

# ***TRAFFIC IMPACT STUDY***

REPORT FOR:

## ***Costco Wholesale, Orland Park***



### **159<sup>th</sup> STREET AND RAVINIA AVENUE** **ORLAND PARK, ILLINOIS**

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## **I. INTRODUCTION**

V3 Companies has been retained by Costco Wholesale Corporation to conduct a traffic impact study for a proposed Costco gas station relocation. The gas station will be relocated east of Ravinia Avenue adjacent to the existing Costco Warehouse at the southeast corner of 159<sup>th</sup> Street and Ravinia Avenue. The site is bounded by 159<sup>th</sup> Street to the north and undeveloped land to the south, east, and west. The undeveloped land to the south of Ravinia Avenue will be developed into a residential area and the area to the west will be developed into a mixed-use retail space. A location map is included as Figure 1.

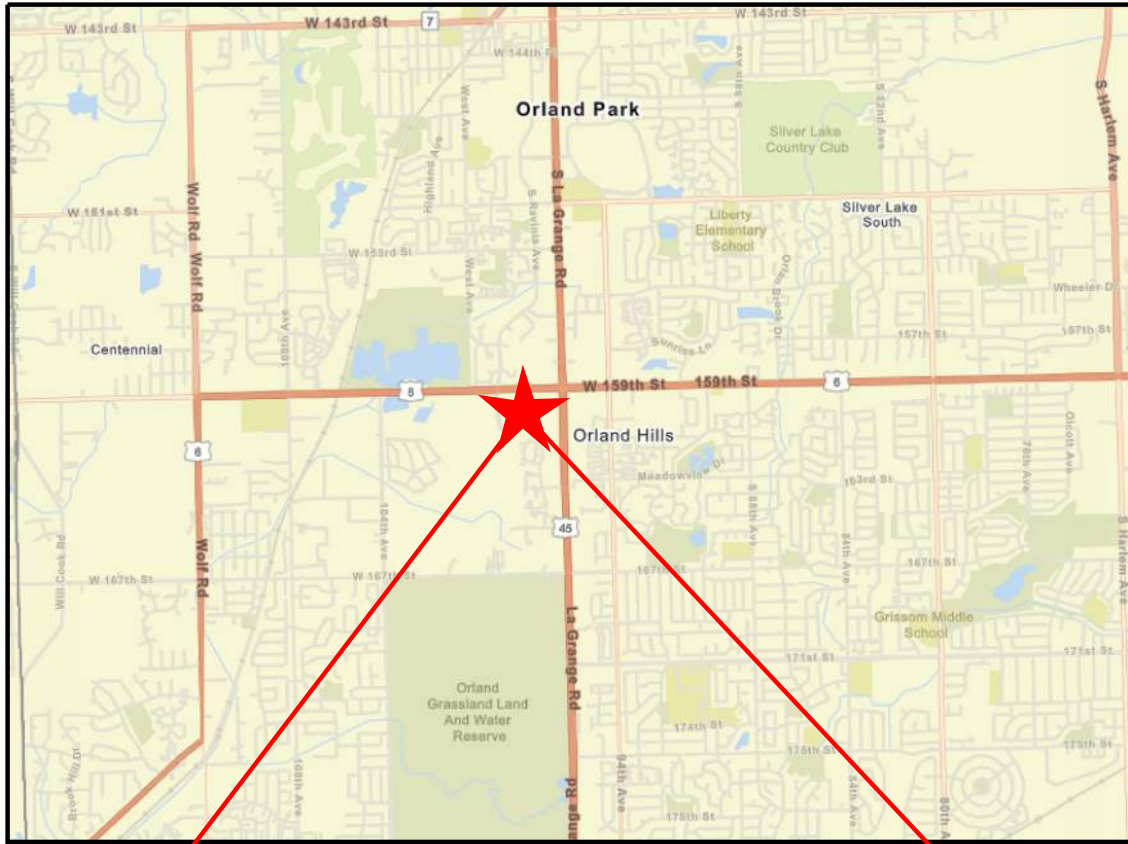
The proposed development consists of a members-only gas station with 40 fueling positions. The existing gas station, located at the northwest corner of the Costco property, will be replaced with additional parking spaces. The proposed access plan includes modifying the existing northern Costco driveway on Ravinia Avenue into a single-lane roundabout with the east leg providing access to the proposed gas station. A right-turn only entrance is proposed on Ravinia Avenue north of the proposed roundabout that will directly access the Costco warehouse. Additionally, the south Costco driveway will be modified from the existing full access driveway to a limited access right in/right out/left in only driveway. As part of the adjacent development plans, Ravinia Avenue is proposed to be extended from its current terminus south of the Costco development to LaGrange Road at 161<sup>st</sup> Street. Figure 2 illustrates the proposed site plan.

The purpose of this study is to evaluate the potential traffic impacts of the proposed members-only gas station relocation. Traffic estimates are projected to 2025 and 2050. 2025 is the anticipated buildout year and 2050 accounts for traffic generated by the adjacent developments and the extension of Ravinia Avenue to LaGrange Road. Ambient growth rates are based on traffic projections from CMAP.

The study area includes the following intersections as well as the proposed driveways to the site.

- 159<sup>th</sup> Street and Costco Right in/Right out driveway (unsignalized)
- 159<sup>th</sup> Street and Ravinia Avenue (signalized)
- Ravinia Avenue and North Costco Driveway (unsignalized)
- Ravinia Avenue and South Costco Driveway (unsignalized)
- LaGrange Road and 161<sup>st</sup> Street (unsignalized)
- Ravinia Avenue and Warehouse Right-In Driveway (unsignalized)

This report includes a description of existing conditions, data collection and capacity analysis, evaluation of data, and conclusions.



**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 1  
SITE LOCATION MAP**

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## **II. PROJECT CONDITIONS**

### ***Land Uses***

The land uses near the project site primarily consist of residential and retail uses as well as undeveloped land. The surrounding land uses are illustrated in Figure 3.

### ***Roadway System***

The characteristics of the roadways in the vicinity of the site are presented below. The existing lane configurations in the study area are illustrated in Figure 4.

#### **Roadway Descriptions**

*159<sup>th</sup> Street/US Route 6* is an east/west roadway classified as a Strategic Regional Arterial (SRA) with a posted speed limit of 40 mph adjacent to the proposed development. 159<sup>th</sup> Street has a four-lane section that widens to provide left and right turn lanes at major intersections while the rest of the corridor has a raised landscaped median. 159<sup>th</sup> Street is under the jurisdiction of the Illinois Department of Transportation (IDOT). The north side of 159<sup>th</sup> Street provides a sidewalk up to the west of Ravinia Avenue where it ends. There is a multi-use path that runs east/west along the south side of 159<sup>th</sup> Street.

*LaGrange Road/US Route 45* is a north/south roadway classified as a Strategic Regional Arterial (SRA) with a posted speed limit of 45 mph under IDOT jurisdiction. LaGrange Road has a six-lane section that widens to provide left and right turn lanes at major intersections while the rest of the corridor has a raised landscaped median. LaGrange Road is under the jurisdiction of the Illinois Department of Transportation (IDOT). A sidewalk is provided on the west side of LaGrange Road and a multi-use path on the east side of the roadway.

*Ravinia Avenue* is a north/south roadway under the jurisdiction of The Village of Orland Park and classified as major collector north of 159<sup>th</sup> Street and a local road south of 159<sup>th</sup> Street. The south leg of Ravinia Avenue has a raised median and dead ends approximately 1,400 feet south of 159<sup>th</sup> Street with a multi-use path on the west side of road. The north leg of Ravinia Avenue is a two-lane section that widens to provide left turn lanes at major intersections and sidewalks are provided on both sides of the road. Ravinia Avenue has a posted speed limit of 30 mph.

*Costco Roadway Access Driveways (North and South along Ravinia Avenue)* are private driveways that provide access to the existing Costco Wholesale west of Ravinia Avenue. Each access driveway provides one departing lane and one eastbound shared left turn/right turn lane.

*161<sup>st</sup> Street/Strip Mall Access Driveway* is an east/west local roadway that provides access to the retail plazas on the east and west side of LaGrange Road. 161<sup>st</sup> Street is under municipal jurisdiction.



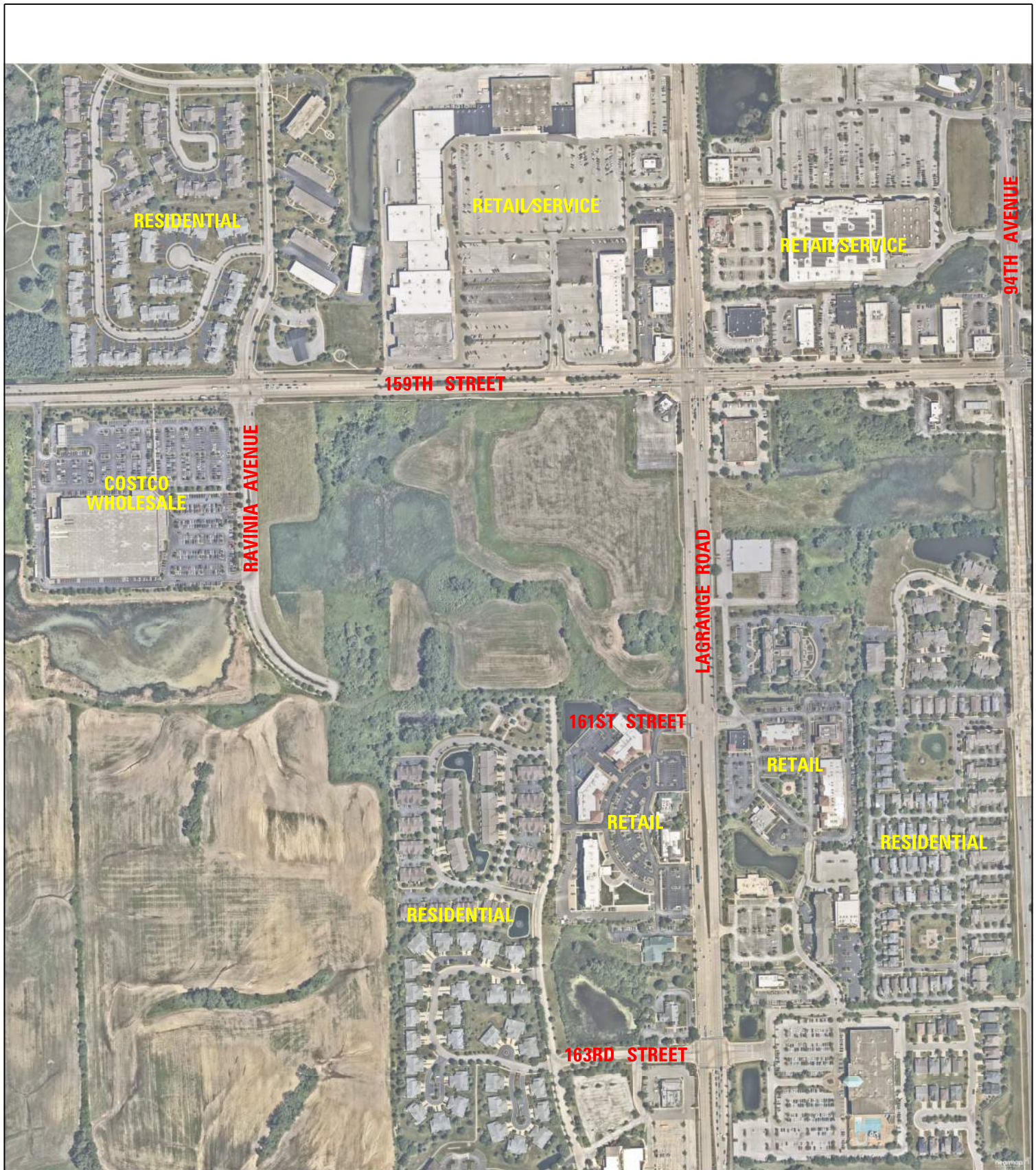
### Intersection Descriptions

*159<sup>th</sup> Street and Ravinia Avenue* is a signalized intersection that is part of a coordinated signal network. The northbound and southbound approaches of Ravinia Avenue consist of one left turn lane, one through lane, and one right turn lane. The westbound approach of 159<sup>th</sup> Street consists of two left turn lanes, two through lanes, and one right turn lane while the eastbound approach consists of one left turn lane, one through lane, and one shared through/right turn lane. The northbound and southbound approaches operate with a protected/permitted left turn movement while the westbound and eastbound approaches operated with a protected only left turn movement. The traffic signal was observed during the peak hours and found that the cycle length for the weekday am peak hour is 120 seconds while the weekday pm peak hour and the Saturday midday peak hour is 130 seconds. The south leg provides a high visibility crosswalk while the east, west, and north legs of the intersection provide a standard pedestrian crosswalk.

*LaGrange Road and 161<sup>st</sup> Street/ Strip Mall Access Driveway* is an unsignalized intersection, two-way stop-controlled intersection with 161<sup>st</sup> Street signed as the stop approach. The northbound and southbound approaches of La Grange Road consist of one left turn lane, two through lanes, and one shared through/right turn lane. The eastbound approach of 161<sup>st</sup> Street consists of one left turn lane, one through lane, and one right turn lane while the westbound approach consists of one left turn lane and one shared through/right turn lane. Standard pedestrian crosswalks are provided on the east and west legs of the intersection.

*North and South Costco Driveways and Ravinia Avenue* are unsignalized three-leg intersections with the west leg signed as the stop approach. The northbound approach consists of one left turn lane and two through lanes while the southbound approach consists of one through lane and one shared through/right turn lane. The eastbound approach consists of one left turn/right turn lane.

*Right-In Right-Out Costco Driveway and 159<sup>th</sup> Street* is an unsignalized intersection, three-leg intersection with the north leg signed as the stop approach. The northbound approach consists of one right turn lane. The eastbound approach consists of one through lane and one shared through/right turn lane. The westbound approach consists of two through lanes.



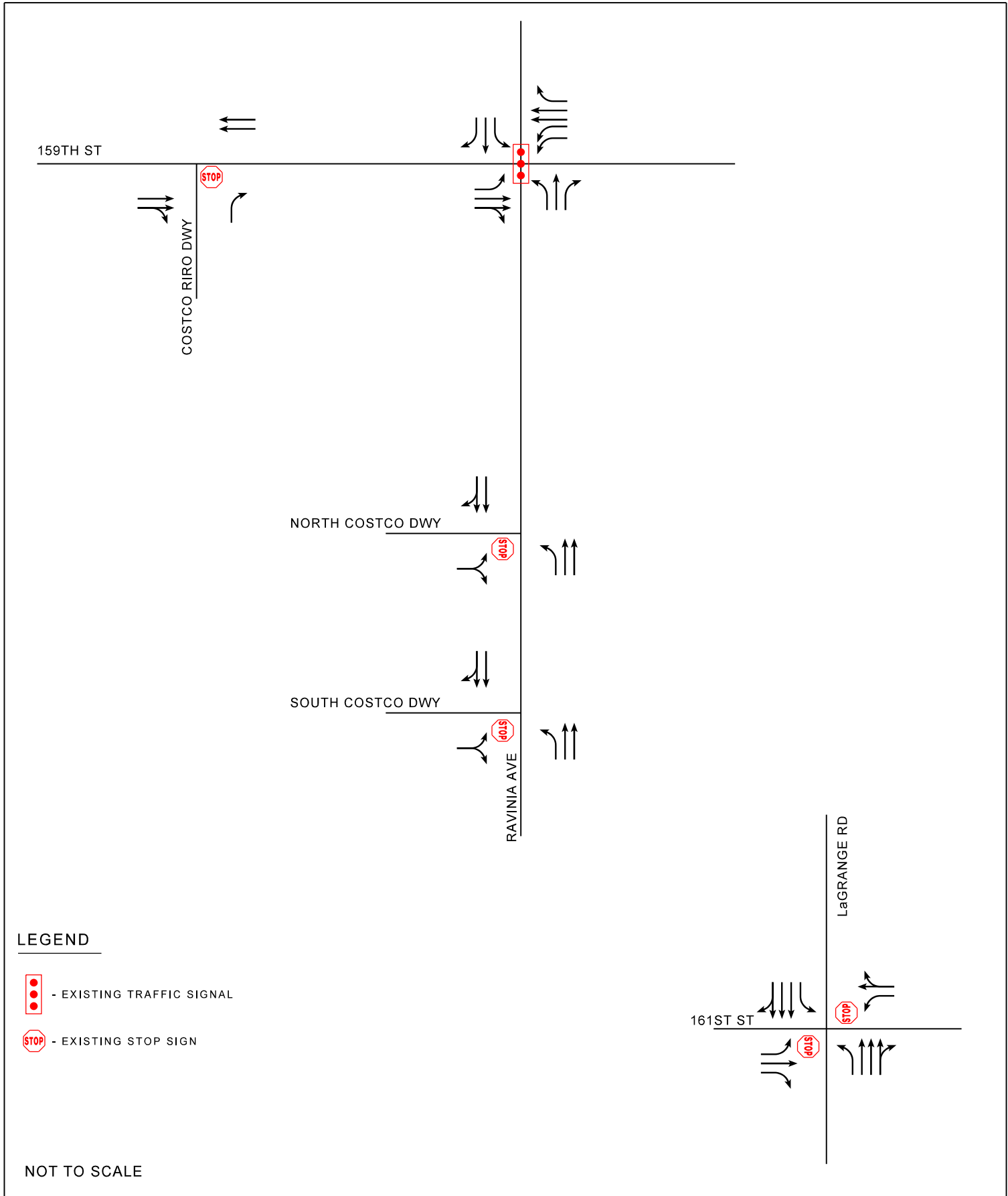
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 3  
LAND USE MAP**

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**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 4  
EXISTING LANE CONFIGURATION**

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### ***Traffic Volumes***

To assist in the evaluation of the traffic impact on the roadway system resulting from the proposed development, existing vehicular volumes were collected at the study area intersections.

Existing traffic counts were collected on Thursday, August 1, 2024, and Saturday, August 3, 2024, at the study area intersections. The weekday am peak period traffic counts were collected from 7:00 am to 9:00 am, the weekday pm peak period were collected from 3:00 pm to 7:00 pm, and the Saturday midday peak period were collected from 11:00 am to 3:00 pm. The time periods of the traffic counts were selected to coincide with the typical peak hours of the arterial roadways like 159<sup>th</sup> Street and LaGrange Road, as well as the typical peak hours for a retail development.

The weekday am peak hour occurs between 8:00 am – 9:00 am, the weekday pm peak hour occurs between 4:30 pm – 5:30 pm, and the Saturday midday peak hour occurs 12:15 pm – 1:15 pm. The existing peak hour volumes at the study area intersections are illustrated in Figure 5. A summary of the traffic volumes collected in fifteen-minute increments is provided in Appendix A.

### ***Proposed Development***

#### ***Land Use Development***

The areas to the south and east of the site are planned to be developed in the upcoming years. A residential development is planned to be constructed on the south of the existing Costco warehouse connecting with Ravinia Avenue with 132 detached single-family residences. The peak hour traffic volumes generated by this development will be included in the future 2050 scenario and excerpts from the TIS have been included in Appendix B.

Similarly, the undeveloped land to the east of the existing Costco warehouse, at the southwest corner of 159<sup>th</sup> Street and LaGrange Road is proposed to be developed as a retail mixed-use development. The proposed site plan calls for two 100-room hotels, approximately 96,022 square feet of strip retail space, a 25,000 square foot supermarket, and various restaurant facilities totaling approximately 43,660 square feet. At the time of this traffic study, it is unknown when this mixed used facility will be built, but it will be included in the future 2050 scenario. Site traffic volume figures from this site have been included in Appendix B.

#### ***Roadway Development***

The Village of Orland Park plans to extend Ravinia Avenue from its current dead-end south of Costco, connecting it to the retail plaza on LaGrange Road at 161st Street. With the extension of Ravinia Avenue, it is anticipated that some vehicular traffic will utilize this roadway as a cut through instead of traveling north then west at 159<sup>th</sup> Street and LaGrange Road.



Additionally, with the relocation of the Costco Gas Station facility to the east of Ravinia Avenue, a one-lane roundabout is being proposed at the North Costco Driveway and Ravinia Avenue. The east leg of the intersection will be built to provide access to the gas station. This roundabout will provide a one-lane approach at each leg. A right-turn only entrance is proposed on Ravinia Avenue north of the proposed roundabout that will access the Costco warehouse.

Following initial discussions with the Village of Orland Park, it was requested to evaluate and provide a second single-lane roundabout at the existing South Costco driveway on Ravinia Avenue. This driveway is approximately 250 feet south of the proposed roundabout at the north Costco driveway and the future relocated gas station driveway. It is anticipated that additional right of way would need to be acquired to construct the second roundabout, either from the Costco parking lot to the west or the environmental area to the east. This existing three leg intersection will likely not be expanded with a fourth leg to the east due to the environmental areas that would be significantly impacted.

As discussed in this report, the traffic data collected and future development projections at this intersection indicate that the current eastbound stop controlled South Costco driveway operates at an adequate level of service under both current and future full build-out scenarios. While the roundabout would also operate with low delays in the future, it is anticipated that a cost-benefit analysis would indicate that the existing intersection configuration as the more favorable option compared to a roundabout.

After further discussions with the Village of Orland Park and several access alternatives evaluated at the South Costco Driveway, it was determined that the South Costco Driveway will be reconfigured to be a right in/right out/left in driveway. This option will accommodate future traffic along Ravinia Avenue as well as providing safe and efficient access to the site driveways. As a result, all eastbound-to-northbound traffic exiting the Costco will have to exit at the North Costco Driveway through the proposed roundabout.

Additionally, with the extension of Ravinia Avenue to LaGrange Road during the 2050 future scenario, it is expected that the intersection of LaGrange Road and 161st Street will warrant a traffic signal as well as dual northbound left turn lanes. It is anticipated that the Village will coordinate with IDOT and other stakeholders on this project, including a traffic analysis to determine intersection design and a traffic signal warrant analysis. Therefore, for the purpose of this study, the intersection of LaGrange Road and 161<sup>st</sup> Street was analyzed as a signalized intersection with an additional northbound left turn lane to accommodate the future 2050 traffic volumes.





### III. TRAFFIC FORECASTS

#### Project Traffic Volumes

##### Trip Generation

The relocation of the existing gas station to the east side of Ravinia Avenue will not generate new trips but rather reroute existing trips generated by the existing Costco Warehouse. In order to estimate the rerouted vehicular trips, a summary of the existing warehouse traffic volumes was gathered by adding all inbound and outbound trips at the three Costco driveways. Costco has completed numerous gas station relocations and expansion throughout the Midwest and in Illinois. Based on this experience and that the gas station patrons are not open to the public but rather only to Costco members, the demand for gas does not noticeably increase. The reason for the relocation and expansion is to provide more parking and to provide a quicker and better experience for Costco's members.

It is worth noting the unique commercial business that Costco offers to its patrons. Costco provides a distinctive shopping experience for its members, offering bulk products and an on-site gas station. This unique setup creates significant interactions between vehicular trips to the warehouse and the gas station. Based on transactional data provided by Costco, Orland Park Store No. 647, three different types of vehicular trips were identified: trips to the warehouse only, trips to the gas station only, and combined trips where patrons visit both the warehouse and the gas station. Based on the transactional data, it is found that 68 percent of the total vehicle trips are warehouse only trips, 20 percent are gas station only trips, and 12 percent are combined trips to both the warehouse and gas station.

As previously mentioned, the existing traffic volumes at the three Costco driveways were utilized to obtain the existing Costco trip generation. Table 1 provides a summary of the existing Costco trip generation. For the weekday am peak hour, there are more inbound trips than outbound trips. It is assumed that all of the outbound trips are gas station trips and that the same amount of those trips will be inbound trips. The remaining trips are likely employee or delivery trips.

**Table 1: Existing Costco Trip Generation**

| LAND USE                                             | Weekday AM |           |            | Weekday PM |            |              | Saturday MD |            |              |
|------------------------------------------------------|------------|-----------|------------|------------|------------|--------------|-------------|------------|--------------|
|                                                      | In         | Out       | Total      | In         | Out        | Total        | In          | Out        | Total        |
| Costco Wholesale Corporation<br>Orland Park, IL #647 | 85         | 73        | 158        | 537        | 575        | 1,112        | 696         | 722        | 1,418        |
| Warehouse ONLY - 68%<br>*Employee Trip During AM     | 12*        | 0         | 107        | 365        | 391        | 756          | 473         | 491        | 964          |
| Gas ONLY - 20%                                       | 73         | 73        | 32         | 107        | 115        | 222          | 139         | 144        | 284          |
| Total Gas & Warehouse - 12%                          | 0          | 0         | 19         | 65         | 69         | 133          | 84          | 87         | 170          |
| <b>Total Trip Generation:</b>                        | <b>85</b>  | <b>73</b> | <b>158</b> | <b>537</b> | <b>575</b> | <b>1,112</b> | <b>696</b>  | <b>722</b> | <b>1,418</b> |



Using the transaction summary data, the percentage of warehouse only, gas station only, and both trips have been applied to the inbound and outbound trips to estimate the types of trips to and from the site.

### *Trip Distribution and Assignment*

Based on the new location of the gas station, the assignment of traffic to the driveways is based on the accessibility of inbound and outbound traffic at the Costco parking lot as well as the new access to the gas station. Therefore, using the type of vehicular trip and the existing trip generation, the rerouted gas station trips can be estimated. The distribution and reassignment of the rerouted gas station trips are illustrated in Figure 6.

The assignment of traffic to the driveways follows a similar distribution to the existing condition, with adjustments made to account for modifications to the internal roadway network and the relocation of the gas station. The proposed access plan will maintain the existing right-in/right-out driveway along 159<sup>th</sup> Street and the two driveways on Ravinia Avenue. However, the North Costco Driveway will be modified from a t-intersection with stop control on the west leg by constructing the east leg to provide access to the gas station and the intersection modified to a roundabout. Additionally, the South Costco Driveway will be modified to right in/right out/left in movements only with all the eastbound left turning traffic shifted to the north driveway.

### *Future 2025 Background Traffic Volumes*

Background traffic volumes are estimated for two different scenario years, including the opening year of the gas relocation in 2025 and the 2050 full area build out with the Ravinia Avenue extension. These volumes account for future non-project related growth in the area. Background traffic volumes were developed in coordination with the Chicago Metropolitan Agency for Planning (CMAP). Background growth rates were estimated from CMAP for the study area roadways based on the Annual Average Daily Traffic (AADT) that were obtained from the IDOT database. A summary of the CMAP growth rates is provided in Table 2. CMAP correspondence is provided in Appendix C.

**Table 2: CMAP Growth Rates**

| Street                               | AADT                 |            | Total Growth from Count Year to 2050 | Compounded Yearly Rate | Total Growth from 2024 to 2025 | Total Growth from 2024 to 2050 |
|--------------------------------------|----------------------|------------|--------------------------------------|------------------------|--------------------------------|--------------------------------|
|                                      | Existing AADT (Year) | 2050 Proj. |                                      |                        |                                |                                |
| LaGrange Road North of 159th Street  | 33,600 (2023)        | 40,000     | 19.0%                                | 0.6%                   | 0.6%                           | 18.3%                          |
| LaGrange Road South of 159th Street  | 33,500 (2023)        | 38,900     | 16.1%                                | 0.6%                   | 0.6%                           | 15.5%                          |
| 159th Street East of LaGrange Road   | 35,000 (2023)        | 38,500     | 10.0%                                | 0.4%                   | 0.4%                           | 9.6%                           |
| 159th Street West of LaGrange Road   | 24,200 (2023)        | 28,700     | 18.6%                                | 0.6%                   | 0.6%                           | 17.8%                          |
| Ravinia Avenue North of 159th Street | 5,600 (2022)         | 6,700      | 19.6%                                | 0.6%                   | 0.6%                           | 18.1%                          |



Overall, the CMAP projections indicate that there will be growth in traffic on the study area roadways. For the purpose of the 2025 Phase 1, a uniform total growth factor of 0.6 percent is applied to all non-Costco related movements throughout the study area to accommodate non-project related growth.

The 2025 background traffic volumes are illustrated in Figure 7.

#### ***Future 2025 with Gas Station Relocation Traffic Volumes***

The total rerouted trips are added to the background traffic volumes to obtain the 2025 future with gas station relocation traffic volumes for the study area intersections. Future with gas station relocation traffic volumes are depicted in Figure 8.

Figure 9 illustrates the proposed lane configuration for the 2025 future with gas relocation scenario.

#### ***Future 2050 Area Build Out with Ravinia Avenue Extension Traffic Volumes***

##### ***Future 2050 Background Traffic Volumes***

As indicated by the CMAP traffic projections, background growth will continue along LaGrange Road and 159<sup>th</sup> Street to 2050. To keep the street segment growth consistent with the CMAP projections, only the through movements along that street segment received the corresponding growth rate as rerouted traffic will be estimated separately for the Ravinia Avenue extension.

In addition to the CMAP growth rates, traffic has been estimated and added to the study area intersections for two adjacent developments planned in the area. In coordination with the Village of Orland Park, the traffic from two nearby developments have been identified and will be included in the 2050 future with Ravinia Extension scenarios:

- Estates at Ravinia Meadow – Residential Development (South of the Existing Costco Warehouse near the existing dead-end of Ravinia Avenue)
  - 132 detached single-family units
- Retail Mixed-Use Development (Southwest corner of 159<sup>th</sup> Street and LaGrange Road)
  - Two hotels with approximately 200 rooms
  - 25,000 square foot supermarket
  - Approximately 96,022 square feet of strip retail space
  - Approximately 43,660 square feet of various restaurant facilities

The vehicular traffic volumes from these two developments will be added to the 2050 Future with Ravinia Avenue Extension. Additional site traffic volume figures and the overall adjacent development locations are included in Appendix B.



### *Existing Rerouted Traffic Volumes with Ravinia Extension*

The construction of the Ravinia Avenue extension will result in an adjustment to the existing traffic patterns in the area as adjacent developments will have additional options to access the area roadways and vehicles will be able to use the new extension to avoid some travel movements and intersections. For instance, currently traffic from the south on LaGrange Road has to use 159<sup>th</sup> Street to access the Costco, but with the extension, those trips can now use Ravinia Avenue.

In coordination with CMAP, it is anticipated that approximately four percent of the average daily traffic (38,900 vehicles reduced to 37,700 vehicles) along LaGrange Road south of 159<sup>th</sup> Street will utilize the Ravinia Avenue extension. Therefore, a four percent reduction of the northbound and southbound through volumes along LaGrange Road were adjusted and rerouted to use the Ravinia Avenue Extension.

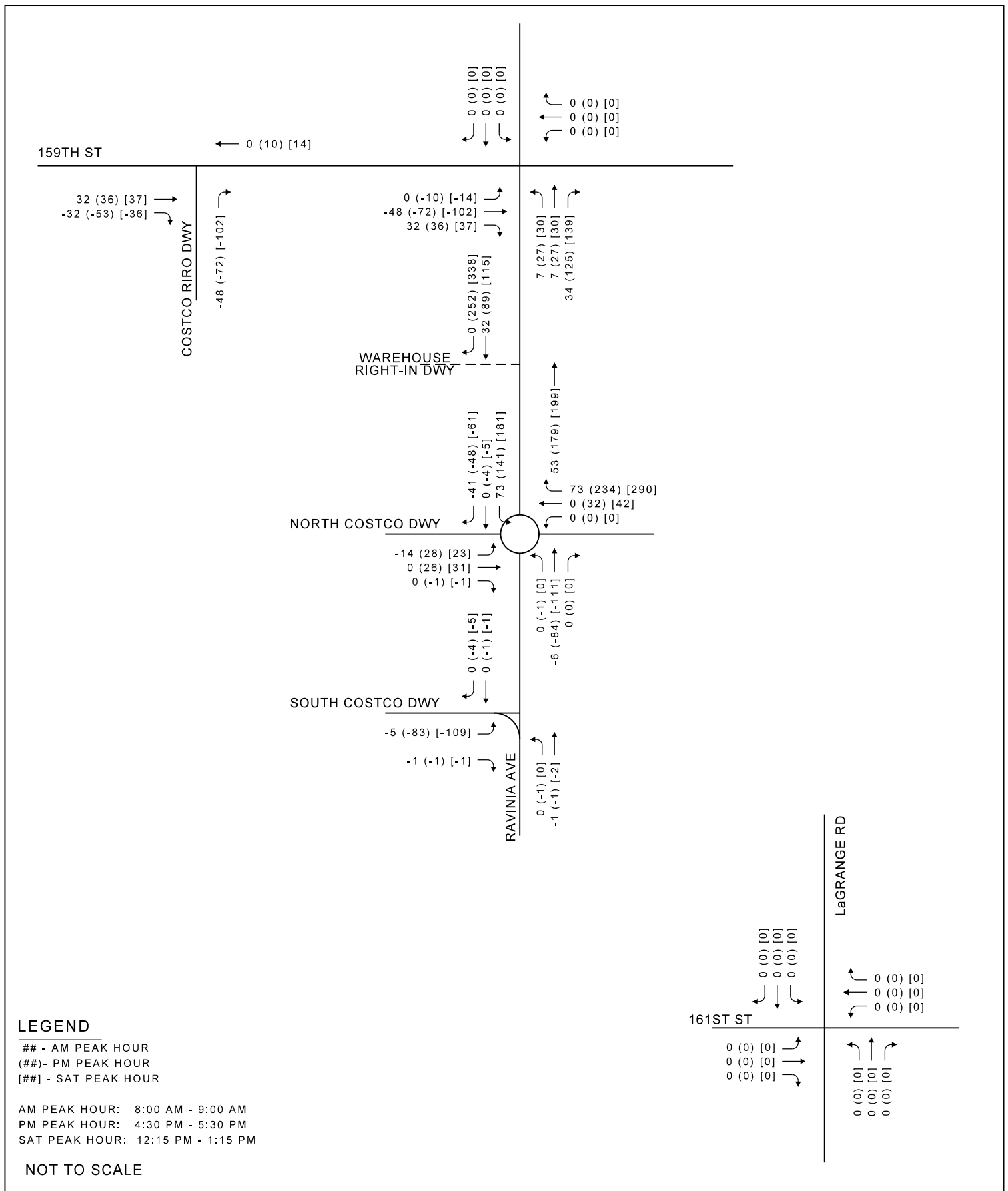
### *Costco Rerouted Traffic Volumes with Ravinia Extension*

Similar to the existing rerouted traffic volumes along LaGrange Road and 159<sup>th</sup> Street, it is anticipated that Costco traffic will be rerouted to utilize the new access connecting south of LaGrange Road to 159<sup>th</sup> Street to the west. Based on the existing Costco traffic patterns, it is estimated that approximately 15 percent of the Costco generated traffic volumes travel to and from the south on LaGrange Road. Therefore, 15 percent of the Costco generated traffic volumes has been rerouted to utilize the Ravinia Extension.

In summary, the future 2050 peak hour traffic volumes the background growth in the area based on CMAP projections, the traffic from the two new developments south and east of Costco, and a redistribution of traffic from 159th Street and LaGrange Road that would likely use the new extension to bypass the 159th Street and LaGrange Road intersection or travel on Ravinia Avenue north of 159th Street, and the redistribution of Costco traffic using the Ravinia Avenue extension. Appendix H includes a summary of traffic volume exhibits that illustrate the development of the 2050 traffic volumes.

The existing rerouted traffic volumes, the adjacent development traffic volumes, and the Costco rerouted traffic volumes total project trips are added to the background volume to obtain the future with project traffic volumes for the study area intersections. Future with project traffic volumes are depicted in Figure 10.

Figure 11 illustrates the proposed lane configuration for the 2050 future with Ravinia Extension scenario.



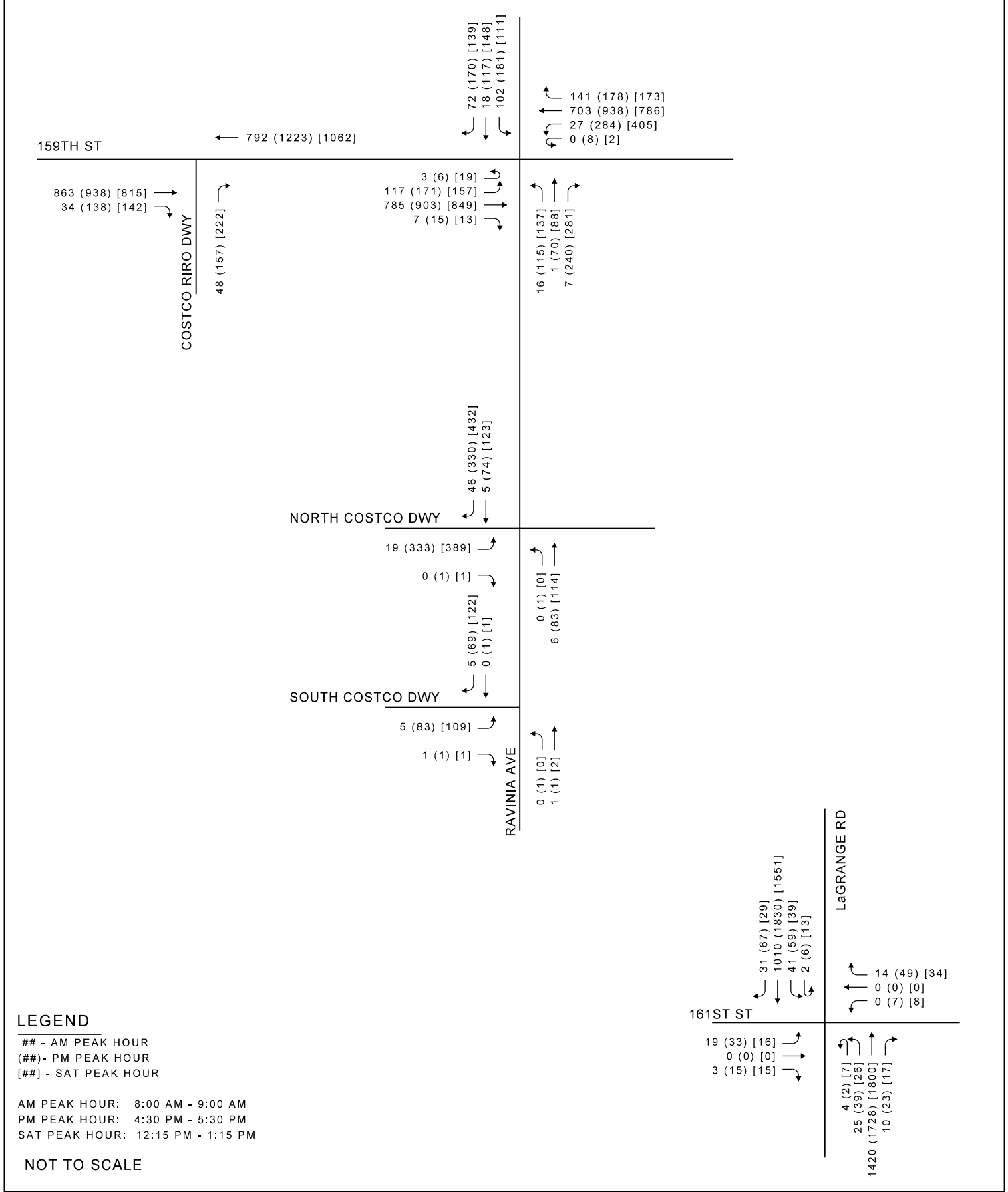
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 6  
GAS STATION RELOCATION  
TRAFFIC VOLUMES**

ORLAND PARK

ILLINOIS





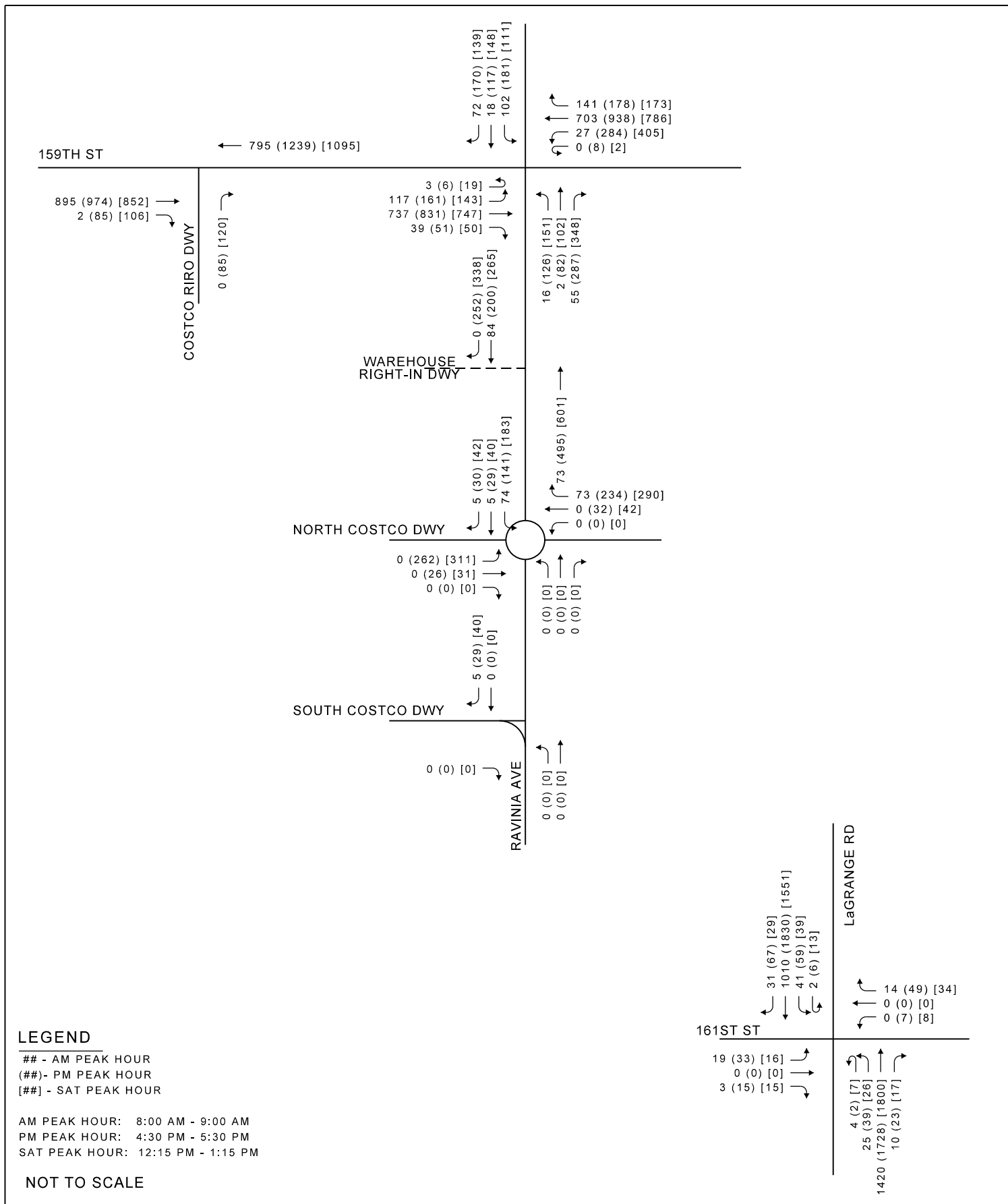
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 7  
2025 BACKGROUND  
TRAFFIC VOLUMES**

ORLAND PARK

ILLINOIS





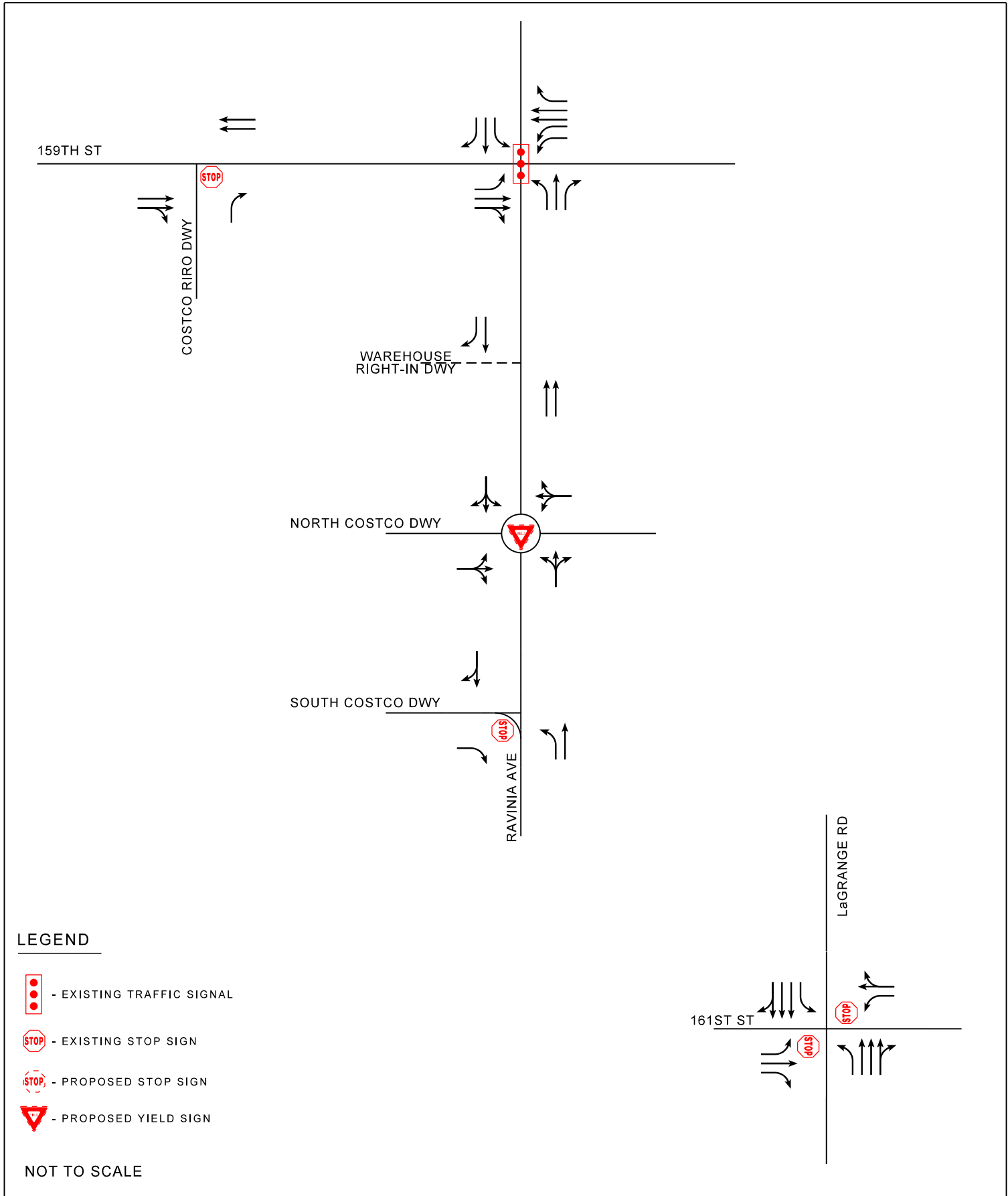
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 8  
2025 FUTURE WITH PROJECT  
TRAFFIC VOLUMES**

ORLAND PARK

ILLINOIS





**LEGEND**

-  - EXISTING TRAFFIC SIGNAL
-  - EXISTING STOP SIGN
-  - PROPOSED STOP SIGN
-  - PROPOSED YIELD SIGN

NOT TO SCALE

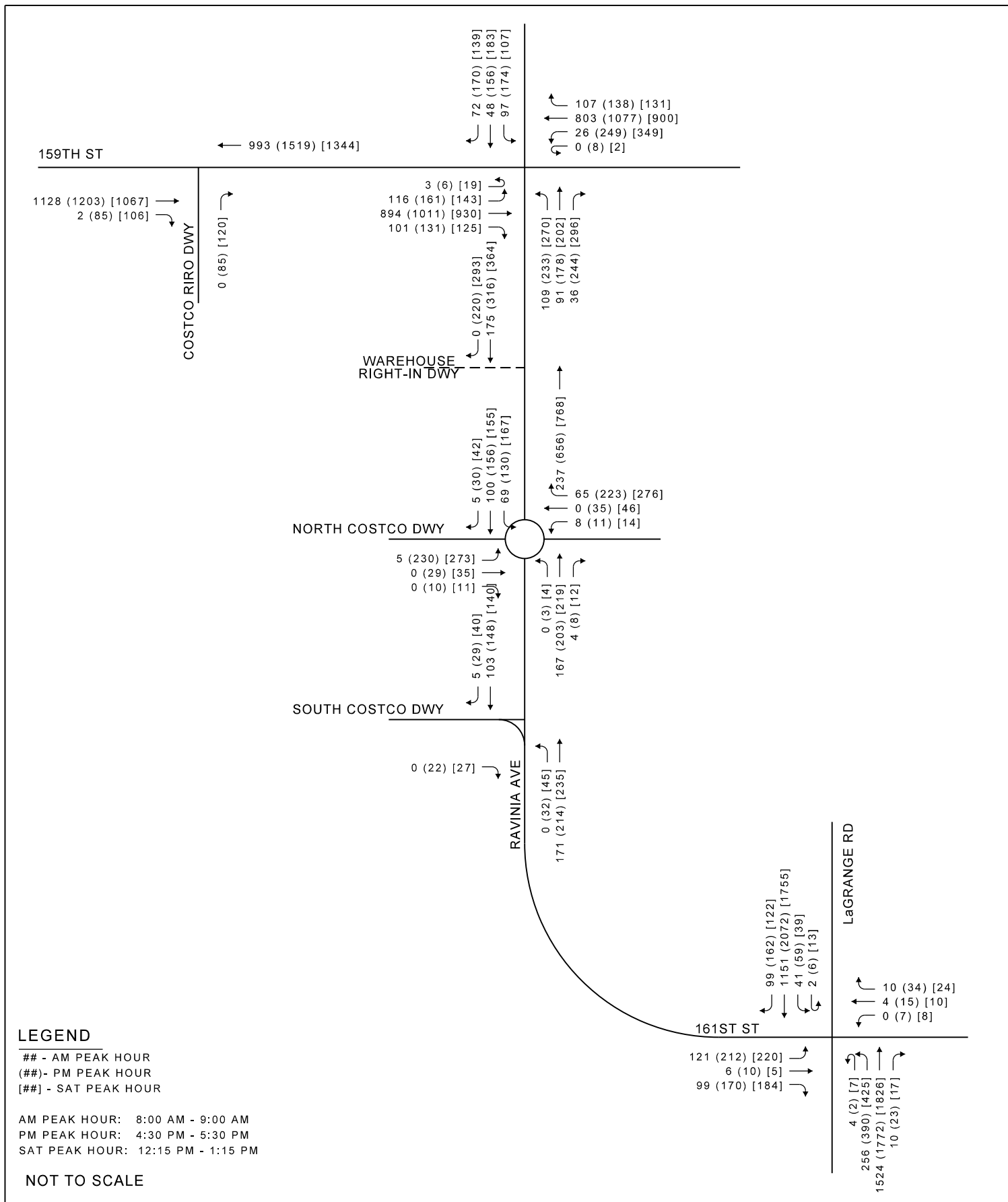
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 9  
2025 PROPOSED LANE  
CONFIGURATION**

ORLAND PARK

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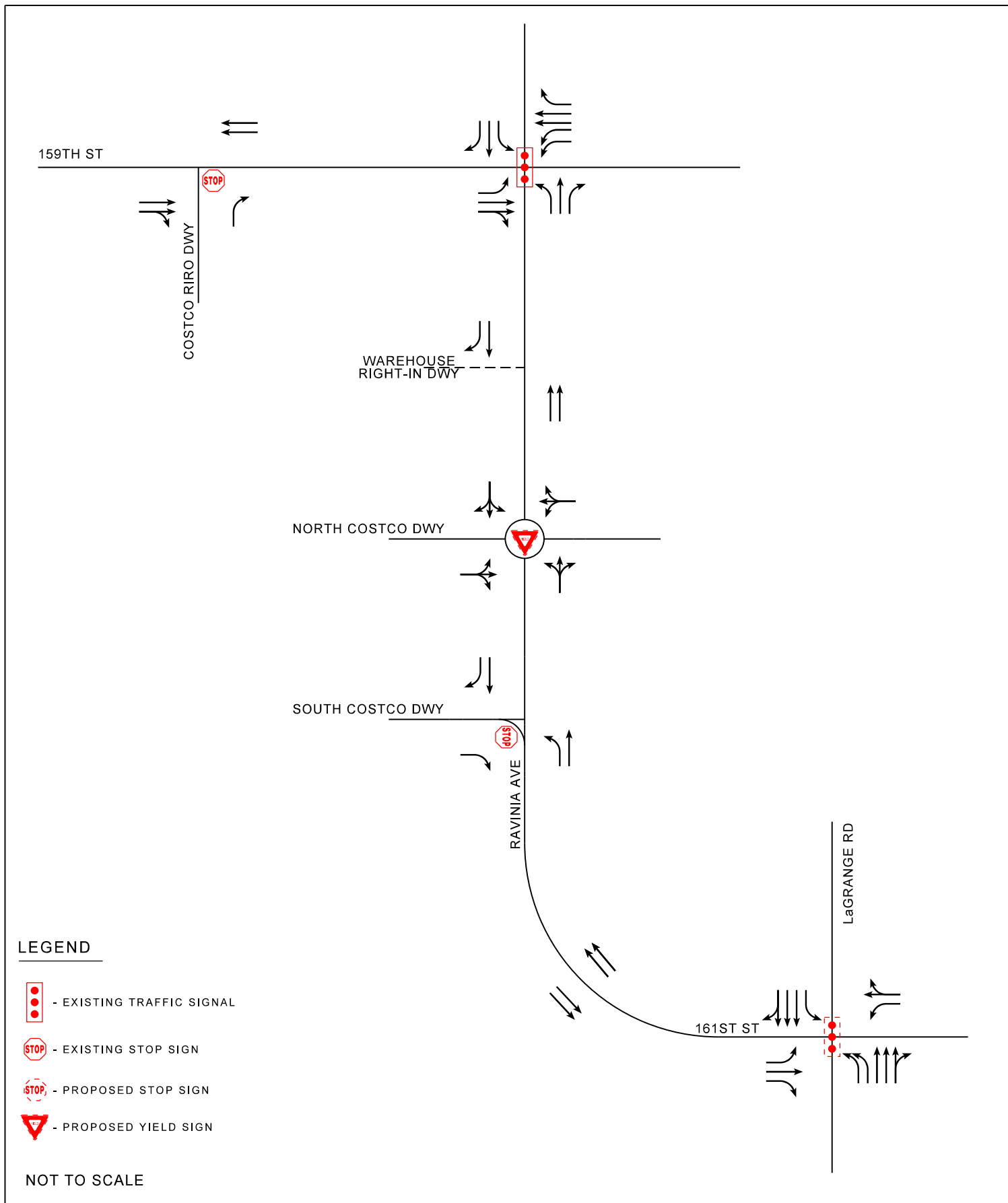
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 10  
2050 FUTURE WITH PROJECT  
TRAFFIC VOLUMES**

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**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**FIGURE 11  
2050 PROPOSED LANE  
CONFIGURATION**

ORLAND PARK

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#### IV. TRAFFIC ANALYSIS

##### Capacity Analysis

The operation of a facility is evaluated based on level of service (LOS) calculations obtained by analytical methods defined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 7th Edition. The concept of LOS is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

There are six LOS letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst.

The LOS of an intersection is based on the average control delay per vehicle. For a signalized intersection, the delay is calculated for each lane group and then aggregated for each approach and for the intersection as a whole. Generally, the LOS is reported for the intersection as a whole. For an unsignalized intersection, the delay is only calculated and reported for each minor movement. An overall intersection LOS is not calculated.

There are different LOS criteria for signalized and unsignalized intersections primarily due to driver perceptions of transportation facilities. The perception is that a signalized intersection is expected to carry higher traffic volumes and experience a greater average delay than an unsignalized intersection. The LOS criteria for signalized and unsignalized intersections are provided in Table 3.

**Table 3: Level of Service Definitions for Signalized and Unsignalized Intersections**

| Level of Service | Signalized Intersection<br>Control Delay<br>(seconds/vehicle) | Unsignalized Intersection<br>Control Delay<br>(seconds/vehicle) |
|------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
| A                | $\leq 10$                                                     | $\leq 10.0$                                                     |
| B                | $> 10.0$ and $\leq 20.0$                                      | $> 10.0$ and $\leq 15.0$                                        |
| C                | $> 20.0$ and $\leq 35.0$                                      | $> 15.0$ and $\leq 25.0$                                        |
| D                | $> 35.0$ and $\leq 55.0$                                      | $> 25.0$ and $\leq 35.0$                                        |
| E                | $> 55.0$ and $\leq 80.0$                                      | $> 35.0$ and $\leq 50.0$                                        |
| F                | $> 80.0$                                                      | $> 50.0$                                                        |

Source: Transportation Research Board, *Highway Capacity Manual 7th Edition*, National Research Council, 2016.

Typically, various state and local governments adopt standards varying between LOS C and LOS E, depending on the area's size and roadway characteristics.



The study area includes the existing signalized intersection of 159<sup>th</sup> Street and Ravinia Avenue, and the existing unsignalized intersections of 159<sup>th</sup> Street and Costco Right in/Right out Driveway, North Costco Driveway and Ravinia Avenue, South Costco Driveway and Ravinia Avenue, and 161<sup>st</sup> Street and LaGrange Road. Capacity analysis was performed with Synchro 12.2. Models were created for the weekday am, weekday pm, and Saturday midday peak hours for the existing, 2025 background, 2025 future with gas station relocation, and Future 2050 Area Build Out with Ravinia Avenue Extension scenarios. The capacity analysis for the roundabout was performed with Sidra Intersection 10.0.

The capacity analysis results at the signalized intersections are summarized in Table 4 and at the unsignalized intersections in Table 5. The traffic signal timing plans were provided by CBBEL reviewer which the timings were obtained from field controller and utilized for this analysis. Supporting capacity analysis worksheets are provided in Appendices D, E, F, and G, respectively.

**Table 4: Capacity Analysis of Signalized Intersections**

| Intersection                  | Peak Hour   | Scenario                   | Eastbound   |     | Westbound   |     | Northbound  |     | Southbound  |     | Intersection |     |
|-------------------------------|-------------|----------------------------|-------------|-----|-------------|-----|-------------|-----|-------------|-----|--------------|-----|
|                               |             |                            | Delay (sec) | LOS | Delay (sec) | LOS | Delay (sec) | LOS | Delay (sec) | LOS | Delay (sec)  | LOS |
| Ravinia Avenue & 159th Street | Weekday AM  | Existing (2024)            | 15.7        | B   | 12.5        | B   | 34.5        | C   | 35.4        | D   | 16.4         | B   |
|                               |             | Background (2025)          | 15.7        | B   | 12.6        | B   | 34.5        | C   | 35.5        | D   | 16.5         | B   |
|                               |             | Future with Project (2025) | 16.4        | B   | 12.7        | B   | 24.6        | C   | 35.3        | D   | 16.9         | B   |
|                               |             | Future with Project (2050) | 22.0        | C   | 20.1        | C   | 43.1        | D   | 32.8        | C   | 24.2         | C   |
|                               | Weekday PM  | Existing (2024)            | 31.3        | C   | 29.9        | C   | 28.3        | C   | 34.5        | C   | 30.8         | C   |
|                               |             | Background (2025)          | 31.4        | C   | 30.0        | C   | 28.4        | C   | 34.4        | C   | 30.9         | C   |
|                               |             | Future with Project (2025) | 31.5        | C   | 30.1        | C   | 29.6        | C   | 34.1        | C   | 31.0         | C   |
|                               |             | Future with Project (2050) | 37.8        | D   | 35.6        | D   | 34.6        | C   | 37.1        | D   | 36.4         | D   |
|                               | Saturday MD | Existing (2024)            | 37.2        | D   | 33.2        | C   | 22.7        | C   | 37.3        | D   | 33.3         | C   |
|                               |             | Background (2025)          | 37.3        | D   | 33.2        | C   | 22.8        | C   | 37.3        | D   | 33.4         | C   |
|                               |             | Future with Project (2025) | 37.0        | D   | 33.1        | C   | 24.0        | C   | 37.2        | D   | 33.1         | C   |
|                               |             | Future with Project (2050) | 45.7        | D   | 38.6        | D   | 29.2        | C   | 39.4        | D   | 39.1         | D   |
| LaGrange Road & 161st Street  | Weekday AM  | Existing (2024)            | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Background (2025)          | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2025) | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2050) | 40.3        | D   | 34.3        | C   | 16.5        | B   | 14.0        | B   | 17.2         | B   |
|                               | Weekday PM  | Existing (2024)            | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Background (2025)          | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2025) | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2050) | 64.4        | E   | 41.9        | D   | 24.4        | C   | 28.7        | C   | 29.8         | C   |
|                               | Saturday MD | Existing (2024)            | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Background (2025)          | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2025) | -           | -   | -           | -   | -           | -   | -           | -   | -            | -   |
|                               |             | Future with Project (2050) | 55.0        | E   | 36.6        | D   | 22.5        | C   | 24.6        | C   | 26.3         | C   |



**Table 5: Capacity Analysis of Unsignalized Intersections**

| Intersection / Approach                                          | Weekday AM    |     |                 |     |                        |     |                        |     | Weekday PM    |     |                 |     |                        |     |                        |     | Saturday MD   |     |                 |     |                        |     |                        |     |
|------------------------------------------------------------------|---------------|-----|-----------------|-----|------------------------|-----|------------------------|-----|---------------|-----|-----------------|-----|------------------------|-----|------------------------|-----|---------------|-----|-----------------|-----|------------------------|-----|------------------------|-----|
|                                                                  | 2024 Existing |     | 2025 Background |     | 2025 Future w/ Project |     | 2050 Future w/ Project |     | 2024 Existing |     | 2025 Background |     | 2025 Future w/ Project |     | 2050 Future w/ Project |     | 2024 Existing |     | 2025 Background |     | 2025 Future w/ Project |     | 2050 Future w/ Project |     |
|                                                                  | Delay (s/veh) | LOS | Delay (s/veh)   | LOS | Delay (s/veh)          | LOS | Delay (s/veh)          | LOS | Delay (s/veh) | LOS | Delay (s/veh)   | LOS | Delay (s/veh)          | LOS | Delay (s/veh)          | LOS | Delay (s/veh) | LOS | Delay (s/veh)   | LOS | Delay (s/veh)          | LOS | Delay (s/veh)          | LOS |
| 159th Street & Costco RIRO Driveway (Two-Way Stop Controlled)    |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |
| NB Right                                                         | 13.1          | B   | 13.1            | B   | 0.0                    | A   | 0.0                    | A   | 16.5          | C   | 16.5            | C   | 14.2                   | B   | 16.5                   | C   | 18.8          | C   | 18.9            | C   | 14.8                   | B   | 17.5                   | C   |
| Ravinia Avenue & North Costco Driveway (Two-Way Stop Controlled) |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |
| NB Left                                                          | 0.0           | A   | 0.0             | A   | Roundabout             |     | Roundabout             |     | 8.2           | A   | 8.2             | A   | Roundabout             |     | Roundabout             |     | 0.0           | A   | 0.0             | A   | Roundabout             |     | Roundabout             |     |
| EB App.                                                          | 8.9           | A   | 8.9             | A   |                        |     |                        |     | 16.3          | C   | 16.3            | C   |                        |     |                        |     | 33.0          | D   | 33.0            | D   |                        |     |                        |     |
| Ravinia Avenue & South Costco Driveway (Two-Way Stop Controlled) |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |
| NB Left                                                          | 0.0           | A   | 0.0             | A   | 0.0                    | A   | 0.0                    | A   | 7.4           | A   | 7.4             | A   | 0.0                    | A   | 7.7                    | A   | 0.0           | A   | 0.0             | A   | 0.0                    | A   | 7.8                    | A   |
| EB App.                                                          | 8.7           | A   | 8.7             | A   | 0.0                    | A   | 0.0                    | A   | 9.2           | A   | 9.2             | A   | 0.0                    | A   | 9.3                    | A   | 9.6           | A   | 9.6             | A   | 0.0                    | A   | 9.3                    | A   |
| LaGrange Road & 161st Street (Two-Way Stop Controlled)           |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |
| NB Left                                                          | 15.5          | C   | 15.5            | C   | 15.5                   | C   | Signalized             |     | 43.0          | E   | 43.7            | E   | 43.7                   | E   | Signalized             |     | 24.2          | C   | 24.4            | C   | 24.4                   | C   | Signalized             |     |
| EB Left                                                          | 51.1          | F   | 51.9            | F   | 51.9                   | F   |                        |     | >100          | F   | >100            | F   | >100                   | F   |                        |     | >100          | F   | >100            | F   |                        |     |                        |     |
| EB Thru                                                          | 0.0           | A   | 0.0             | A   | 0.0                    | A   |                        |     | 0.0           | A   | 0.0             | A   | 0.0                    | A   |                        |     | 0.0           | A   | 0.0             | A   |                        |     |                        |     |
| EB Right                                                         | 13.8          | B   | 13.8            | B   | 13.8                   | B   |                        |     | 23.0          | C   | 23.1            | C   | 23.1                   | C   |                        |     | 18.4          | C   | 18.5            | C   | 18.5                   | C   |                        |     |
| WB left                                                          | 0.0           | A   | 0.0             | A   | 0.0                    | A   |                        |     | >100          | F   | >100            | F   | >100                   | F   |                        |     | >100          | F   | >100            | F   | >100                   | F   |                        |     |
| WB Thru/Right                                                    | 17.4          | C   | 17.5            | C   | 17.5                   | C   |                        |     | 23.8          | C   | 24.0            | C   | 24.0                   | C   |                        |     | 22.8          | C   | 22.9            | C   | 22.9                   | C   |                        |     |
| SB Left                                                          | 25.2          | D   | 25.4            | D   | 25.4                   | D   |                        |     | 41.7          | E   | 42.4            | E   | 42.4                   | E   |                        |     | 36.5          | E   | 37.1            | E   | 37.1                   | E   |                        |     |
| Ravinia Avenue & Nouth Costco Driveway (Yield Controlled)        |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |               |     |                 |     |                        |     |                        |     |
| NB App.                                                          | -             | -   | -               | -   | 2.9                    | A   | 4.0                    | A   | -             | -   | -               | -   | 4.3                    | A   | 7.1                    | A   | -             | -   | -               | -   | 4.8                    | A   | 8.6                    | A   |
| WB App.                                                          | -             | -   | -               | -   | 3.0                    | A   | 3.9                    | A   | -             | -   | -               | -   | 6.6                    | A   | 8.7                    | A   | -             | -   | -               | -   | 8.2                    | A   | 11.5                   | B   |
| SB App.                                                          | -             | -   | -               | -   | 3.0                    | A   | 3.6                    | A   | -             | -   | -               | -   | 4.1                    | A   | 5.0                    | A   | -             | -   | -               | -   | 4.6                    | A   | 5.6                    | A   |
| EB App.                                                          | -             | -   | -               | -   | 2.9                    | A   | 3.3                    | A   | -             | -   | -               | -   | 6.0                    | A   | 7.0                    | A   | -             | -   | -               | -   | 7.2                    | A   | 8.3                    | A   |
| Intersection                                                     | -             | -   | -               | -   | 3.0                    | A   | 3.8                    | A   | -             | -   | -               | -   | 5.7                    | A   | 6.9                    | A   | -             | -   | -               | -   | 6.8                    | A   | 8.4                    | A   |

### Existing Scenario

Based on the analysis results for the signalized intersection of 159<sup>th</sup> Street and Ravinia Avenue, the major approaches operate with LOS D or better while the overall intersection operates at LOS B during the weekday am and at LOS C during the weekday pm peak hour and the Saturday midday peak hour.

All movements at the unsignalized intersections operate adequately with the exception of the eastbound and westbound left turn movements at 161<sup>st</sup> Street and LaGrange Road which operate with high delays during all three time periods.

### 2025 Background Scenario

For the 2025 background scenario, delays tend to increase slightly at the signalized intersection. The addition of background traffic results in similar delay times for each approach and the overall intersection. It is worth noting that minor delay improvements are observed on some minor street approaches. This is due to the increased side street volumes placing more calls on the intersection approach which extends the effective green times for the side street and results in a decreased average delay for that approach.

Similar to the existing scenario, all movements at the unsignalized intersections operate adequately with the exception of the eastbound and westbound left turn movements at 161<sup>st</sup> Street and LaGrange Road which operate with high delays during all three time periods.



### *2025 Future with Gas Station Relocation Scenario*

Intersection delays tend to increase with the relocation of the gas station east of Ravinia Avenue. A slight increase in delay is observed on the northbound approach and decrease on the eastbound approach as less traffic is using the right in/right out driveway west of 159th Street and Ravinia Avenue. Overall, each approach continues to operate at LOS D or better during all three time periods while the overall intersection operates at LOS B during the weekday am peak hour and at LOS C during the weekday pm peak hour and the Saturday midday peak hour.

All movements at the unsignalized intersections continue to operate adequately, with all levels of service remaining at LOS D or better with the exception of the eastbound and westbound left turn movements at 161<sup>st</sup> Street and LaGrange Road. Minimal delays are observed for the roundabout at the North Costco Driveway and Ravinia Avenue.

### *Future 2050 Area Build Out with Ravinia Avenue Extension Scenario*

As previously mentioned, it is anticipated that the extension of Ravinia Avenue to LaGrange Road will warrant a traffic signal and a second northbound left turn lane at the intersection of LaGrange Road and 161<sup>st</sup> Street. Therefore, in the Future 2050 Area Build Out with Ravinia Avenue Extension Scenario, this intersection has been analyzed as a signalized intersection.

The signalized intersection delays tend to increase with the relocation of the gas station east of Ravinia Avenue, the addition of the residential and mixed-use developments, as well as the rerouted cut-through traffic along Ravinia Avenue. Overall, the approaches of the Ravinia Avenue and 159<sup>th</sup> Street intersection continue to operate at LOS D or better during all three time periods while the overall intersection operates at LOS C during the weekday am peak hour and at LOS D during the weekday pm and Saturday midday peak hour. The major approaches of 161<sup>st</sup> Street and LaGrange Road operate at LOS E or better during all three time periods while the overall intersection operates at LOS B during the weekday am peak hour and at LOS C during the weekday pm and Saturday midday peak hours. As the Ravinia Avenue extension is planned and as the new adjacent developments are constructed, it is anticipated that the intersection geometry and traffic signal timing will be reviewed and updated to minimize delays and efficiently move traffic through the area.

All movements at the unsignalized intersections continue to operate adequately, with all levels of service remaining at LOS C or better. No delays are observed for the roundabout at the North Costco Driveway and Ravinia Avenue.



### ***Queue Length Analysis***

A queue length analysis was conducted at each of the study area intersections. A summary of this analysis is provided in Table 6. This data is comprised of the 95<sup>th</sup> percentile queue output from the Synchro and Sidra analysis.

At 159<sup>th</sup> Street and Ravinia Avenue, the northbound right turn and southbound left turn queues exceed the provided storage length for several of the scenarios during the weekday pm and Saturday peak hours. For the northbound right turn, it should be noted that this is a trap lane with the through lane becoming the right turn lane, so the storage length is actually much longer than the striped 150-foot storage. Additionally, the southbound left turn exceeds the storage length for each scenario during the weekday pm peak hour. However, the queue does not exceed the storage length by more than 30 feet, or approximately one vehicle. It is anticipated that this additional queue length can be accommodated within the taper length.

The projected queue lengths for the proposed roundabout at the North Costco Driveway are within the proposed storage lengths. At LaGrange Road and 161<sup>st</sup> Street, the additional traffic with the Ravinia Avenue extension creates several turn lanes where the queue length exceeds the storage length. As the Ravinia Avenue extension is planned and as the new adjacent developments are constructed, it is anticipated that the intersection geometry will be reviewed so that the turn lane storage lengths can accommodate the projected queue lengths.



**Table 6: 95<sup>th</sup> Percentile Queue Lengths**

| Intersection                                                                                                              | Peak Hour    | Scenario                   | Eastbound |       | Westbound |       | Northbound |       | Southbound |       |
|---------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------|-----------|-------|-----------|-------|------------|-------|------------|-------|
|                                                                                                                           |              |                            | Left      | Right | Left      | Right | Left       | Right | Left       | Right |
| 159th Street & Costco RIRO Driveway (Two-Way Stop Controlled)                                                             | Weekday AM   | Existing (2024)            | -         | -     | -         | -     | -          | 10    | -          | -     |
|                                                                                                                           |              | Background (2025)          | -         | -     | -         | -     | -          | 10    | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | -         | -     | -         | -     | -          | 0     | -          | -     |
|                                                                                                                           |              | Future with Project (2050) | -         | -     | -         | -     | -          | 0     | -          | -     |
|                                                                                                                           | Weekday PM   | Existing (2024)            | -         | -     | -         | -     | -          | 38    | -          | -     |
|                                                                                                                           |              | Background (2025)          | -         | -     | -         | -     | -          | 38    | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | -         | -     | -         | -     | -          | 18    | -          | -     |
|                                                                                                                           |              | Future with Project (2050) | -         | -     | -         | -     | -          | 20    | -          | -     |
|                                                                                                                           | Saturday MD  | Existing (2024)            | -         | -     | -         | -     | -          | 65    | -          | -     |
|                                                                                                                           |              | Background (2025)          | -         | -     | -         | -     | -          | 65    | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | -         | -     | -         | -     | -          | 28    | -          | -     |
|                                                                                                                           |              | Future with Project (2050) | -         | -     | -         | -     | -          | 33    | -          | -     |
|                                                                                                                           | Storage (ft) |                            | -         | -     | -         | -     | -          | 85    | -          | -     |
|                                                                                                                           | Taper (ft)   |                            | -         | -     | -         | -     | -          | -     | -          | -     |
| 159th Street & Ravinia Avenue (Signalized)                                                                                | Weekday AM   | Existing (2024)            | 157       | -     | 27        | 20    | 30         | 0     | 124        | 33    |
|                                                                                                                           |              | Background (2025)          | 158       | -     | 27        | 20    | 30         | 0     | 124        | 33    |
|                                                                                                                           |              | Future with Project (2025) | 158       | -     | 27        | 20    | 30         | 38    | 123        | 33    |
|                                                                                                                           |              | Future with Project (2050) | 157       | -     | 27        | 23    | 120        | 17    | 107        | 34    |
|                                                                                                                           | Weekday PM   | Existing (2024)            | 216       | -     | 167       | 32    | 121        | 85    | 181        | 46    |
|                                                                                                                           |              | Background (2025)          | 216       | -     | 167       | 33    | 121        | 86    | 183        | 46    |
|                                                                                                                           |              | Future with Project (2025) | 207       | -     | 167       | 33    | 129        | 125   | 181        | 46    |
|                                                                                                                           |              | Future with Project (2050) | 207       | -     | 150       | 42    | 213        | 76    | 160        | 63    |
|                                                                                                                           | Saturday MD  | Existing (2024)            | 222       | -     | 225       | 36    | 140        | 54    | 116        | 42    |
|                                                                                                                           |              | Background (2025)          | 223       | -     | 225       | 36    | 140        | 55    | 117        | 42    |
|                                                                                                                           |              | Future with Project (2025) | 214       | -     | 240       | 32    | 162        | 209   | 123        | 48    |
|                                                                                                                           |              | Future with Project (2050) | 209       | -     | 201       | 40    | 246        | 62    | 102        | 62    |
|                                                                                                                           | Storage (ft) |                            | 275       | -     | 400       | 200   | 295        | 150   | 160        | 165   |
|                                                                                                                           | Taper (ft)   |                            | 150       | -     | 290       | 245   | 95         | 25    | 100        | 105   |
| Ravinia Avenue & North Costco Driveway (Two-Way Stop Controlled -- Ex 2024 & BG 2025) (Roundabout -- FwP 2025 & FwP 2050) | Weekday AM   | Existing (2024)            | 3         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Background (2025)          | 3         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | 0         |       | 8         |       | 0          |       | 8          |       |
|                                                                                                                           |              | Future with Project (2050) | 0         |       | 8         |       | 18         |       | 18         |       |
|                                                                                                                           | Weekday PM   | Existing (2024)            | 78        | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Background (2025)          | 78        | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | 38        |       | 38        |       | 0          |       | 20         |       |
|                                                                                                                           |              | Future with Project (2050) | 38        |       | 43        |       | 33         |       | 38         |       |
|                                                                                                                           | Saturday MD  | Existing (2024)            | 193       | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Background (2025)          | 193       | -     | -         | -     | 0          | -     | -          | -     |
|                                                                                                                           |              | Future with Project (2025) | 50        |       | 50        |       | 0          |       | 30         |       |
|                                                                                                                           |              | Future with Project (2050) | 50        |       | 80        |       | 38         |       | 45         |       |
|                                                                                                                           | Storage (ft) |                            | 35        | -     | -         | -     | 65         | -     | -          | -     |
|                                                                                                                           | Taper (ft)   |                            | -         | -     | -         | -     | 105        | -     | -          | -     |

Note: 95<sup>th</sup> Percentile Queue Lengths in Feet.



**Table 6: 95<sup>th</sup> Percentile Queue Lengths (cont.)**

| Intersection                                                     | Peak Hour    | Scenario                   | Eastbound |       | Westbound |       | Northbound |       | Southbound |       |
|------------------------------------------------------------------|--------------|----------------------------|-----------|-------|-----------|-------|------------|-------|------------|-------|
|                                                                  |              |                            | Left      | Right | Left      | Right | Left       | Right | Left       | Right |
| Ravinia Avenue & South Costco Driveway (Two-Way Stop Controlled) | Weekday AM   | Existing (2024)            | 0         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Background (2025)          | 0         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2025) | -         | 0     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2050) | -         | 0     | -         | -     | 0          | -     | -          | -     |
|                                                                  | Weekday PM   | Existing (2024)            | 8         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Background (2025)          | 8         | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2025) | -         | 0     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2050) | -         | 3     | -         | -     | 3          | -     | -          | -     |
|                                                                  | Saturday MD  | Existing (2024)            | 13        | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Background (2025)          | 13        | -     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2025) | -         | 0     | -         | -     | 0          | -     | -          | -     |
|                                                                  |              | Future with Project (2050) | -         | 3     | -         | -     | 3          | -     | -          | -     |
|                                                                  | Storage (ft) |                            | 35        | -     | -         | -     | 110        | -     | -          | -     |
|                                                                  | Taper (ft)   |                            | -         | -     | -         | -     | 105        | -     | -          | -     |
| LaGrange Road & 161st Street (Two-Way Stop Controlled)           | Weekday AM   | Existing (2024)            | 18        | 0     | 5         | 0     | 8          | -     | 18         | -     |
|                                                                  |              | Background (2025)          | 18        | 0     | 5         | 0     | 8          | -     | 20         | -     |
|                                                                  |              | Future with Project (2025) | 18        | 0     | 5         | 0     | 8          | -     | 20         | -     |
|                                                                  |              | Future with Project (2050) | 149       | 24    | 0         | 0     | 146        | -     | 72         | -     |
|                                                                  | Weekday PM   | Existing (2024)            | 120       | 5     | 23        | 20    | 30         | -     | 45         | -     |
|                                                                  |              | Background (2025)          | 123       | 5     | 23        | 20    | 33         | -     | 48         | -     |
|                                                                  |              | Future with Project (2025) | 123       | 5     | 23        | 20    | 33         | -     | 48         | -     |
|                                                                  |              | Future with Project (2050) | 337       | 74    | 20        | -     | 250        | -     | 115        | -     |
|                                                                  | Saturday MD  | Existing (2024)            | 38        | 5     | 20        | 13    | 13         | -     | 33         | -     |
|                                                                  |              | Background (2025)          | 38        | 5     | 20        | 13    | 13         | -     | 33         | -     |
|                                                                  |              | Future with Project (2025) | 38        | 5     | 20        | 13    | 13         | -     | 33         | -     |
|                                                                  |              | Future with Project (2050) | 284       | 71    | 20        | -     | 232        | -     | 85         | -     |
|                                                                  | Storage (ft) |                            | 70        | 70    | 45        | -     | 190        | -     | 270        | -     |
|                                                                  | Taper (ft)   |                            | 80        | 25    | 80        | -     | 190        | -     | 160        | -     |

Note: 95<sup>th</sup> Percentile Queue Lengths in Feet.



## ***V. CONCLUSIONS***

The purpose of this study is to evaluate the potential traffic impacts for a proposed Costco gas station relocation. The gas station will be relocated east of Ravinia Avenue adjacent to the existing Costco Warehouse at the southeast corner of 159<sup>th</sup> Street and Ravinia Avenue. The proposed members-only gas station consists of 40 gas pumps.

The existing gas station, located at the northwest corner of the Costco property, will be replaced with additional parking spaces. The proposed access plan includes modifying the existing northern Costco driveway on Ravinia Avenue into a single-lane roundabout with the east leg providing access to the proposed gas station. A right-turn only entrance is proposed on Ravinia Avenue north of the proposed roundabout that will access the Costco warehouse. Additionally, the south Costco driveway will be modified from the existing full access driveway to a limited access right in/right out/left in only driveway. As part of the adjacent development plans, Ravinia Avenue is proposed to be extended from its current terminus south of the Costco development to LaGrange Road at 161<sup>st</sup> Street.

The Village of Orland Park plans to extend Ravinia Avenue from its current dead-end south of Costco, connecting it to the retail plaza on LaGrange Road at 161st Street. With the extension of Ravinia Avenue, it is anticipated that some vehicular traffic will utilize this roadway as a cut through instead of traveling north then west at 159<sup>th</sup> Street and LaGrange Road.

Additionally, with the relocation of the Costco Gas Station facility to the east of Ravinia Avenue, a one-lane roundabout is being proposed at the North Costco Driveway and Ravinia Avenue. The east leg of the intersection will be built to provide access to the gas station. This roundabout will provide a one-lane approach at each leg.

Following initial discussions with the Village of Orland Park, it was requested to evaluate and provide a second single-lane roundabout at the existing South Costco driveway on Ravinia Avenue. This driveway is approximately 250 feet south of the proposed roundabout at the north Costco driveway and the future relocated gas station driveway. It is anticipated that additional right of way would need to be acquired to construct the second roundabout, either from the Costco parking lot to the west or the environmental area to the east. This existing three leg intersection will likely not be expanded with a fourth leg to the east due to the environmental areas that would be significantly impacted.

As discussed in this report, the traffic data collected and future development projections at this intersection indicate that the current eastbound stop controlled South Costco driveway operates at an adequate level of service under both current and future full build-out scenarios. While the roundabout would also operate with low delays in the future, it is anticipated that a cost-benefit analysis would indicate that the existing intersection configuration as the more favorable option compared to a roundabout.



After further discussions with the Village of Orland Park and several access alternatives evaluated at the South Costco Driveway, it was determined that the South Costco Driveway will be reconfigured to be a right in/right out/left in driveway. This option will accommodate future traffic along Ravinia Avenue as well as providing safe and efficient access to the site driveways. As a result, all eastbound-to-northbound traffic exiting the Costco will have to exit at the North Costco Driveway through the proposed roundabout.

Traffic estimates are projected utilizing growth rates from CMAP that projected traffic volumes to 2050. Traffic estimates were projected to 2025, which is the anticipated build out year, as well as 2050 which accounts for traffic generated by the adjacent developments and the extension of Ravinia Avenue to LaGrange Road. The study area includes the existing signalized intersection of 159<sup>th</sup> Street and Ravinia Avenue, and the existing unsignalized intersections of 159<sup>th</sup> Street and Costco Right in/Right out Driveway, North Costco Driveway and Ravinia Avenue, South Costco Driveway and Ravinia Avenue, and 161<sup>st</sup> Street and LaGrange Road.

Additionally, with the extension of Ravinia Avenue to LaGrange Road during the 2050 future scenario, it is expected that the intersection of LaGrange Road and 161<sup>st</sup> Street will warrant a traffic signal as well as dual northbound left turn lanes. Therefore, for the purpose of this study, the intersection of LaGrange Road and 161<sup>st</sup> Street was analyzed as a signalized intersection with an additional northbound left turn lane to accommodate the future 2050 traffic volumes.

Results of the capacity analysis indicate that the signalized intersection of 159<sup>th</sup> Street and Ravinia Avenue operates at LOS D or better during all three peak hours for all future scenarios. All movements at the unsignalized intersections operate adequately for all future scenarios, with all levels of service remaining at LOS D or better with the exception of the eastbound and westbound left turn movements at 161<sup>st</sup> Street and LaGrange Road which operates with high delays during all three time periods. The major approaches of 161<sup>st</sup> Street and LaGrange Road operate at LOS E or better during all three time periods while the overall intersection operates at LOS B during the weekday am peak hour and at LOS C during the weekday pm and Saturday midday peak hours. As the Ravinia Avenue extension is planned and as the new adjacent developments are constructed, it is anticipated that the intersection geometry and traffic signal timing will be reviewed and updated to minimize delays and efficiently move traffic through the area.

Additionally, a 95<sup>th</sup> percentile queue analysis was conducted and the projected queue lengths for the proposed roundabout at the North Costco Driveway are within the proposed storage lengths. At LaGrange Road and 161<sup>st</sup> Street, the additional traffic with the Ravinia Avenue extension creates significant queues with the current stop-controlled intersection. When the extension is constructed, it is likely that this intersection will be signalized and the queue lengths will likely be accommodated within the storage lengths.

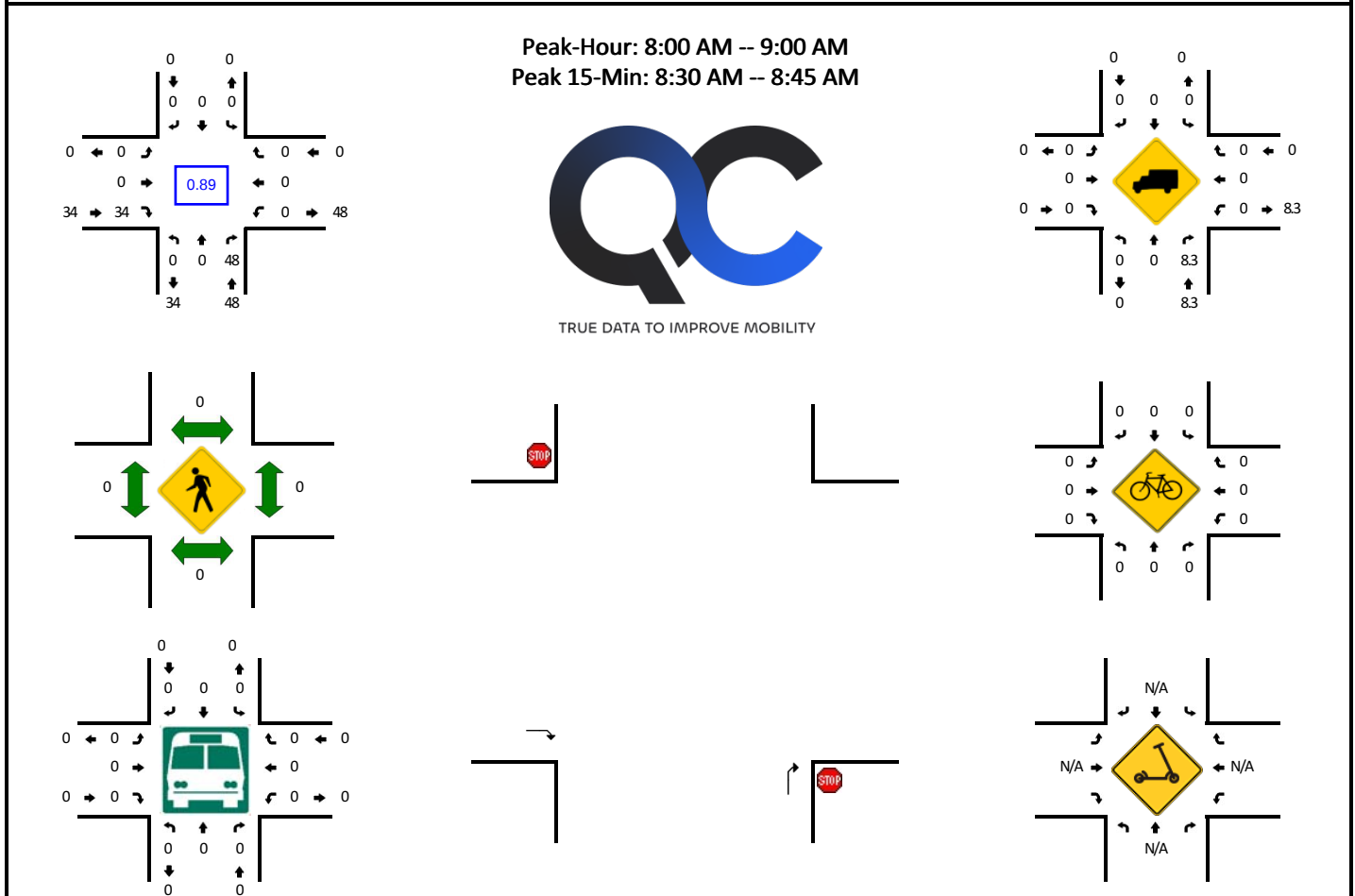


## **APPENDIX A**

### **EXISTING TRAFFIC COUNTS**

**LOCATION:** Costco RIRO Dwy -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665811  
**DATE:** Thu, Aug 1 2024



| 15-Min Count Period Beginning At | Costco RIRO Dwy (Northbound) |      |       |   | Costco RIRO Dwy (Southbound) |      |       |   | 159th St (Eastbound) |      |       |   | 159th St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|------------------------------|------|-------|---|------------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 7:00 AM                          | 0                            | 0    | 7     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 9     | 0 | 0                    | 0    | 0     | 0 | 16    |               |
| 7:15 AM                          | 0                            | 0    | 12    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 4     | 0 | 0                    | 0    | 0     | 0 | 16    |               |
| 7:30 AM                          | 0                            | 0    | 9     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 4     | 0 | 0                    | 0    | 0     | 0 | 13    |               |
| 7:45 AM                          | 0                            | 0    | 11    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 5     | 0 | 0                    | 0    | 0     | 0 | 16    | 61            |
| 8:00 AM                          | 0                            | 0    | 11    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 9     | 0 | 0                    | 0    | 0     | 0 | 20    | 65            |
| 8:15 AM                          | 0                            | 0    | 10    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 4     | 0 | 0                    | 0    | 0     | 0 | 14    | 63            |
| 8:30 AM                          | 0                            | 0    | 17    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 11    | 0 | 0                    | 0    | 0     | 0 | 28    | 78            |
| 8:45 AM                          | 0                            | 0    | 10    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 10    | 0 | 0                    | 0    | 0     | 0 | 20    | 82            |
| Peak 15-Min Flowrates            | Northbound                   |      |       |   | Southbound                   |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 0                            | 0    | 68    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 44    | 0 | 0                    | 0    | 0     | 0 | 112   |               |
| Heavy Trucks                     | 0                            | 0    | 4     |   | 0                            | 0    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 4     |               |
| Buses                            | 0                            | 0    | 0     |   | 0                            | 0    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 0     |               |
| Pedestrians                      |                              |      | 0     |   |                              |      | 0     |   |                      |      | 0     |   |                      |      | 0     |   | 0     |               |
| Bicycles                         | 0                            | 0    | 0     |   | 0                            | 0    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 0     |               |
| Scooters                         |                              |      |       |   |                              |      |       |   |                      |      |       |   |                      |      |       |   | 0     |               |

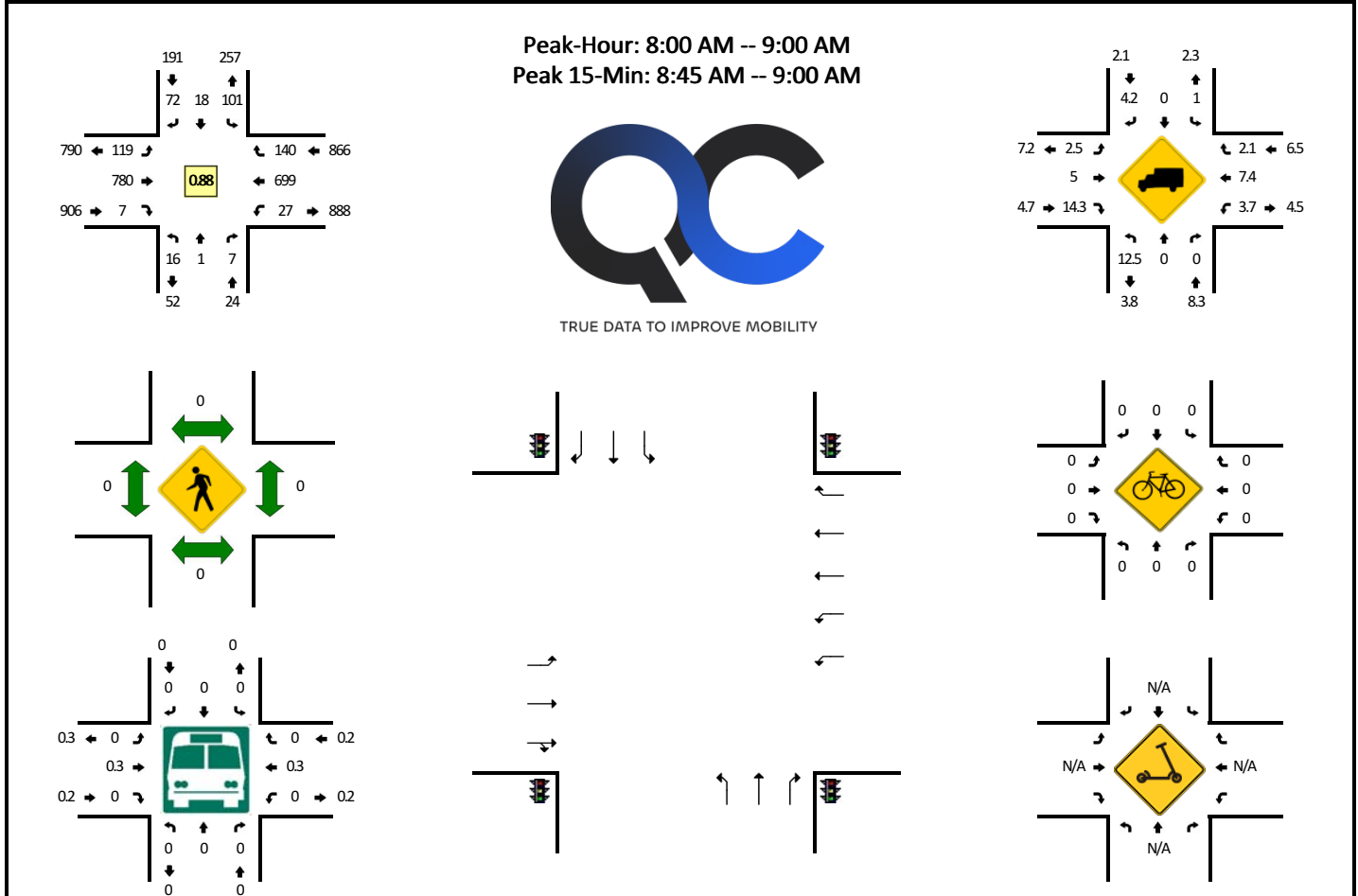
**Comments:**

Report generated on 8/26/2024 12:02 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** S Ravinia Ave -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665812  
**DATE:** Thu, Aug 1 2024



| 15-Min Count<br>Period<br>Beginning At | S Ravinia Ave<br>(Northbound) |      |       |   | S Ravinia Ave<br>(Southbound) |      |       |   | 159th St<br>(Eastbound) |      |       |   | 159th St<br>(Westbound) |      |       |   | Total | Hourly<br>Totals |
|----------------------------------------|-------------------------------|------|-------|---|-------------------------------|------|-------|---|-------------------------|------|-------|---|-------------------------|------|-------|---|-------|------------------|
|                                        | Left                          | Thru | Right | U | Left                          | Thru | Right | U | Left                    | Thru | Right | U | Left                    | Thru | Right | U |       |                  |
| 7:00 AM                                | 4                             | 0    | 2     | 0 | 22                            | 3    | 13    | 0 | 10                      | 122  | 1     | 0 | 5                       | 105  | 16    | 0 | 303   |                  |
| 7:15 AM                                | 1                             | 0    | 1     | 0 | 16                            | 4    | 5     | 0 | 17                      | 152  | 0     | 0 | 4                       | 174  | 35    | 1 | 410   |                  |
| 7:30 AM                                | 0                             | 0    | 1     | 0 | 26                            | 3    | 11    | 0 | 22                      | 159  | 1     | 1 | 7                       | 155  | 27    | 1 | 414   |                  |
| 7:45 AM                                | 3                             | 0    | 2     | 0 | 26                            | 5    | 20    | 0 | 40                      | 214  | 0     | 0 | 8                       | 184  | 60    | 0 | 562   | 1689             |
| 8:00 AM                                | 1                             | 0    | 1     | 0 | 18                            | 3    | 16    | 0 | 27                      | 184  | 1     | 1 | 4                       | 177  | 31    | 0 | 464   | 1850             |
| 8:15 AM                                | 3                             | 0    | 1     | 0 | 25                            | 3    | 25    | 0 | 32                      | 154  | 3     | 0 | 10                      | 189  | 47    | 0 | 492   | 1932             |
| 8:30 AM                                | 5                             | 1    | 4     | 0 | 24                            | 6    | 15    | 0 | 21                      | 192  | 2     | 1 | 4                       | 165  | 24    | 0 | 464   | 1982             |
| 8:45 AM                                | 7                             | 0    | 1     | 0 | 34                            | 6    | 16    | 0 | 36                      | 250  | 1     | 1 | 9                       | 168  | 38    | 0 | 567   | 1987             |
| Peak 15-Min<br>Flowrates               | Northbound                    |      |       |   | Southbound                    |      |       |   | Eastbound               |      |       |   | Westbound               |      |       |   | Total |                  |
|                                        | Left                          | Thru | Right | U | Left                          | Thru | Right | U | Left                    | Thru | Right | U | Left                    | Thru | Right | U |       |                  |
| All Vehicles                           | 28                            | 0    | 4     | 0 | 136                           | 24   | 64    | 0 | 144                     | 1000 | 4     | 4 | 36                      | 672  | 152   | 0 | 2268  |                  |
| Heavy Trucks                           | 8                             | 0    | 0     | 0 | 0                             | 0    | 4     | 0 | 8                       | 56   | 0     | 0 | 0                       | 48   | 4     | 0 | 128   |                  |
| Buses                                  | 0                             | 0    | 0     | 0 | 0                             | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |                  |
| Pedestrians                            | 0                             | 0    | 0     | 0 | 0                             | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |                  |
| Bicycles                               | 0                             | 0    | 0     | 0 | 0                             | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |                  |
| Scoters                                | 0                             | 0    | 0     | 0 | 0                             | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0                       | 0    | 0     | 0 | 0     |                  |

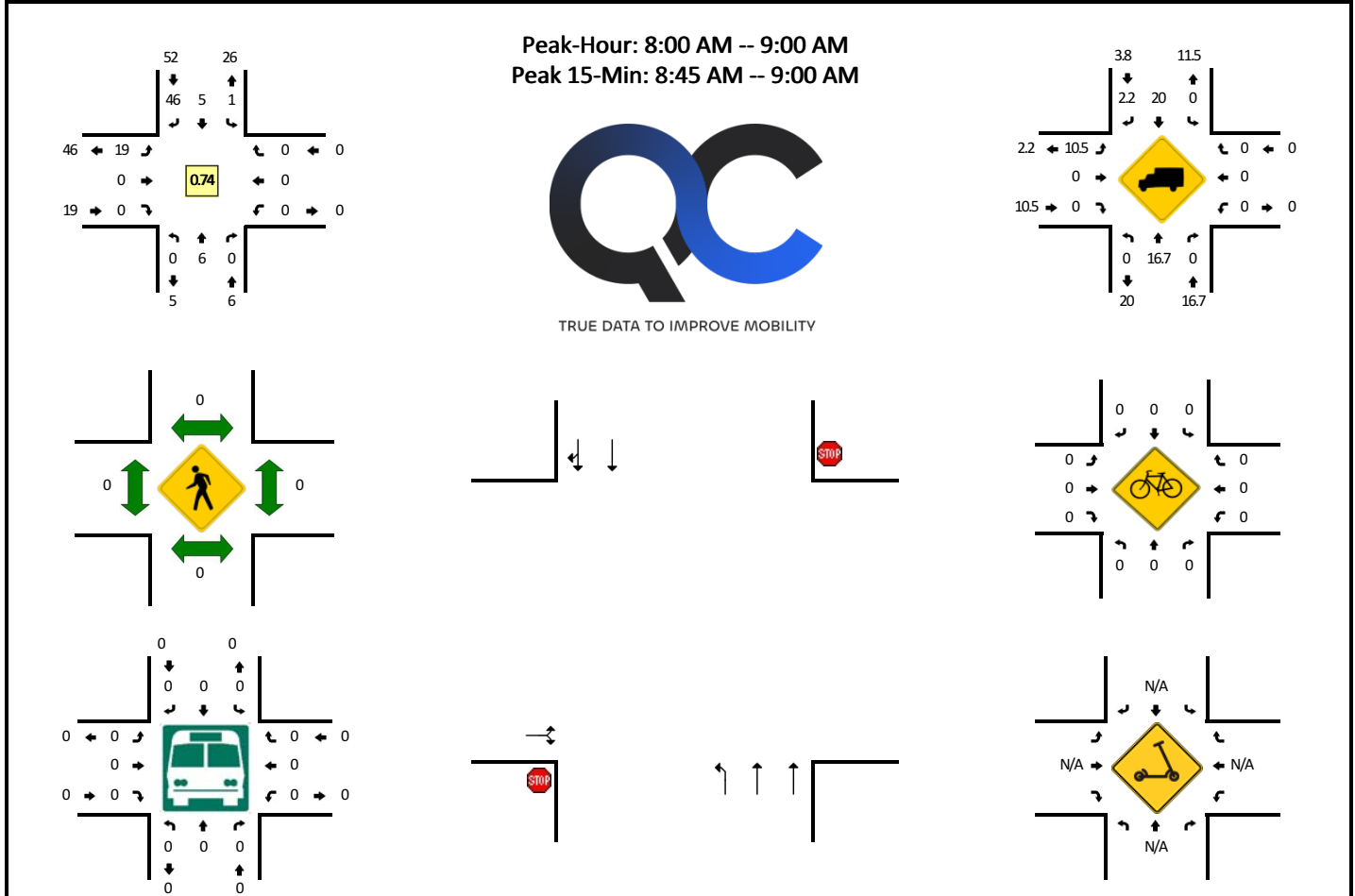
**Comments:**

Report generated on 8/26/2024 12:02 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** S Ravinia Ave -- North Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665813  
**DATE:** Thu, Aug 1 2024

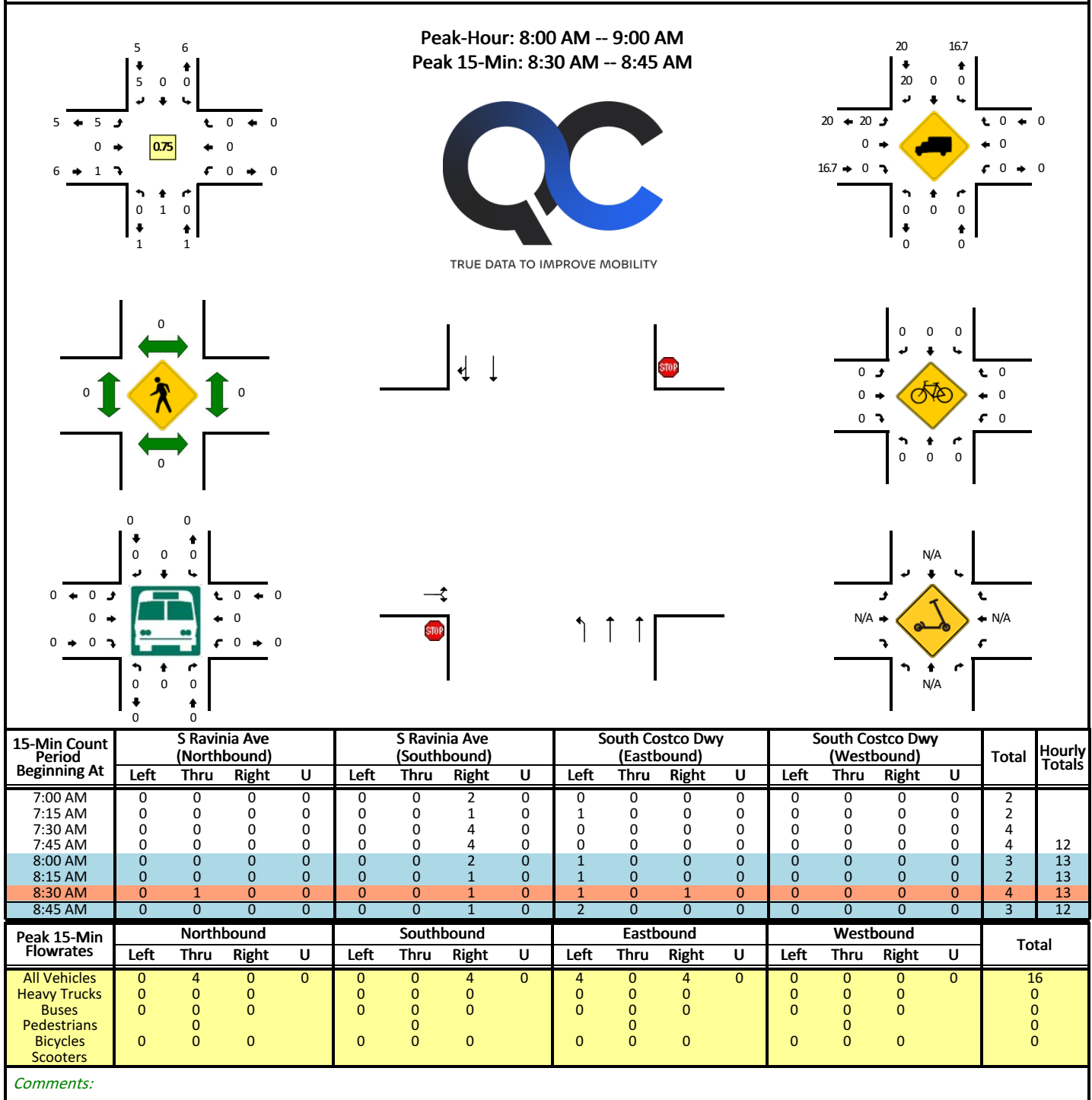


| 15-Min Count Period Beginning At | S Ravinia Ave (Northbound) |      |       |   | S Ravinia Ave (Southbound) |      |       |   | North Costco Dwy (Eastbound) |      |       |   | North Costco Dwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|------------------------------|------|-------|---|------------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| 7:00 AM                          | 0                          | 0    | 0     | 0 | 0                          | 2    | 7     | 0 | 5                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 14    |               |
| 7:15 AM                          | 0                          | 1    | 0     | 0 | 0                          | 1    | 7     | 0 | 1                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 10    |               |
| 7:30 AM                          | 0                          | 0    | 0     | 0 | 0                          | 4    | 5     | 0 | 1                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 10    |               |
| 7:45 AM                          | 0                          | 0    | 0     | 0 | 0                          | 4    | 10    | 1 | 4                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 19    | 53            |
| 8:00 AM                          | 0                          | 1    | 0     | 0 | 0                          | 2    | 6     | 0 | 2                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 11    | 50            |
| 8:15 AM                          | 0                          | 1    | 0     | 0 | 0                          | 1    | 15    | 0 | 3                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 20    | 60            |
| 8:30 AM                          | 0                          | 2    | 0     | 0 | 0                          | 1    | 10    | 0 | 7                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 20    | 70            |
| 8:45 AM                          | 0                          | 2    | 0     | 0 | 0                          | 1    | 15    | 1 | 7                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 26    | 77            |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound                    |      |       |   | Westbound                    |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| All Vehicles                     | 0                          | 8    | 0     | 0 | 0                          | 4    | 60    | 4 | 28                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 104   |               |
| Heavy Trucks                     | 0                          | 4    | 0     | 0 | 0                          | 0    | 0     | 0 | 4                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 8     |               |
| Buses                            | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |

*Comments:*

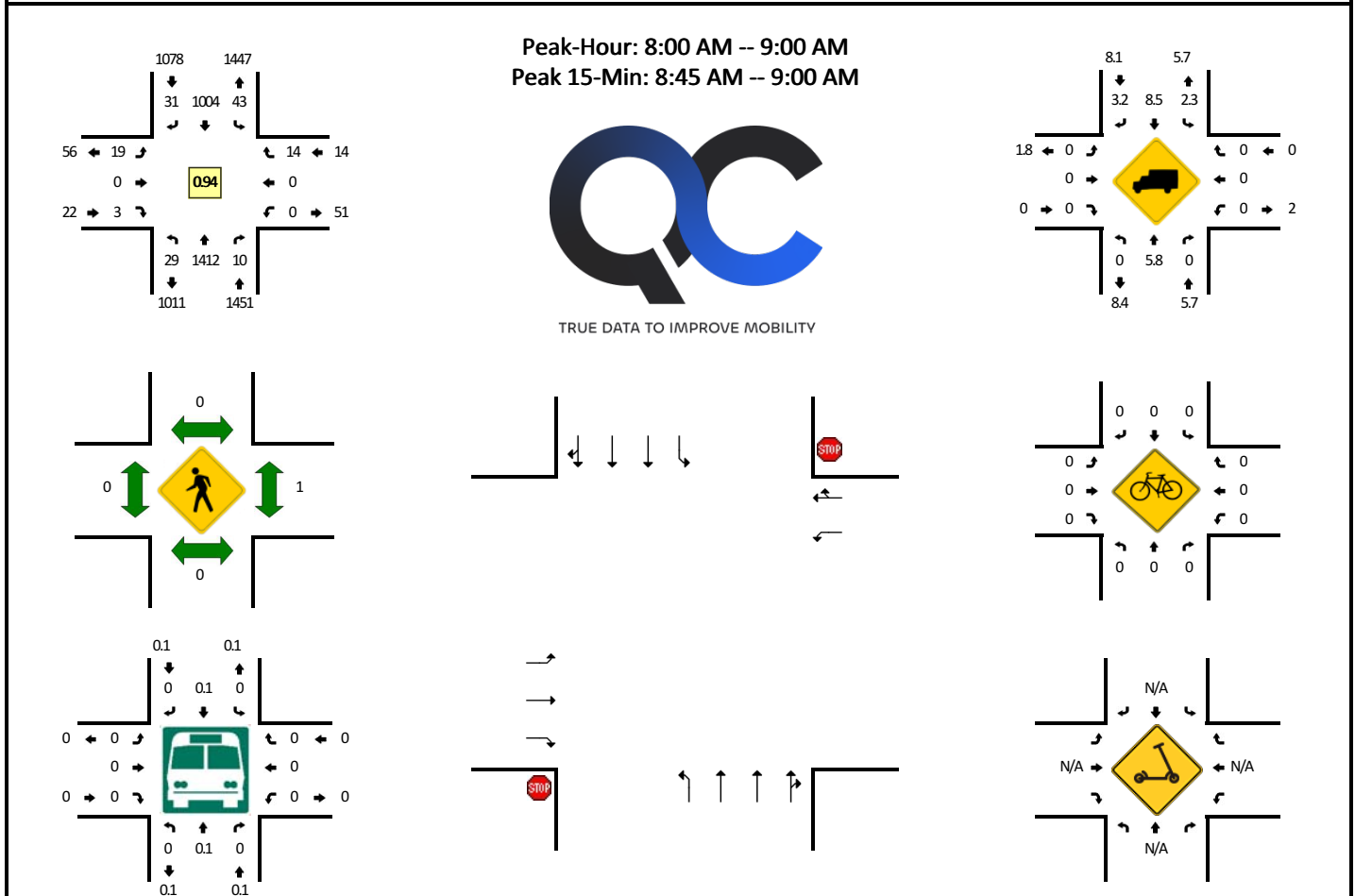
**LOCATION:** S Ravinia Ave -- South Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665814  
**DATE:** Thu, Aug 1 2024



**LOCATION:** 96th Ave/LaGrange Rd -- 161st St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665815  
**DATE:** Thu, Aug 1 2024



| 15-Min Count Period Beginning At | 96th Ave/LaGrange Rd (Northbound) |      |       |    | 96th Ave/LaGrange Rd (Southbound) |      |       |   | 161st St (Eastbound) |      |       |   | 161st St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|-----------------------------------|------|-------|----|-----------------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                              | Thru | Right | U  | Left                              | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 7:00 AM                          | 2                                 | 227  | 2     | 0  | 4                                 | 211  | 4     | 2 | 7                    | 1    | 0     | 0 | 1                    | 0    | 0     | 0 | 461   |               |
| 7:15 AM                          | 4                                 | 288  | 1     | 0  | 5                                 | 211  | 4     | 1 | 3                    | 0    | 0     | 0 | 0                    | 0    | 4     | 0 | 521   |               |
| 7:30 AM                          | 5                                 | 312  | 3     | 0  | 4                                 | 262  | 7     | 0 | 5                    | 0    | 3     | 0 | 0                    | 0    | 0     | 0 | 601   |               |
| 7:45 AM                          | 6                                 | 341  | 5     | 1  | 9                                 | 271  | 8     | 0 | 8                    | 0    | 1     | 0 | 0                    | 0    | 2     | 0 | 652   | 2235          |
| 8:00 AM                          | 3                                 | 335  | 2     | 0  | 1                                 | 229  | 8     | 1 | 7                    | 0    | 1     | 0 | 0                    | 0    | 0     | 0 | 587   | 2361          |
| 8:15 AM                          | 8                                 | 378  | 1     | 1  | 9                                 | 236  | 9     | 0 | 3                    | 0    | 2     | 0 | 0                    | 0    | 4     | 0 | 651   | 2491          |
| 8:30 AM                          | 7                                 | 339  | 3     | 0  | 12                                | 269  | 7     | 0 | 3                    | 0    | 0     | 0 | 0                    | 0    | 4     | 0 | 644   | 2534          |
| 8:45 AM                          | 7                                 | 360  | 4     | 3  | 19                                | 270  | 7     | 1 | 6                    | 0    | 0     | 0 | 0                    | 0    | 6     | 0 | 683   | 2565          |
| Peak 15-Min Flowrates            | Northbound                        |      |       |    | Southbound                        |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                              | Thru | Right | U  | Left                              | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 28                                | 1440 | 16    | 12 | 76                                | 1080 | 28    | 4 | 24                   | 0    | 0     | 0 | 0                    | 0    | 24    | 0 | 2732  |               |
| Heavy Trucks                     | 0                                 | 88   | 0     |    | 0                                 | 112  | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 200   |               |
| Buses                            | 0                                 | 0    | 0     |    | 0                                 | 4    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 4     |               |
| Pedestrians                      | 0                                 | 0    | 0     |    | 0                                 | 0    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 0     |               |
| Bicycles                         | 0                                 | 0    | 0     |    | 0                                 | 0    | 0     |   | 0                    | 0    | 0     |   | 0                    | 0    | 0     |   | 0     |               |
| Scooters                         |                                   |      |       |    |                                   |      |       |   |                      |      |       |   |                      |      |       |   | 0     |               |

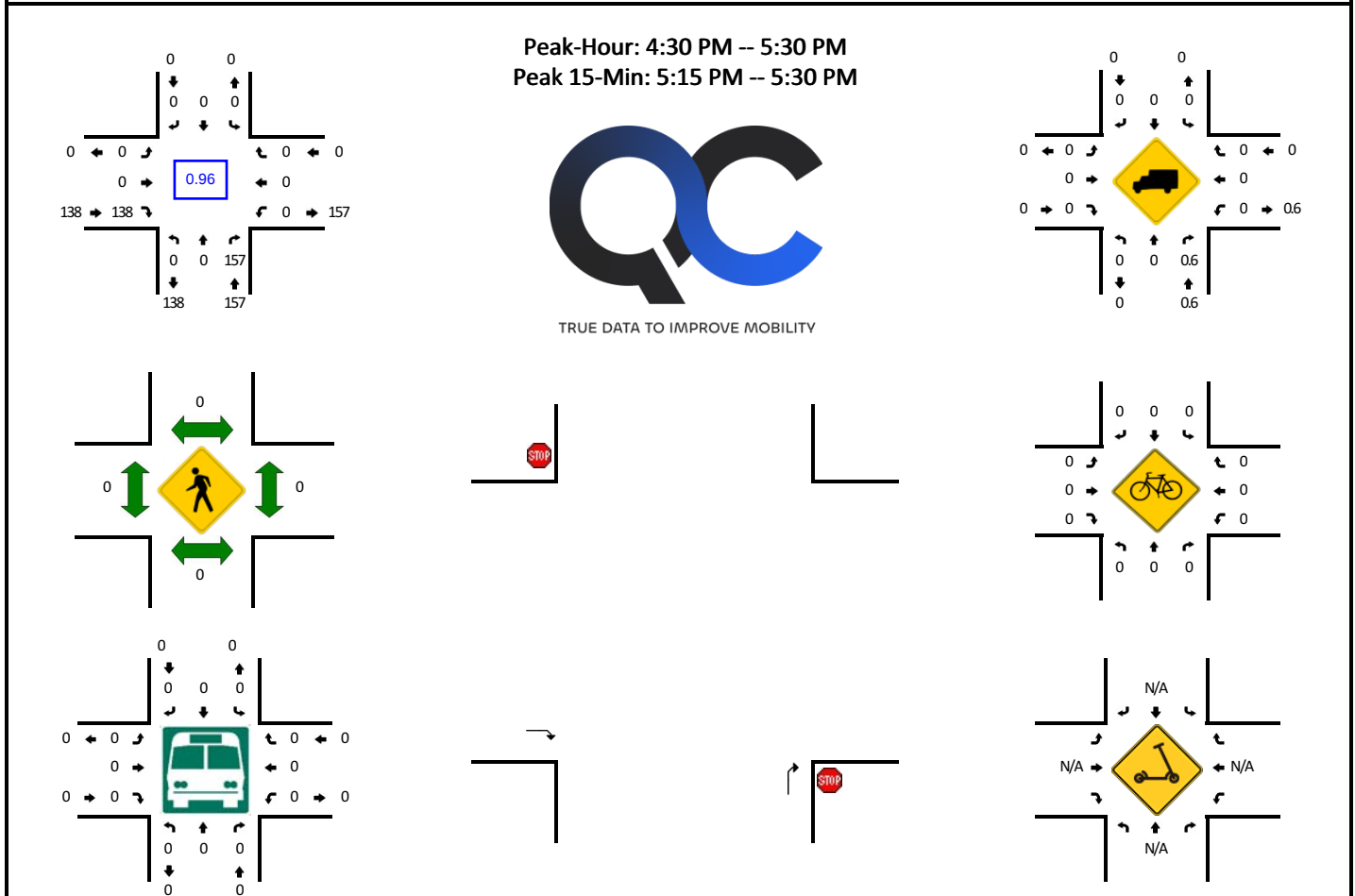
**Comments:**

Report generated on 8/26/2024 12:02 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**LOCATION:** Costco RIRO Dwy -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665801  
**DATE:** Thu, Aug 1 2024

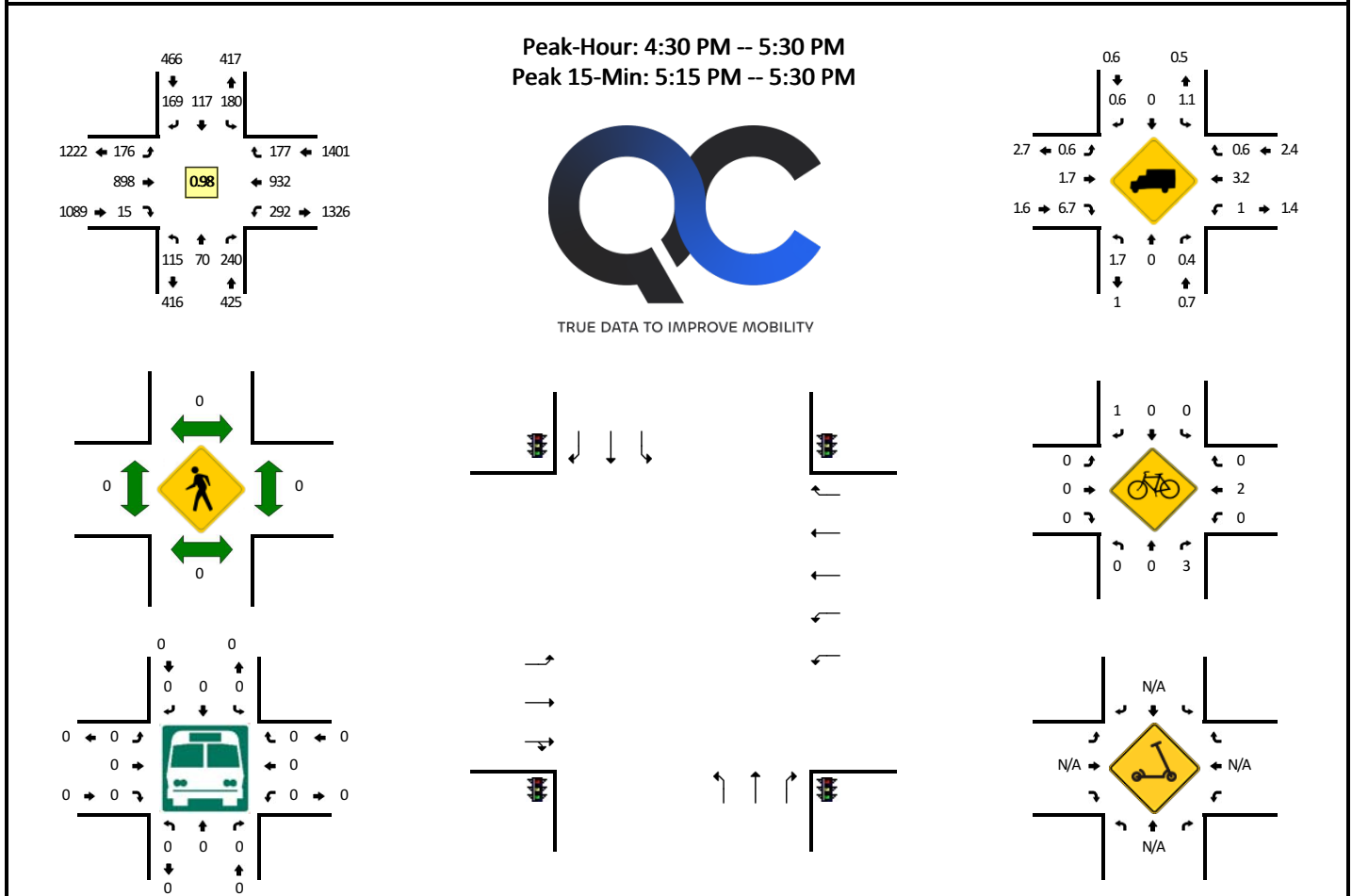


| 15-Min Count Period Beginning At | Costco RIRO Dwy (Northbound) |      |       |   | Costco RIRO Dwy (Southbound) |      |       |   | 159th St (Eastbound) |      |       |   | 159th St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|------------------------------|------|-------|---|------------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 3:00 PM                          | 0                            | 0    | 39    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 37    | 0 | 0                    | 0    | 0     | 0 | 76    |               |
| 3:15 PM                          | 0                            | 0    | 46    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 28    | 0 | 0                    | 0    | 0     | 0 | 74    |               |
| 3:30 PM                          | 0                            | 0    | 43    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 31    | 0 | 0                    | 0    | 0     | 0 | 74    |               |
| 3:45 PM                          | 0                            | 0    | 35    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 33    | 0 | 0                    | 0    | 0     | 0 | 68    | 292           |
| 4:00 PM                          | 0                            | 0    | 47    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 31    | 0 | 0                    | 0    | 0     | 0 | 78    | 294           |
| 4:15 PM                          | 0                            | 0    | 38    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 27    | 0 | 0                    | 0    | 0     | 0 | 65    | 285           |
| 4:30 PM                          | 0                            | 0    | 34    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 34    | 0 | 0                    | 0    | 0     | 0 | 68    | 279           |
| 4:45 PM                          | 0                            | 0    | 39    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 33    | 0 | 0                    | 0    | 0     | 0 | 72    | 283           |
| 5:00 PM                          | 0                            | 0    | 40    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 37    | 0 | 0                    | 0    | 0     | 0 | 77    | 282           |
| 5:15 PM                          | 0                            | 0    | 44    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 34    | 0 | 0                    | 0    | 0     | 0 | 78    | 295           |
| 5:30 PM                          | 0                            | 0    | 37    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 32    | 0 | 0                    | 0    | 0     | 0 | 69    | 296           |
| 5:45 PM                          | 0                            | 0    | 38    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 31    | 0 | 0                    | 0    | 0     | 0 | 69    | 293           |
| 6:00 PM                          | 0                            | 0    | 39    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 27    | 0 | 0                    | 0    | 0     | 0 | 66    | 282           |
| 6:15 PM                          | 0                            | 0    | 30    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 25    | 0 | 0                    | 0    | 0     | 0 | 55    | 259           |
| 6:30 PM                          | 0                            | 0    | 29    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 27    | 0 | 0                    | 0    | 0     | 0 | 56    | 246           |
| 6:45 PM                          | 0                            | 0    | 37    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 29    | 0 | 0                    | 0    | 0     | 0 | 66    | 243           |
| Peak 15-Min Flowrates            | Northbound                   |      |       |   | Southbound                   |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 0                            | 0    | 176   | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 136   | 0 | 0                    | 0    | 0     | 0 | 312   |               |
| Heavy Trucks                     | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Buses                            | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** S Ravinia Ave -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665803  
**DATE:** Thu, Aug 1 2024

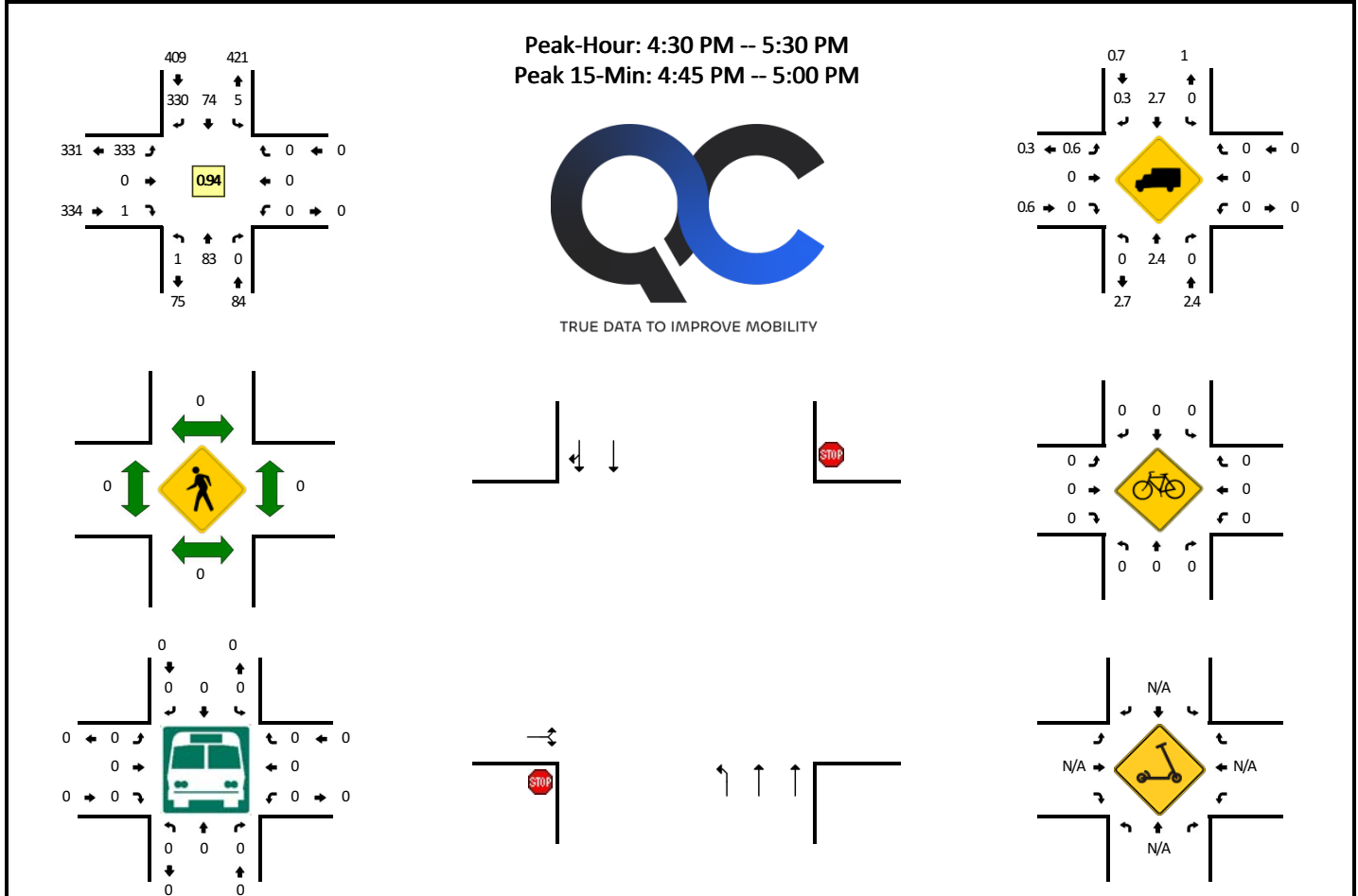


| 15-Min Count Period Beginning At | S Ravinia Ave (Northbound) |      |       |   | S Ravinia Ave (Southbound) |      |       |   | 159th St (Eastbound) |      |       |   | 159th St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 3:00 PM                          | 33                         | 26   | 73    | 0 | 39                         | 27   | 36    | 0 | 39                   | 196  | 3     | 3 | 85                   | 179  | 42    | 1 | 782   |               |
| 3:15 PM                          | 33                         | 20   | 68    | 0 | 41                         | 43   | 36    | 0 | 49                   | 229  | 1     | 4 | 84                   | 224  | 38    | 0 | 870   |               |
| 3:30 PM                          | 43                         | 22   | 67    | 0 | 56                         | 23   | 39    | 0 | 52                   | 217  | 9     | 1 | 80                   | 185  | 51    | 0 | 845   |               |
| 3:45 PM                          | 27                         | 15   | 61    | 0 | 39                         | 29   | 45    | 0 | 42                   | 228  | 3     | 5 | 87                   | 229  | 45    | 0 | 855   | 3352          |
| 4:00 PM                          | 30                         | 25   | 58    | 0 | 39                         | 25   | 32    | 0 | 42                   | 217  | 3     | 2 | 75                   | 234  | 51    | 0 | 833   | 3403          |
| 4:15 PM                          | 28                         | 23   | 76    | 0 | 32                         | 38   | 40    | 0 | 49                   | 197  | 5     | 4 | 74                   | 226  | 44    | 0 | 836   | 3369          |
| 4:30 PM                          | 37                         | 15   | 45    | 0 | 51                         | 20   | 43    | 0 | 43                   | 226  | 4     | 2 | 67                   | 250  | 40    | 4 | 847   | 3371          |
| 4:45 PM                          | 29                         | 17   | 67    | 0 | 39                         | 34   | 43    | 0 | 42                   | 221  | 6     | 2 | 84                   | 206  | 39    | 1 | 830   | 3346          |
| 5:00 PM                          | 27                         | 19   | 65    | 0 | 47                         | 29   | 46    | 0 | 47                   | 208  | 2     | 0 | 75                   | 221  | 51    | 2 | 839   | 3352          |
| 5:15 PM                          | 22                         | 19   | 63    | 0 | 43                         | 34   | 37    | 0 | 38                   | 243  | 3     | 2 | 58                   | 255  | 47    | 1 | 865   | 3381          |
| 5:30 PM                          | 31                         | 19   | 56    | 0 | 43                         | 31   | 36    | 0 | 38                   | 228  | 0     | 6 | 74                   | 217  | 44    | 1 | 824   | 3358          |
| 5:45 PM                          | 25                         | 25   | 52    | 0 | 42                         | 27   | 51    | 0 | 27                   | 224  | 6     | 2 | 66                   | 207  | 40    | 2 | 796   | 3324          |
| 6:00 PM                          | 23                         | 19   | 69    | 0 | 41                         | 33   | 31    | 0 | 50                   | 217  | 3     | 2 | 69                   | 216  | 40    | 1 | 814   | 3299          |
| 6:15 PM                          | 9                          | 11   | 25    | 0 | 42                         | 13   | 38    | 0 | 27                   | 211  | 7     | 7 | 66                   | 170  | 40    | 2 | 668   | 3102          |
| 6:30 PM                          | 36                         | 31   | 75    | 0 | 18                         | 17   | 35    | 0 | 26                   | 194  | 4     | 2 | 64                   | 230  | 36    | 0 | 768   | 3046          |
| 6:45 PM                          | 24                         | 13   | 58    | 0 | 21                         | 21   | 35    | 0 | 34                   | 189  | 2     | 2 | 64                   | 213  | 29    | 1 | 706   | 2956          |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 88                         | 76   | 252   | 0 | 172                        | 136  | 148   | 0 | 152                  | 972  | 12    | 8 | 232                  | 1020 | 188   | 4 | 3460  |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 4                          | 0    | 0     | 0 | 0                    | 8    | 0     | 0 | 0                    | 36   | 0     | 0 | 48    |               |
| Buses                            | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** S Ravinia Ave -- North Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665805  
**DATE:** Thu, Aug 1 2024

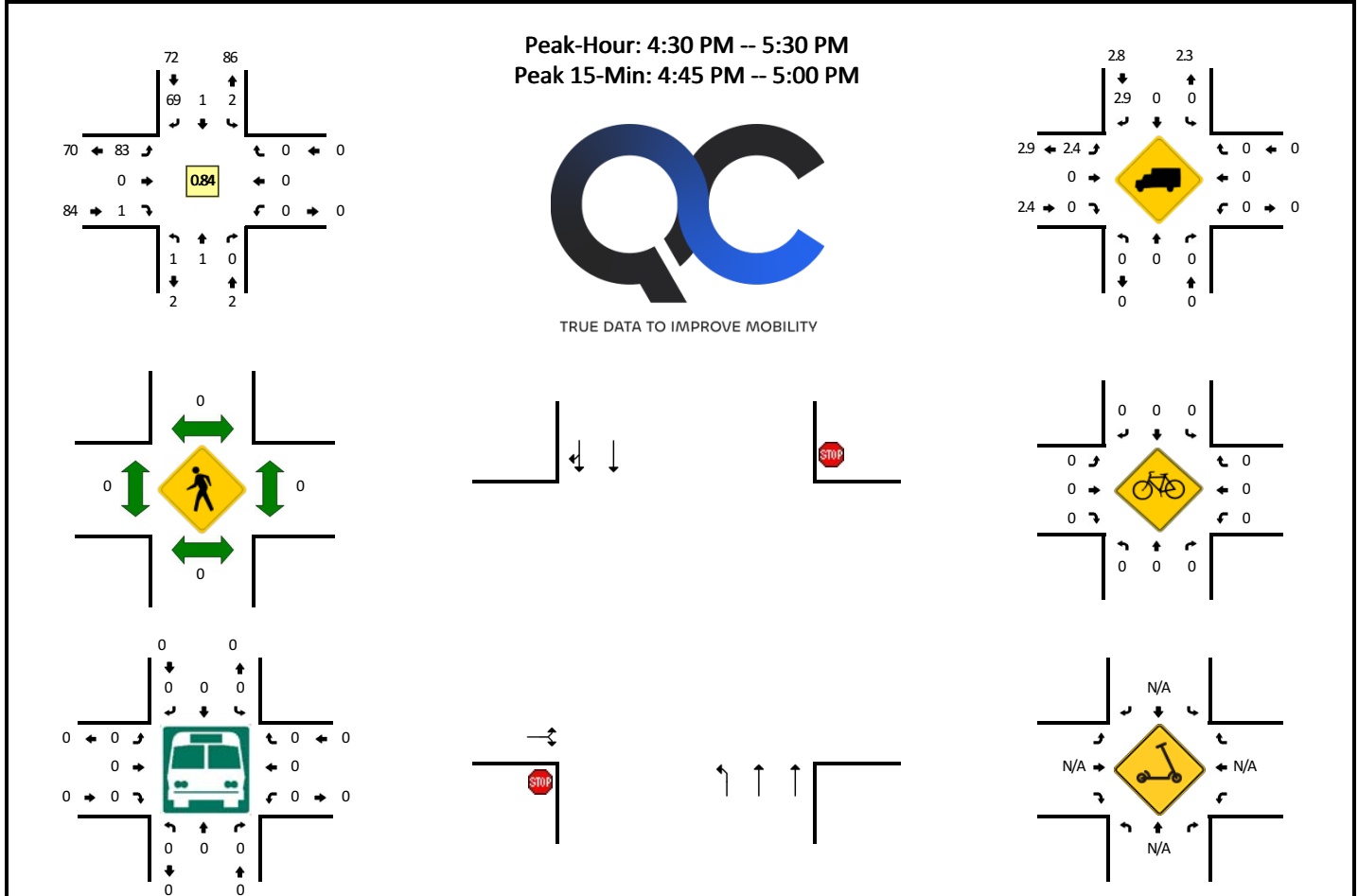


| 15-Min Count Period Beginning At | S Ravinia Ave (Northbound) |      |       |   | S Ravinia Ave (Southbound) |      |       |   | North Costco Dwy (Eastbound) |      |       |   | North Costco Dwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|------------------------------|------|-------|---|------------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| 3:00 PM                          | 0                          | 26   | 0     | 0 | 0                          | 14   | 97    | 0 | 107                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 244   |               |
| 3:15 PM                          | 0                          | 16   | 0     | 0 | 0                          | 28   | 93    | 1 | 100                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 238   |               |
| 3:30 PM                          | 0                          | 38   | 0     | 0 | 0                          | 29   | 84    | 1 | 96                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 249   |               |
| 3:45 PM                          | 0                          | 17   | 0     | 0 | 0                          | 25   | 97    | 0 | 85                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 225   | 956           |
| 4:00 PM                          | 0                          | 22   | 0     | 0 | 0                          | 20   | 83    | 0 | 100                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 225   | 937           |
| 4:15 PM                          | 0                          | 22   | 0     | 0 | 0                          | 21   | 93    | 3 | 96                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 235   | 934           |
| 4:30 PM                          | 0                          | 23   | 0     | 0 | 0                          | 15   | 76    | 0 | 81                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 195   | 880           |
| 4:45 PM                          | 1                          | 21   | 0     | 0 | 0                          | 26   | 90    | 1 | 81                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 221   | 876           |
| 5:00 PM                          | 0                          | 20   | 0     | 0 | 0                          | 22   | 86    | 2 | 89                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 219   | 870           |
| 5:15 PM                          | 0                          | 19   | 0     | 0 | 0                          | 11   | 78    | 2 | 82                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 192   | 827           |
| 5:30 PM                          | 0                          | 19   | 0     | 0 | 0                          | 14   | 88    | 0 | 84                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 205   | 837           |
| 5:45 PM                          | 0                          | 15   | 0     | 0 | 0                          | 19   | 83    | 0 | 88                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 205   | 821           |
| 6:00 PM                          | 0                          | 20   | 0     | 0 | 0                          | 11   | 89    | 2 | 86                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 208   | 810           |
| 6:15 PM                          | 0                          | 13   | 0     | 0 | 0                          | 8    | 81    | 1 | 38                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 142   | 760           |
| 6:30 PM                          | 0                          | 25   | 0     | 0 | 0                          | 16   | 67    | 3 | 112                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 223   | 778           |
| 6:45 PM                          | 0                          | 13   | 0     | 0 | 0                          | 13   | 70    | 0 | 81                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 177   | 750           |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound                    |      |       |   | Westbound                    |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| All Vehicles                     | 4                          | 84   | 0     | 0 | 0                          | 104  | 360   | 4 | 324                          | 0    | 4     | 0 | 0                            | 0    | 0     | 0 | 884   |               |
| Heavy Trucks                     | 0                          | 4    | 0     | 0 | 0                          | 4    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 8     |               |
| Buses                            | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** S Ravinia Ave -- South Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665807  
**DATE:** Thu, Aug 1 2024

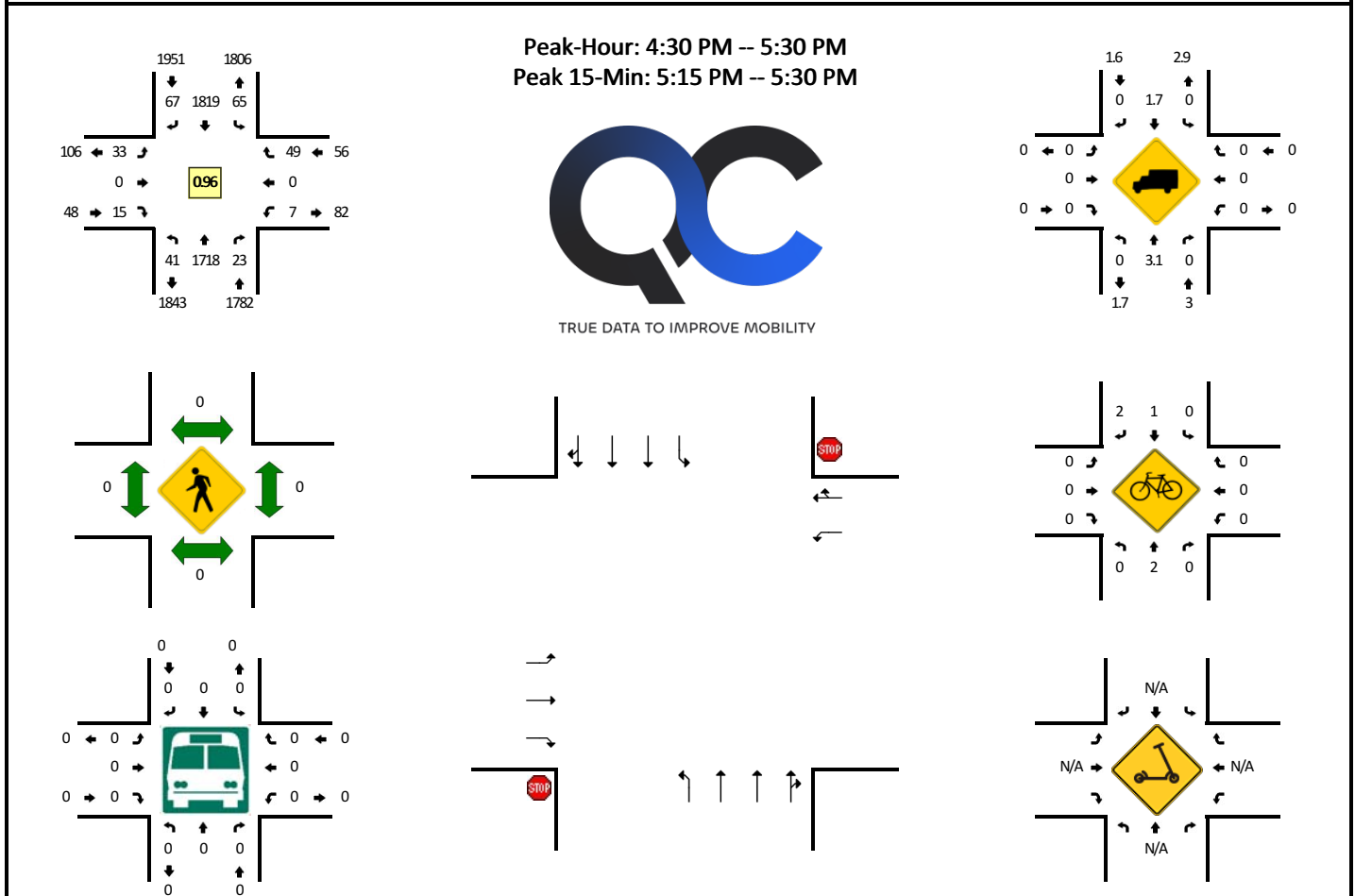


| 15-Min Count Period Beginning At | S Ravinia Ave (Northbound) |      |       |   | S Ravinia Ave (Southbound) |      |       |   | South Costco Dwy (Eastbound) |      |       |   | South Costco Dwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|------------------------------|------|-------|---|------------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| 3:00 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 14    | 0 | 28                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 42    |               |
| 3:15 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 28    | 0 | 16                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 44    |               |
| 3:30 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 28    | 1 | 35                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 64    |               |
| 3:45 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 25    | 0 | 16                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 41    | 191           |
| 4:00 PM                          | 0                          | 0    | 0     | 0 | 0                          | 1    | 16    | 3 | 20                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 40    | 189           |
| 4:15 PM                          | 1                          | 0    | 0     | 0 | 0                          | 0    | 21    | 0 | 21                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 44    | 189           |
| 4:30 PM                          | 1                          | 1    | 0     | 0 | 0                          | 1    | 13    | 1 | 21                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 39    | 164           |
| 4:45 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 25    | 0 | 22                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 47    | 170           |
| 5:00 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 21    | 1 | 19                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 41    | 171           |
| 5:15 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 10    | 0 | 21                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 31    | 158           |
| 5:30 PM                          | 0                          | 1    | 0     | 0 | 0                          | 0    | 15    | 0 | 16                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 32    | 151           |
| 5:45 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 19    | 0 | 17                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 36    | 140           |
| 6:00 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 11    | 0 | 19                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 30    | 129           |
| 6:15 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 6     | 1 | 12                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 19    | 117           |
| 6:30 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 18    | 0 | 25                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 43    | 128           |
| 6:45 PM                          | 0                          | 0    | 0     | 0 | 0                          | 0    | 13    | 0 | 13                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 26    | 118           |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound                    |      |       |   | Westbound                    |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| All Vehicles                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 100   | 0 | 88                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 188   |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 0    | 4     | 0 | 4                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 8     |               |
| Buses                            | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** 96th Ave/LaGrange Rd -- 161st St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665809  
**DATE:** Thu, Aug 1 2024

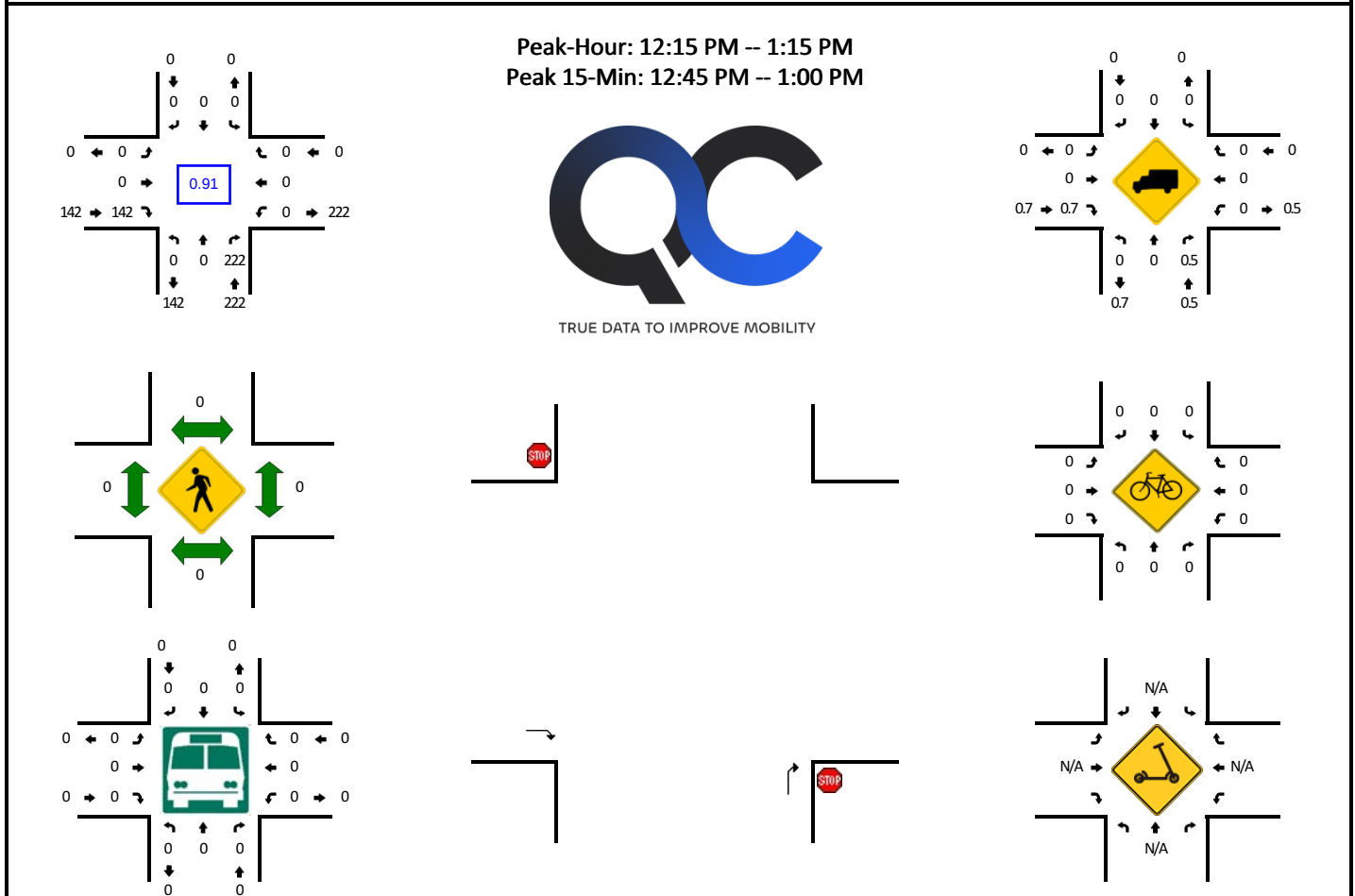


| 15-Min Count Period Beginning At | 96th Ave/LaGrange Rd (Northbound) |      |       |   | 96th Ave/LaGrange Rd (Southbound) |      |       |   | 161st St (Eastbound) |      |       |   | 161st St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|-----------------------------------|------|-------|---|-----------------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                              | Thru | Right | U | Left                              | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 3:00 PM                          | 11                                | 409  | 4     | 0 | 7                                 | 446  | 6     | 5 | 8                    | 0    | 3     | 0 | 3                    | 0    | 12    | 0 | 914   |               |
| 3:15 PM                          | 6                                 | 398  | 1     | 0 | 10                                | 418  | 10    | 3 | 6                    | 0    | 3     | 0 | 2                    | 0    | 9     | 0 | 866   |               |
| 3:30 PM                          | 4                                 | 410  | 5     | 0 | 16                                | 447  | 6     | 0 | 9                    | 0    | 4     | 0 | 3                    | 0    | 9     | 0 | 913   |               |
| 3:45 PM                          | 12                                | 424  | 4     | 0 | 17                                | 411  | 8     | 2 | 5                    | 0    | 2     | 0 | 2                    | 0    | 15    | 0 | 902   | 3595          |
| 4:00 PM                          | 8                                 | 409  | 2     | 0 | 18                                | 433  | 19    | 6 | 6                    | 0    | 8     | 0 | 1                    | 0    | 13    | 0 | 923   | 3604          |
| 4:15 PM                          | 11                                | 381  | 5     | 1 | 10                                | 447  | 18    | 3 | 6                    | 0    | 4     | 0 | 3                    | 0    | 13    | 0 | 902   | 3640          |
| 4:30 PM                          | 12                                | 443  | 6     | 0 | 14                                | 433  | 16    | 2 | 7                    | 0    | 4     | 0 | 4                    | 0    | 12    | 0 | 953   | 3680          |
| 4:45 PM                          | 13                                | 426  | 6     | 1 | 14                                | 477  | 17    | 2 | 7                    | 0    | 3     | 0 | 1                    | 0    | 12    | 0 | 979   | 3757          |
| 5:00 PM                          | 6                                 | 415  | 4     | 1 | 10                                | 427  | 18    | 1 | 10                   | 0    | 5     | 0 | 1                    | 0    | 12    | 0 | 910   | 3744          |
| 5:15 PM                          | 8                                 | 434  | 7     | 0 | 21                                | 482  | 16    | 1 | 9                    | 0    | 3     | 0 | 1                    | 0    | 13    | 0 | 995   | 3837          |
| 5:30 PM                          | 8                                 | 395  | 1     | 2 | 9                                 | 404  | 26    | 8 | 5                    | 0    | 11    | 0 | 3                    | 0    | 13    | 0 | 885   | 3769          |
| 5:45 PM                          | 10                                | 383  | 10    | 1 | 25                                | 410  | 14    | 2 | 7                    | 0    | 5     | 0 | 2                    | 0    | 18    | 0 | 887   | 3677          |
| 6:00 PM                          | 10                                | 372  | 6     | 2 | 18                                | 416  | 19    | 3 | 13                   | 0    | 12    | 0 | 3                    | 0    | 12    | 0 | 886   | 3653          |
| 6:15 PM                          | 14                                | 326  | 9     | 3 | 17                                | 391  | 18    | 2 | 6                    | 0    | 16    | 0 | 1                    | 1    | 13    | 0 | 817   | 3475          |
| 6:30 PM                          | 8                                 | 376  | 5     | 0 | 11                                | 365  | 12    | 3 | 3                    | 1    | 6     | 0 | 2                    | 0    | 20    | 0 | 812   | 3402          |
| 6:45 PM                          | 10                                | 348  | 8     | 1 | 7                                 | 337  | 10    | 0 | 14                   | 1    | 9     | 0 | 3                    | 0    | 16    | 0 | 764   | 3279          |
| Peak 15-Min Flowrates            | Northbound                        |      |       |   | Southbound                        |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                              | Thru | Right | U | Left                              | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 32                                | 1736 | 28    | 0 | 84                                | 1928 | 64    | 4 | 36                   | 0    | 12    | 0 | 4                    | 0    | 52    | 0 | 3980  |               |
| Heavy Trucks                     | 0                                 | 32   | 0     | 0 | 0                                 | 32   | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 64    |               |
| Buses                            | 0                                 | 0    | 0     | 0 | 0                                 | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                                 | 0    | 0     | 0 | 0                                 | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                                 | 0    | 0     | 0 | 0                                 | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Scoters                          | 0                                 | 0    | 0     | 0 | 0                                 | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |

**Comments:**

**LOCATION:** Costco RIRO Dwy -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665802  
**DATE:** Sat, Aug 3 2024

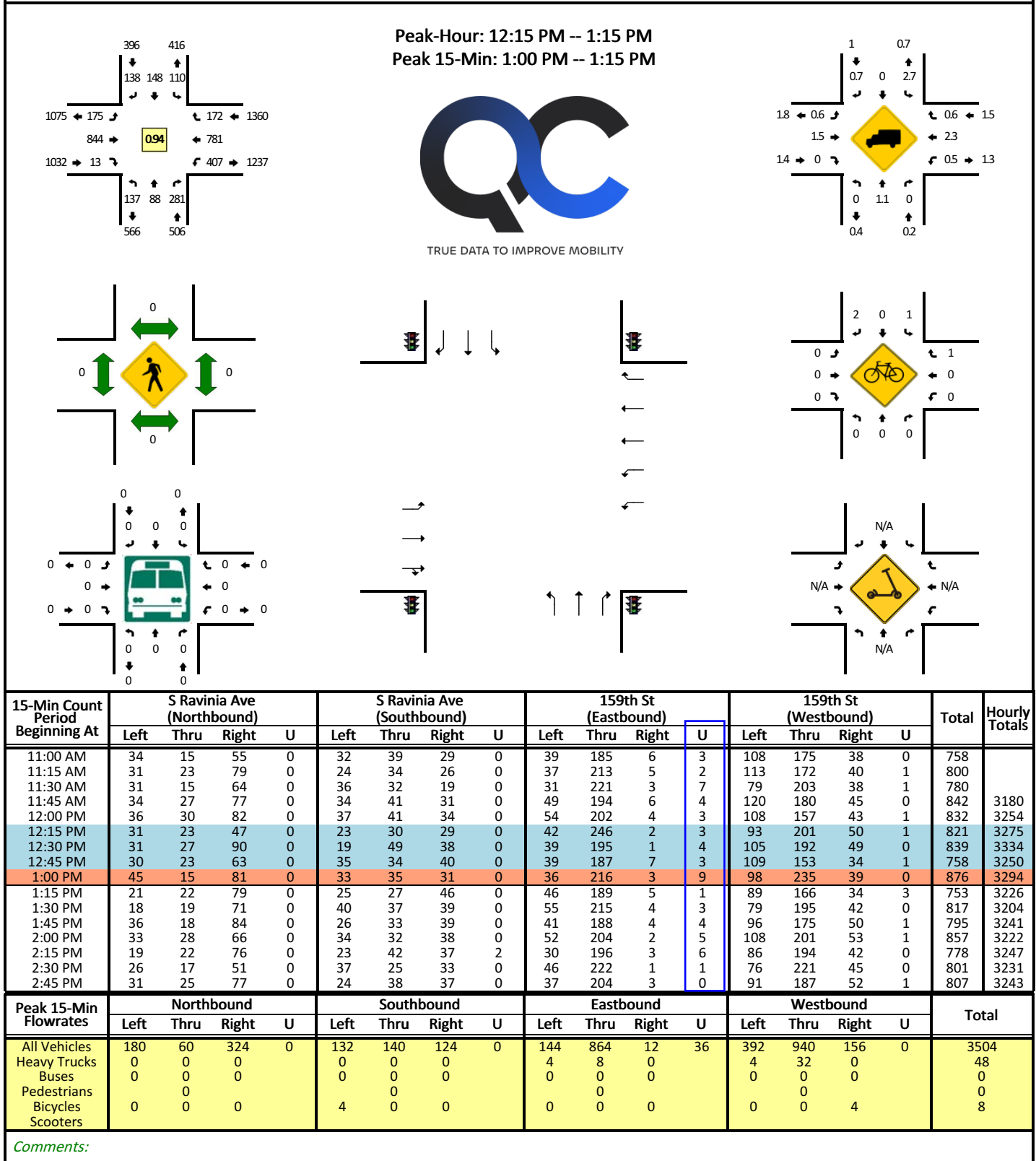


| 15-Min Count Period Beginning At | Costco RIRO Dwy (Northbound) |      |       |   | Costco RIRO Dwy (Southbound) |      |       |   | 159th St (Eastbound) |      |       |   | 159th St (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|------------------------------|------|-------|---|------------------------------|------|-------|---|----------------------|------|-------|---|----------------------|------|-------|---|-------|---------------|
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| 11:00 AM                         | 0                            | 0    | 42    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 50    | 0 | 0                    | 0    | 0     | 0 | 92    |               |
| 11:15 AM                         | 0                            | 0    | 46    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 48    | 0 | 0                    | 0    | 0     | 0 | 94    |               |
| 11:30 AM                         | 0                            | 0    | 42    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 41    | 0 | 0                    | 0    | 0     | 0 | 83    |               |
| 11:45 AM                         | 0                            | 0    | 42    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 45    | 0 | 0                    | 0    | 0     | 0 | 87    | 356           |
| 12:00 PM                         | 0                            | 0    | 49    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 38    | 0 | 0                    | 0    | 0     | 0 | 87    | 351           |
| 12:15 PM                         | 0                            | 0    | 55    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 38    | 0 | 0                    | 0    | 0     | 0 | 93    | 350           |
| 12:30 PM                         | 0                            | 0    | 49    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 39    | 0 | 0                    | 0    | 0     | 0 | 88    | 355           |
| 12:45 PM                         | 0                            | 0    | 57    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 37    | 0 | 0                    | 0    | 0     | 0 | 94    | 362           |
| 1:00 PM                          | 0                            | 0    | 61    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 28    | 0 | 0                    | 0    | 0     | 0 | 89    | 364           |
| 1:15 PM                          | 0                            | 0    | 44    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 36    | 0 | 0                    | 0    | 0     | 0 | 80    | 351           |
| 1:30 PM                          | 0                            | 0    | 59    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 35    | 0 | 0                    | 0    | 0     | 0 | 94    | 357           |
| 1:45 PM                          | 0                            | 0    | 52    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 40    | 0 | 0                    | 0    | 0     | 0 | 92    | 355           |
| 2:00 PM                          | 0                            | 0    | 49    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 38    | 0 | 0                    | 0    | 0     | 0 | 87    | 353           |
| 2:15 PM                          | 0                            | 0    | 49    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 26    | 0 | 0                    | 0    | 0     | 0 | 75    | 348           |
| 2:30 PM                          | 0                            | 0    | 37    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 31    | 0 | 0                    | 0    | 0     | 0 | 68    | 322           |
| 2:45 PM                          | 0                            | 0    | 55    | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 35    | 0 | 0                    | 0    | 0     | 0 | 90    | 320           |
| Peak 15-Min Flowrates            | Northbound                   |      |       |   | Southbound                   |      |       |   | Eastbound            |      |       |   | Westbound            |      |       |   | Total |               |
|                                  | Left                         | Thru | Right | U | Left                         | Thru | Right | U | Left                 | Thru | Right | U | Left                 | Thru | Right | U |       |               |
| All Vehicles                     | 0                            | 0    | 228   | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 148   | 0 | 0                    | 0    | 0     | 0 | 376   |               |
| Heavy Trucks                     | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Buses                            | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0                    | 0    | 0     | 0 | 0     |               |

**Comments:**

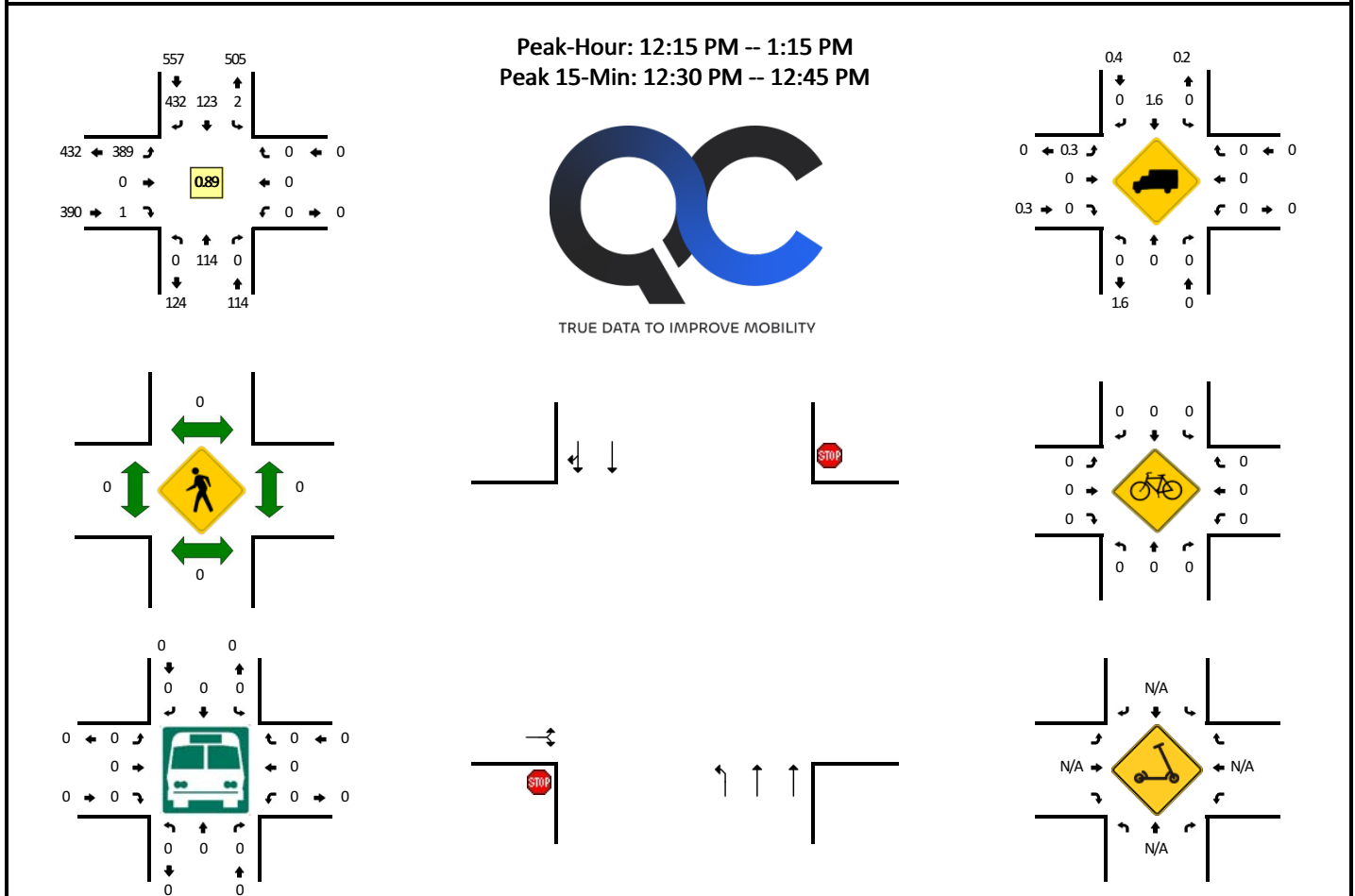
**LOCATION:** S Ravinia Ave -- 159th St  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665804  
**DATE:** Sat, Aug 3 2024



**LOCATION:** S Ravinia Ave -- North Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665806  
**DATE:** Sat, Aug 3 2024

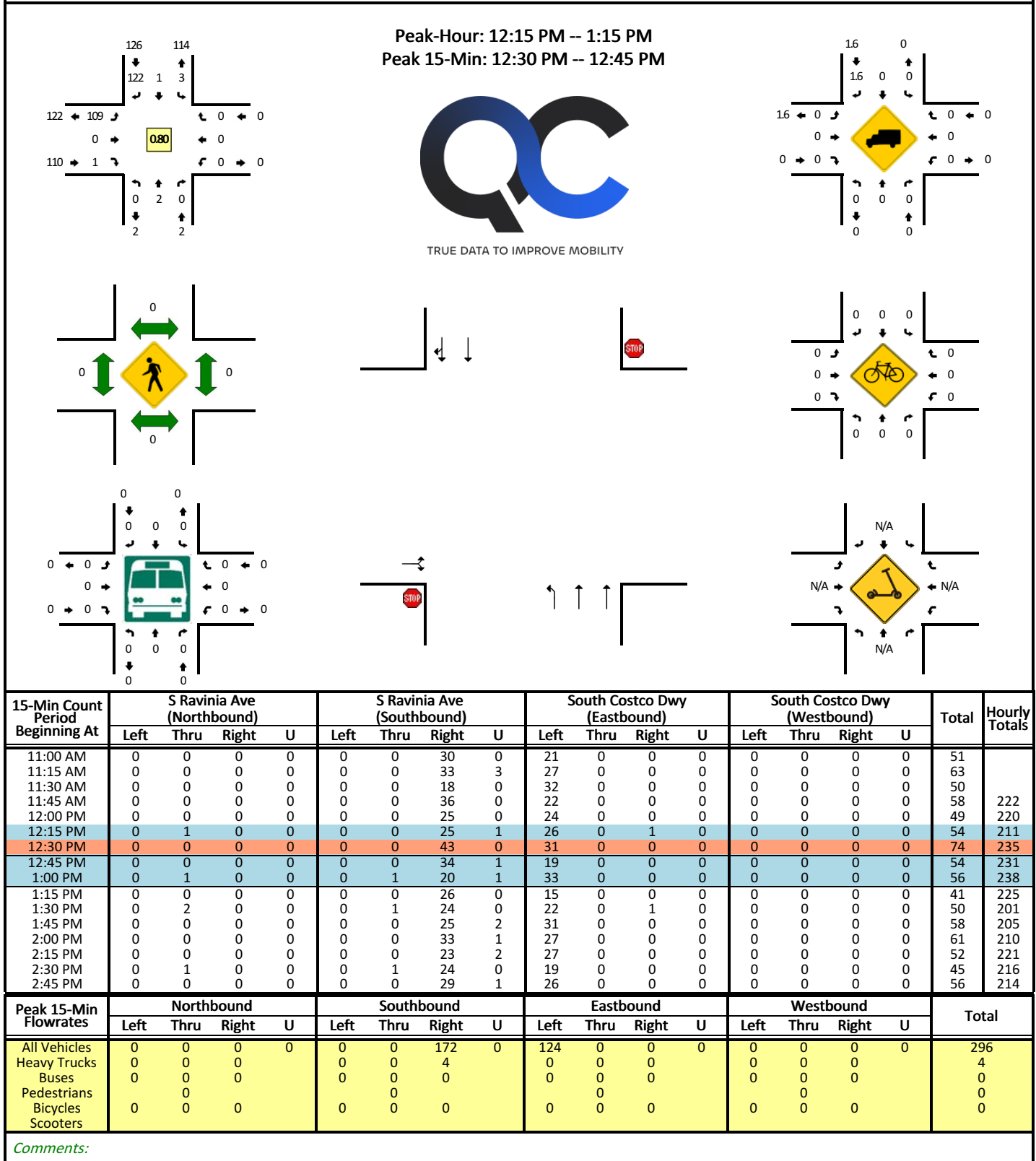


| 15-Min Count Period Beginning At | S Ravinia Ave (Northbound) |      |       |   | S Ravinia Ave (Southbound) |      |       |   | North Costco Dwy (Eastbound) |      |       |   | North Costco Dwy (Westbound) |      |       |   | Total | Hourly Totals |
|----------------------------------|----------------------------|------|-------|---|----------------------------|------|-------|---|------------------------------|------|-------|---|------------------------------|------|-------|---|-------|---------------|
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| 11:00 AM                         | 0                          | 22   | 0     | 0 | 0                          | 30   | 125   | 1 | 84                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 262   |               |
| 11:15 AM                         | 0                          | 30   | 0     | 0 | 0                          | 35   | 118   | 1 | 101                          | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 286   |               |
| 11:30 AM                         | 0                          | 32   | 0     | 0 | 0                          | 18   | 98    | 1 | 89                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 238   |               |
| 11:45 AM                         | 0                          | 22   | 0     | 0 | 0                          | 36   | 126   | 0 | 110                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 294   | 1080          |
| 12:00 PM                         | 0                          | 24   | 0     | 0 | 0                          | 28   | 119   | 0 | 114                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 285   | 1103          |
| 12:15 PM                         | 0                          | 27   | 0     | 0 | 0                          | 23   | 103   | 0 | 81                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 234   | 1051          |
| 12:30 PM                         | 0                          | 32   | 0     | 0 | 0                          | 43   | 111   | 0 | 111                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 297   | 1110          |
| 12:45 PM                         | 0                          | 20   | 0     | 0 | 0                          | 36   | 116   | 1 | 91                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 265   | 1081          |
| 1:00 PM                          | 0                          | 35   | 0     | 0 | 0                          | 21   | 102   | 1 | 106                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 265   | 1061          |
| 1:15 PM                          | 0                          | 15   | 0     | 0 | 0                          | 25   | 96    | 0 | 106                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 242   | 1069          |
| 1:30 PM                          | 0                          | 24   | 0     | 0 | 0                          | 26   | 102   | 1 | 85                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 238   | 1010          |
| 1:45 PM                          | 0                          | 33   | 0     | 0 | 0                          | 26   | 106   | 2 | 100                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 267   | 1012          |
| 2:00 PM                          | 0                          | 28   | 0     | 0 | 0                          | 33   | 104   | 1 | 95                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 262   | 1009          |
| 2:15 PM                          | 0                          | 28   | 0     | 0 | 0                          | 24   | 105   | 0 | 93                           | 0    | 1     | 0 | 0                            | 0    | 0     | 0 | 251   | 1018          |
| 2:30 PM                          | 0                          | 21   | 0     | 0 | 0                          | 25   | 83    | 0 | 78                           | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 207   | 987           |
| 2:45 PM                          | 0                          | 27   | 0     | 0 | 0                          | 28   | 103   | 1 | 101                          | 0    | 3     | 0 | 0                            | 0    | 0     | 0 | 263   | 983           |
| Peak 15-Min Flowrates            | Northbound                 |      |       |   | Southbound                 |      |       |   | Eastbound                    |      |       |   | Westbound                    |      |       |   | Total |               |
|                                  | Left                       | Thru | Right | U | Left                       | Thru | Right | U | Left                         | Thru | Right | U | Left                         | Thru | Right | U |       |               |
| All Vehicles                     | 0                          | 128  | 0     | 0 | 0                          | 172  | 444   | 0 | 444                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 1188  |               |
| Heavy Trucks                     | 0                          | 0    | 0     | 0 | 0                          | 4    | 0     | 0 | 4                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 8     |               |
| Buses                            | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Pedestrians                      | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Bicycles                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |
| Scooters                         | 0                          | 0    | 0     | 0 | 0                          | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0                            | 0    | 0     | 0 | 0     |               |

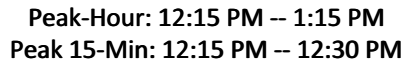
**Comments:**

**LOCATION:** S Ravinia Ave -- South Costco Dwy  
**CITY/STATE:** Orland Park, IL

**QC JOB #:** 16665808  
**DATE:** Sat, Aug 3 2024



QC JOB #: 16665810  
DATE: Sat, Aug 3 2024



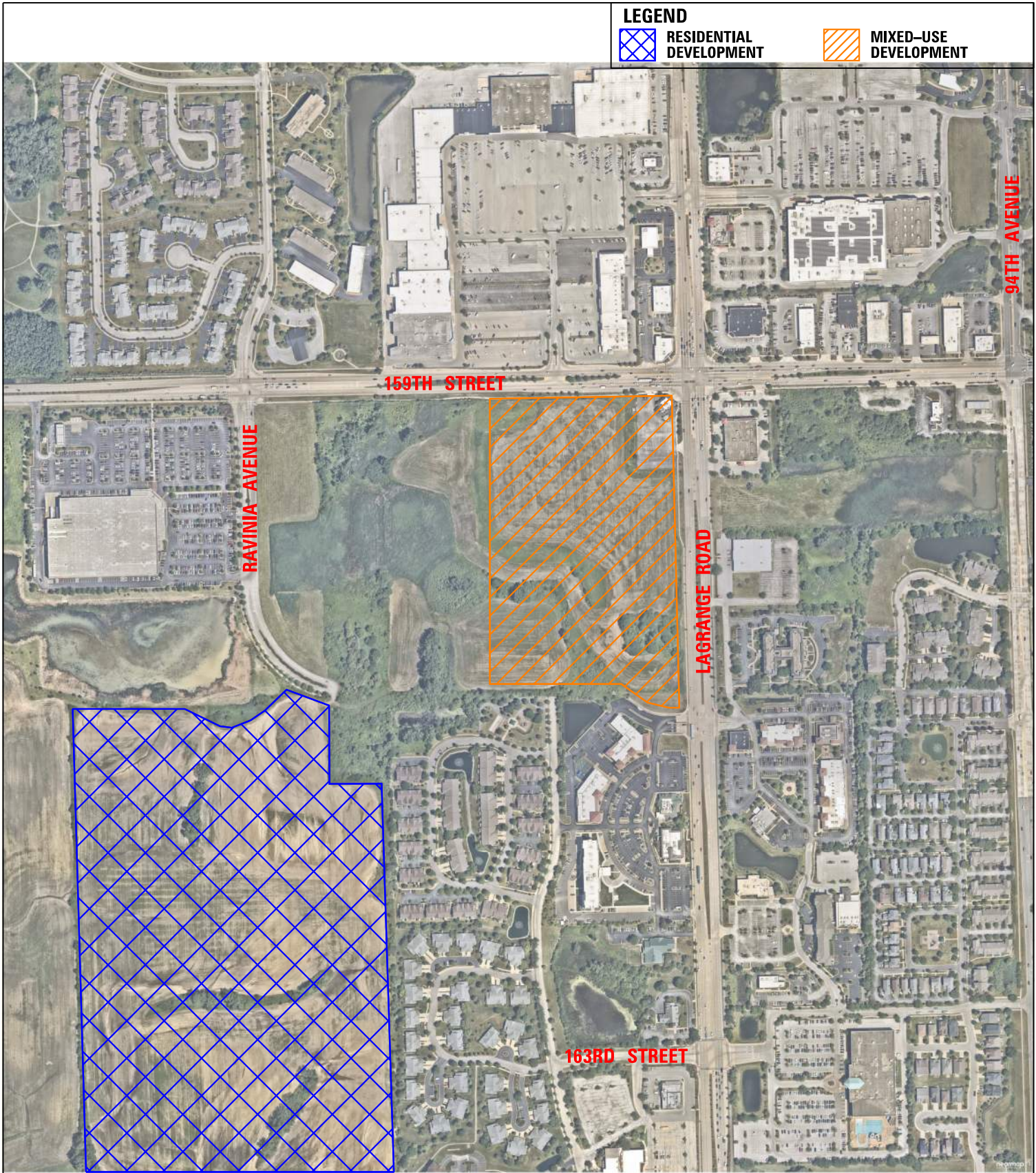
|           |  |  |  |  |  |
|-----------|--|--|--|--|--|
| Comments: |  |  |  |  |  |
|-----------|--|--|--|--|--|

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212



## **APPENDIX B**

### **ADJACENT DEVELOPMENT EXCERPTS**



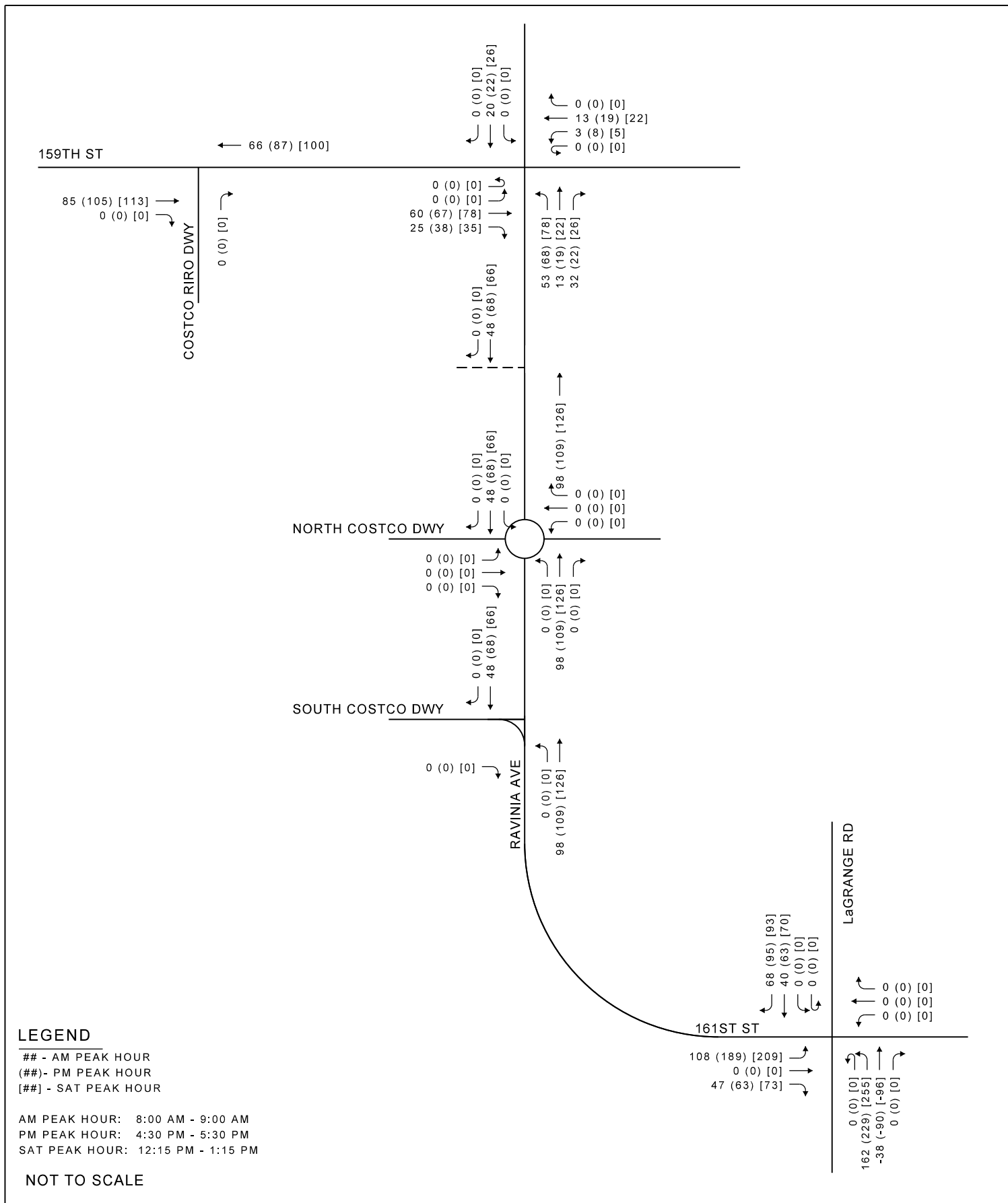
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**EXHIBIT 1  
ADJACENT DEVELOPMENT  
LOCATIONS**

ORLAND PARK

ILLINOIS





**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**ADJACENT DEVELOPMENT  
TRAFFIC VOLUMES  
WITH RAVINIA EXTENSION**

ORLAND PARK

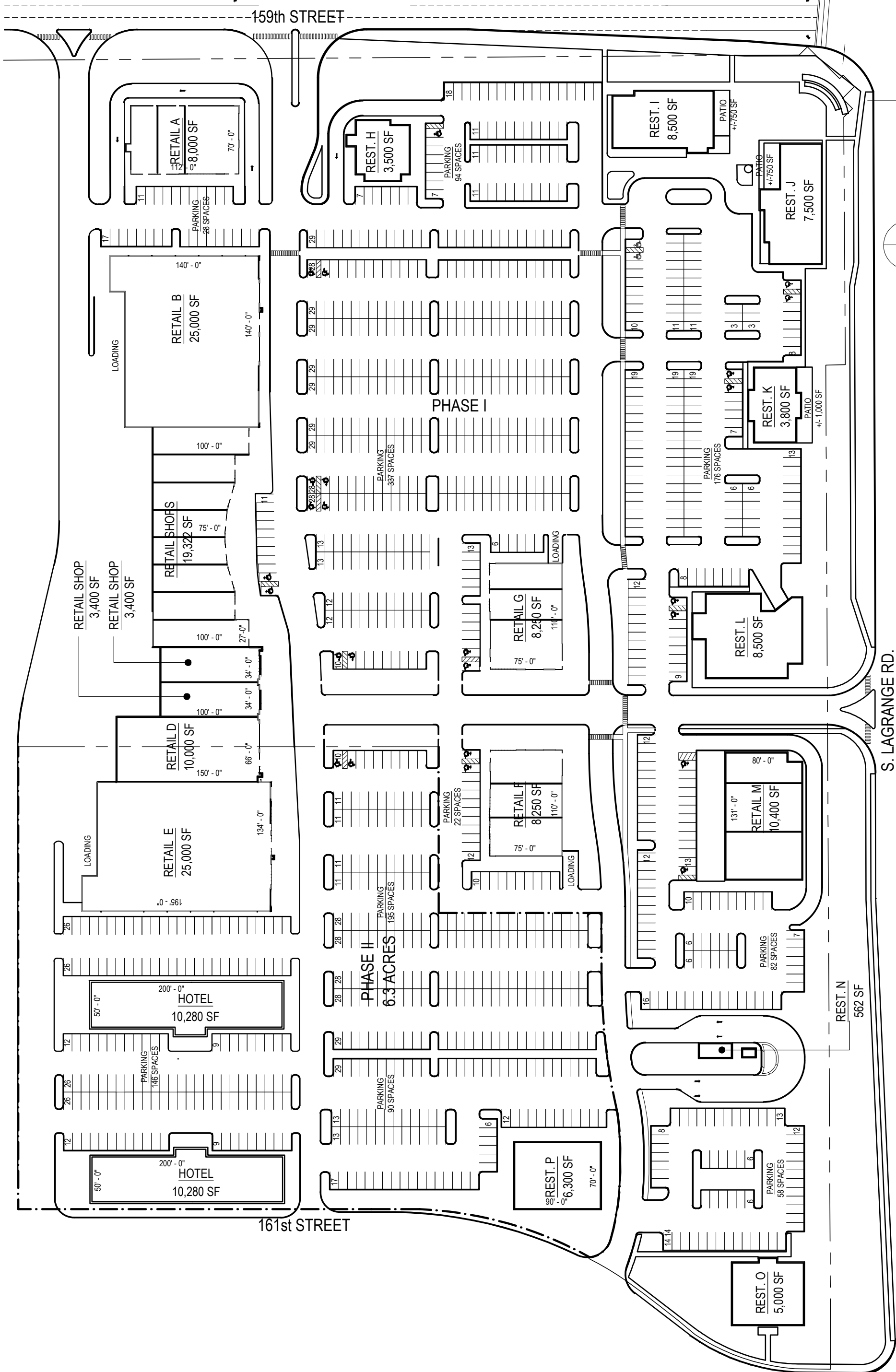
ILLINOIS

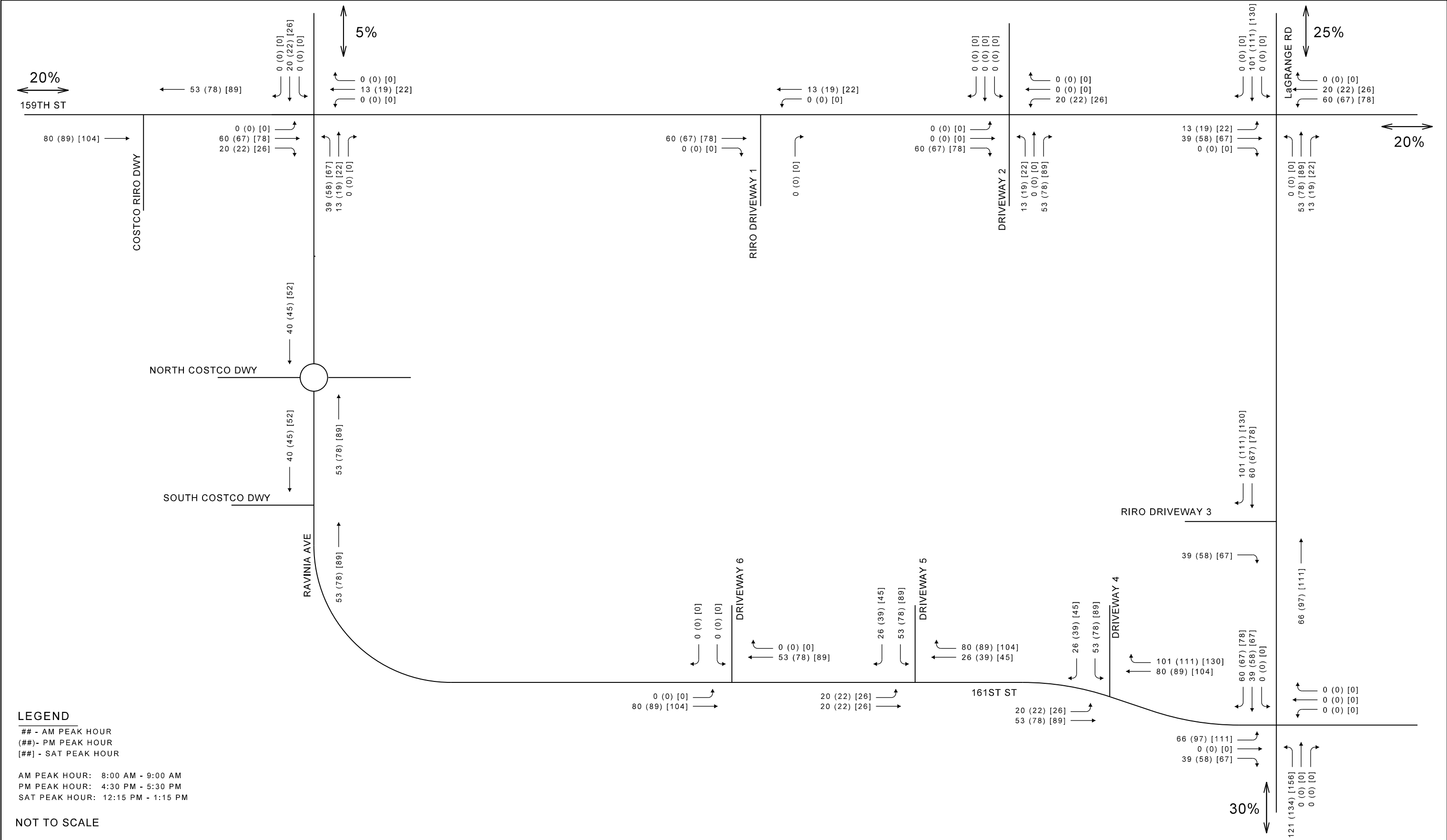




Pete's Market  
Store Design Development

| LUC                                     | LAND USE                                                                       | SIZE            | Daily  | Weekday AM |     |       | Weekday PM |      |       | Saturday MD |      |       |
|-----------------------------------------|--------------------------------------------------------------------------------|-----------------|--------|------------|-----|-------|------------|------|-------|-------------|------|-------|
|                                         |                                                                                |                 | Total  | In         | Out | Total | In         | Out  | Total | In          | Out  | Total |
| 310                                     | Hotel                                                                          | 200 Room        | 1,744  | 52         | 41  | 93    | 61         | 59   | 120   | 81          | 63   | 144   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -2         | -10 | -12   | -24        | -24  | -48   | -23         | -20  | -43   |
|                                         | Pass-By Trips:                                                                 |                 | -      | 0          | 0   | 0     | 0          | 0    | 0     | 0           | 0    | 0     |
| 821                                     | Strip Retail Plaza (40-150k) - Retail A, C, D, E, F, G, M                      | 96,022 SF       | 8,802  | 210        | 129 | 339   | 411        | 444  | 855   | 436         | 419  | 855   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -22        | -17 | -39   | -71        | -74  | -145  | -126        | -131 | -257  |
|                                         | Pass-By Trips:                                                                 |                 | -      | -51        | -51 | -102  | -121       | -121 | -242  | -78         | -78  | -156  |
| 850                                     | Supermarket - Retail B                                                         | 25,000 SF       | 2,624  | 42         | 30  | 72    | 126        | 125  | 251   | 164         | 164  | 328   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -4         | -4  | -8    | -22        | -21  | -43   | -47         | -51  | -98   |
|                                         | Pass-By Trips:                                                                 |                 | -      | 0          | 0   | 0     | -37        | -37  | -74   | -41         | -41  | -82   |
| 930                                     | Fast Casual Restaurant - Retail K                                              | 3,800 SF        | 369    | 3          | 2   | 5     | 29         | 23   | 52    | 68          | 56   | 124   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | 0          | 0   | 0     | -10        | -11  | -21   | -20         | -17  | -37   |
|                                         | Pass-By Trips:                                                                 |                 | -      | 0          | 0   | 0     | -7         | -7   | -14   | -19         | -19  | -38   |
| 931                                     | Fine Dining Restaurant - Retail L                                              | 8,500 SF        | 713    | 4          | 2   | 6     | 44         | 22   | 66    | 54          | 37   | 91    |
|                                         | Internal Capture Reduction:                                                    |                 | -      | 0          | 0   | 0     | -15        | -11  | -26   | -16         | -11  | -27   |
|                                         | Pass-By Trips:                                                                 |                 | -      | 0          | 0   | 0     | -9         | -9   | -18   | -14         | -14  | -28   |
| 932                                     | High-Turnover (Sit-Down) Restaurant - Building I, J, O, P                      | 27,300 SF       | 2,927  | 144        | 117 | 261   | 151        | 96   | 247   | 156         | 149  | 305   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -14        | -12 | -26   | -52        | -46  | -98   | -45         | -47  | -92   |
|                                         | Pass-By Trips:                                                                 |                 | -      | 0          | 0   | 0     | -32        | -32  | -64   | -46         | -46  | -92   |
| 934                                     | Fast-Food Restaurant with Drive-Thru Window - Building H                       | 3,500 SF        | 1,636  | 80         | 76  | 156   | 60         | 56   | 116   | 99          | 94   | 193   |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -8         | -8  | -16   | -21        | -27  | -48   | -29         | -29  | -58   |
|                                         | Pass-By Trips:                                                                 |                 | -      | -34        | -34 | -68   | -17        | -17  | -34   | -34         | -34  | -68   |
| 938                                     | Coffee/Donut Shop with Drive-Through Window and No Indoor Seating - Building N | 1 Drive-Through | 179    | 18         | 18  | 36    | 8          | 7    | 15    | 18          | 18   | 36    |
|                                         | Internal Capture Reduction:                                                    |                 | -      | -2         | -2  | -4    | -3         | -3   | -6    | -5          | -6   | -11   |
|                                         | Pass-By Trips:                                                                 |                 | -      | -14        | -14 | -28   | -4         | -4   | -8    | -11         | -11  | -22   |
| Total Trip Generation:                  |                                                                                |                 | 18,994 | 553        | 415 | 968   | 890        | 832  | 1,722 | 1076        | 1000 | 2,076 |
| Less Internal Capture:                  |                                                                                |                 |        | -52        | -53 | -105  | -218       | -217 | -435  | -312        | -312 | -623  |
| Internal Capture Rate:                  |                                                                                |                 |        | 11%        |     |       | 25%        |      |       | 30%         |      |       |
| Total External Trips                    |                                                                                |                 |        | 501        | 362 | 863   | 672        | 615  | 1287  | 765         | 689  | 1453  |
| Less Pass-by:                           |                                                                                |                 |        | -99        | -99 | -198  | -227       | -227 | -454  | -243        | -243 | -486  |
| Total New Traffic Generated on Network: |                                                                                |                 |        | 402        | 263 | 665   | 445        | 388  | 833   | 522         | 446  | 967   |



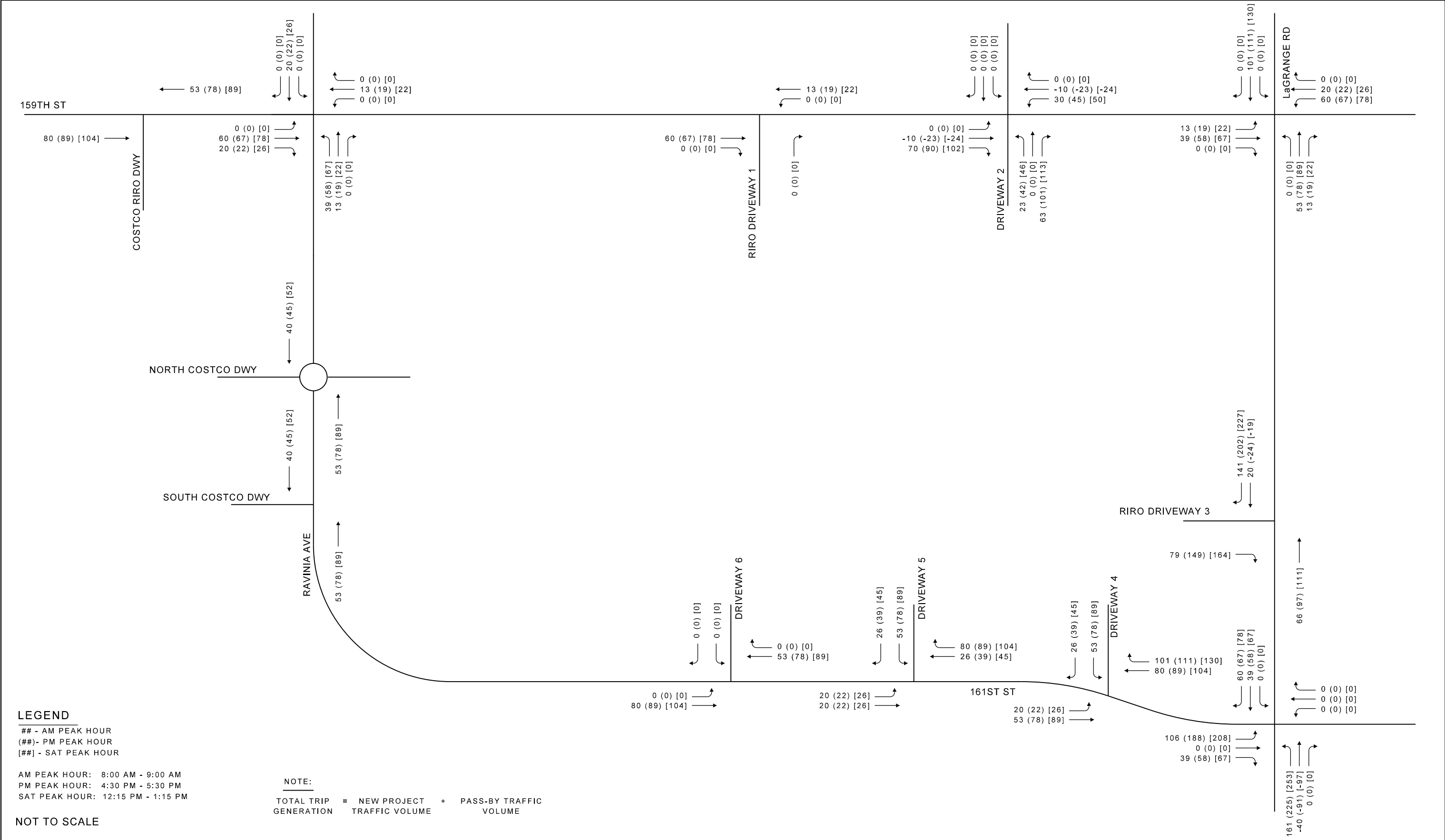


COSTCO WHOLESALE  
ORLAND PARK, IL #647

PETE'S MARKET  
NEW PROJECT TRAFFIC VOLUMES





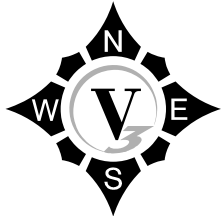


COSTCO WHOLESALE  
ORLAND PARK, IL #647

ORLAND PARK

ILLINOIS

PETE'S MARKET  
TOTAL SITE TRAFFIC VOLUMES



# Traffic Impact Study Proposed Residential Development

Orland Park, Illinois



Prepared For:



Kenig, Lindgren, O'Hara, Aboona, Inc.

August 22, 2024

### 3. Traffic Characteristics of the Proposed Development

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed development, including the directional distribution and volumes of traffic that it will generate.

#### Proposed Site and Development Plan

As proposed, the site will be developed with a residential development consisting of 132 single-family homes. Access to the site will be provided via proposed connections to Ravinia Avenue and 165<sup>th</sup> Street. A copy of the preliminary site plan is included in the Appendix.

#### Future Extension of Ravinia Avenue to 161<sup>st</sup> Street

With the development of the commercial parcel to the east, Ravinia Avenue will be extended east to connect with 161<sup>st</sup> Street, providing additional access for the site and Costco to LaGrange Road. This extension of Ravinia Avenue would have the same cross-section as the existing roadway which will allow for the provision of a westbound left-turn lane into the proposed development.

#### Directional Distribution

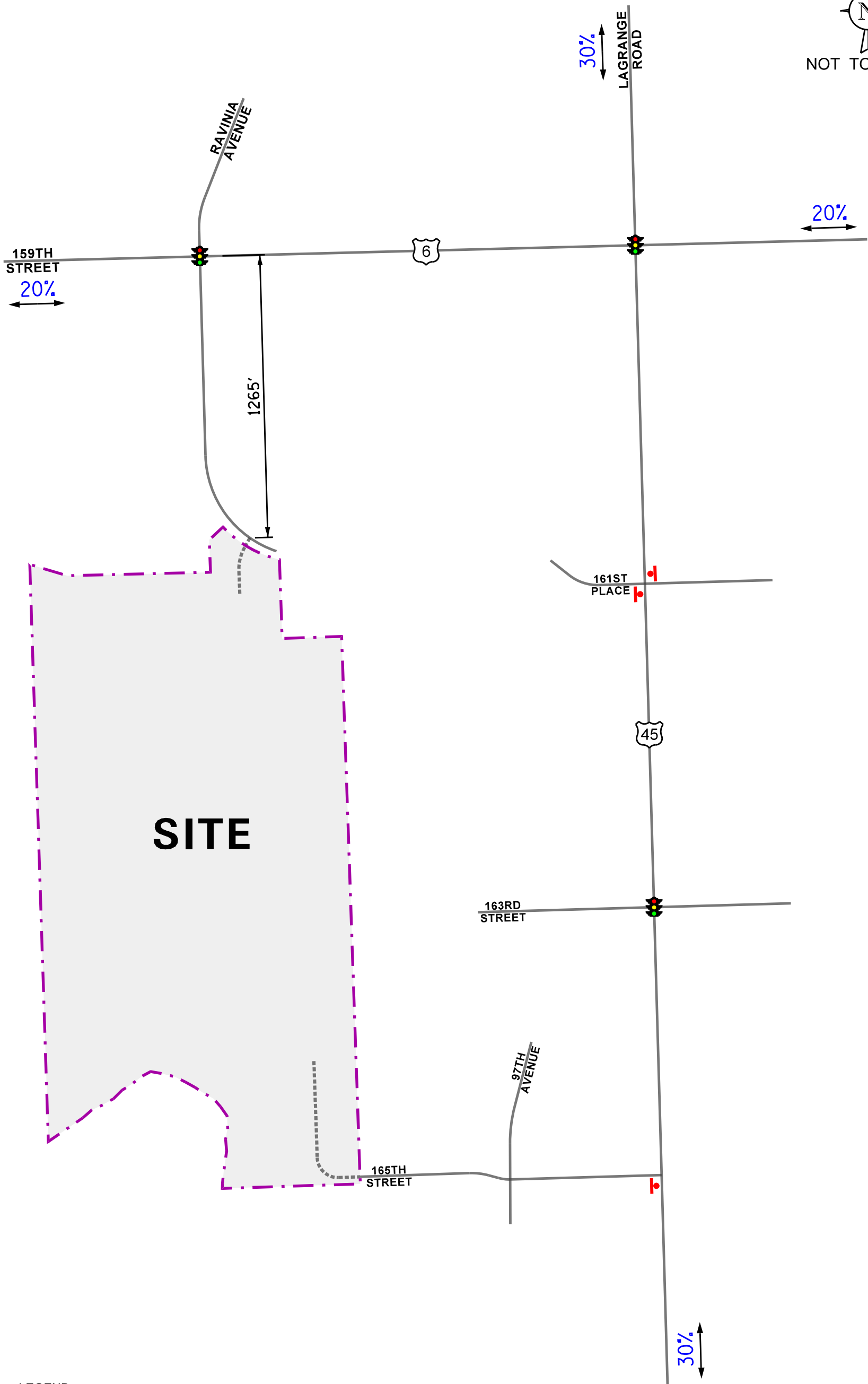
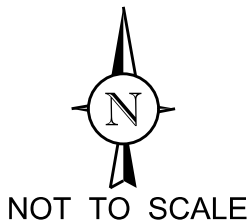
The directions from which residents will approach and depart the site were estimated based on existing travel patterns, as determined from the traffic counts. **Figure 5** illustrates the directional distribution of the development-generated traffic. Figure 5 also shows the distance, in feet, between the existing and proposed access intersections.

#### Peak Hour Traffic Volumes

The number of peak hour trips estimated to be generated by the proposed residential development was based on vehicle trip generation rates contained in *Trip Generation Manual*, 11<sup>th</sup> Edition, published by the Institute of Transportation Engineers (ITE). The “Single-Family Detached Housing” (Land-Use Code 210) rates were used to determine the traffic to be generated by the development. **Table 6** shows the weekday morning, weekday evening, and Saturday midday peak hour traffic to be generated by the proposed residential development.

Table 6  
PROJECTED DEVELOPMENT-GENERATED TRAFFIC VOLUMES

| ITE<br>Land-<br>Use<br>Code | Type/Size                                        | Weekday Morning<br>Peak Hour |     |       | Weekday Evening<br>Peak Hour |     |       | Saturday Midday<br>Peak Hour |     |       |
|-----------------------------|--------------------------------------------------|------------------------------|-----|-------|------------------------------|-----|-------|------------------------------|-----|-------|
|                             |                                                  | In                           | Out | Total | In                           | Out | Total | In                           | Out | Total |
| 210                         | Single-Family<br>Detached Housing<br>(132 Units) | 24                           | 72  | 96    | 81                           | 48  | 129   | 45                           | 56  | 101   |



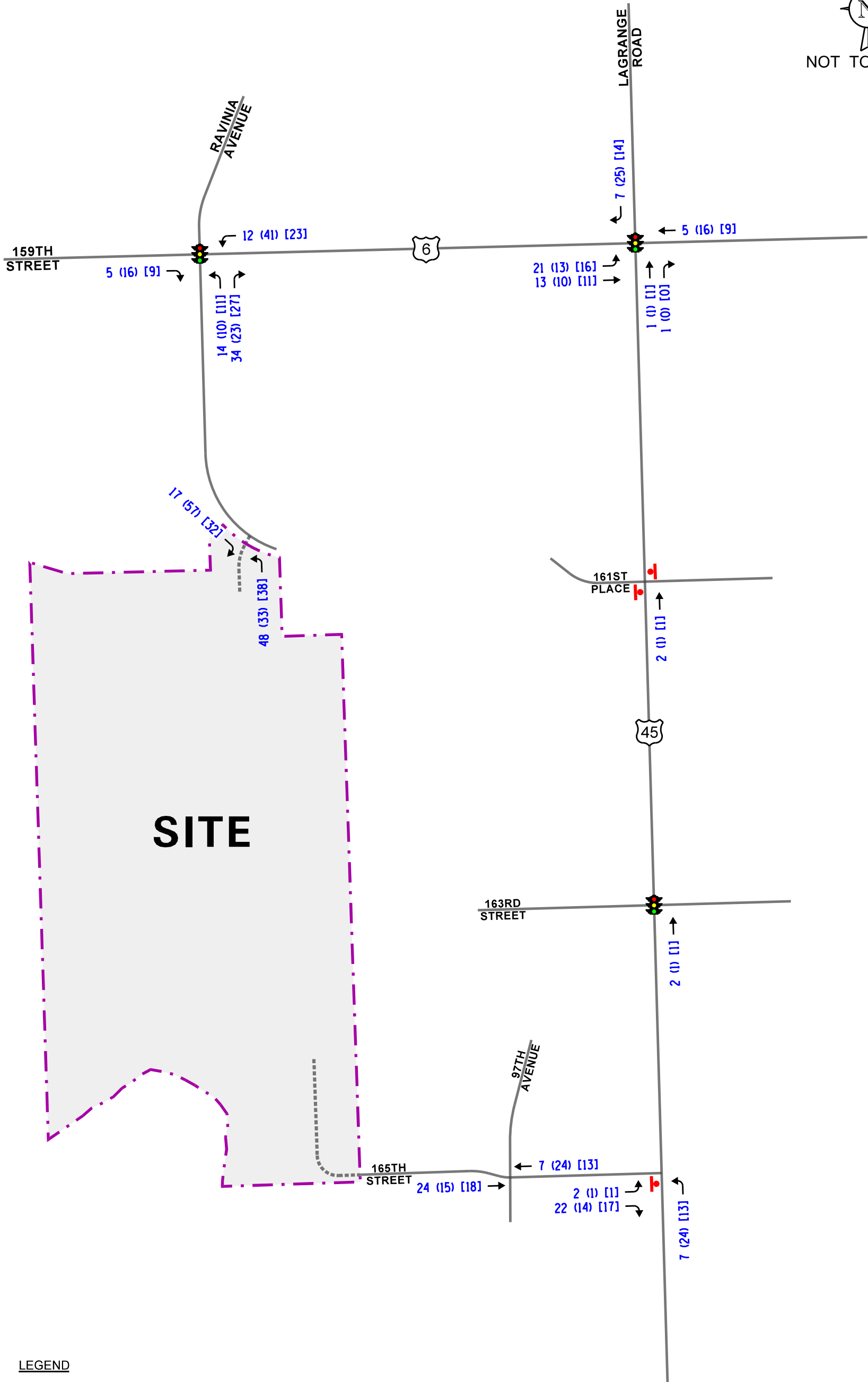
LEGEND

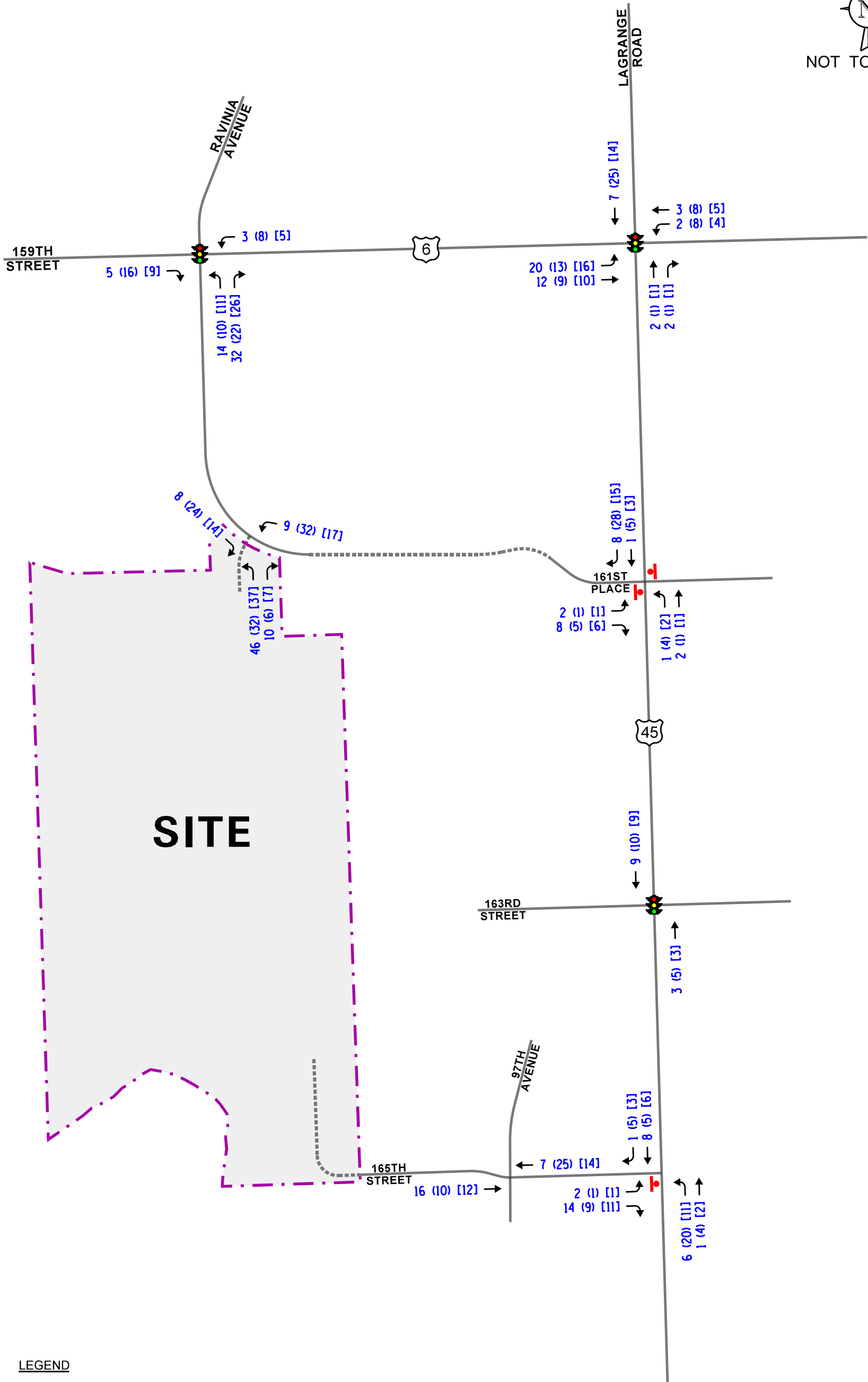
- 00% - PERCENT DISTRIBUTION
- 00' - DISTANCE IN FEET

ESTATES AT  
RAVINIA MEADOW  
ORLAND PARK, ILLINOIS

DIRECTIONAL DISTRIBUTION

**KLOA**  
Kenig, Lindgren, O'Hara, Aboona, Inc.  
Job No: 24-194      Figure: 5





LEGEND

- 00 - WEEKDAY AM PEAK HOUR (8:00-9:00 AM)
- (00) - WEEKDAY PM PEAK HOUR (4:30-5:30 PM)
- [00] - SATURDAY AFTERNOON PEAK HOUR (1:00-2:00 PM)



## **APPENDIX C**

### **CMAP CORRESPONDENCE**



September 27, 2024

Peter Reinhofer, P.E.  
Chicago Traffic Services Leader/Senior Project Manager  
V3 Companies  
7325 Janes Avenue  
Woodridge, IL 60517

**Subject: 159th Street and Ravinia Avenue**  
IDOT

Dear Mr. Reinhofer:

In response to a request made on your behalf and dated September 27, 2024, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

| ROAD SEGMENT                                       | 2023 ADT      | No-Build 2050<br>ADT | Build Ravinia<br>Extn 2050 ADT |
|----------------------------------------------------|---------------|----------------------|--------------------------------|
| 159 <sup>th</sup> Street West of Ravinia Ave)      | Not Requested | Not Requested        | +1,300<br>maximum              |
| 159th Street West of LaGrange Road                 | 24,200        | 28,700               | 29,100 (+400)                  |
| 159th Street East of LaGrange Road                 | 35,000        | 38,500               | 38,900 (+400)                  |
| LaGrange Road North of 159th Street                | 33,600        | 40,000               | 38,800 (-1,500)                |
| LaGrange Road South of 159th Street                | 33,500        | 38,900               | 37,700 (-1,500)                |
| Ravinia Avenue North of 159th Street               | 5,600         | 6,700                | 7,000 – 8,300                  |
| Ravinia Ave Extension from 159th St to LaGrange Rd | N/A           | N/A                  | 1,800                          |

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2024 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments. If you have any questions, please call me at (312) 386-8806 or email me at [jrodriguez@cmap.illinois.gov](mailto:jrodriguez@cmap.illinois.gov)

Jose Rodriguez, PTP, AICP  
Senior Planner, Research & Analysis



**APPENDIX D**

**CAPACITY ANALYSIS WORKSHEETS**

**2024 EXISTING**

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 3                                                                                 | 116                                                                               | 780                                                                               | 7                                                                                 | 27                                                                                | 699                                                                               | 140                                                                                | 16                                                                                  | 1                                                                                   | 7                                                                                   | 101                                                                                 | 18                                                                                  |
| Future Volume (vph)        | 3                                                                                 | 116                                                                               | 780                                                                               | 7                                                                                 | 27                                                                                | 699                                                                               | 140                                                                                | 16                                                                                  | 1                                                                                   | 7                                                                                   | 101                                                                                 | 18                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                              | 1900                                                                               | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                | 2000                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 | 400                                                                               |                                                                                   | 200                                                                                | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |                                                                                     |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                  | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   | 290                                                                               |                                                                                   |                                                                                    | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)          | 0                                                                                 | 1770                                                                              | 3432                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                               | 1597                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                | 2000                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.851                                                                               |                                                                                     |
| Satd. Flow (perm)          | 0                                                                                 | 1770                                                                              | 3432                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                               | 1681                                                                                | 2000                                                                                | 1615                                                                                | 1601                                                                                | 2000                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 159                                                                                |                                                                                     |                                                                                     | 59                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                    |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   | 1894                                                                              |                                                                                    |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     | 571                                                                                 |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                    |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     | 13.0                                                                                |
| Peak Hour Factor           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                               | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 2%                                                                                | 5%                                                                                | 14%                                                                               | 4%                                                                                | 7%                                                                                | 2%                                                                                 | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 3                                                                                 | 132                                                                               | 886                                                                               | 8                                                                                 | 31                                                                                | 794                                                                               | 159                                                                                | 18                                                                                  | 1                                                                                   | 8                                                                                   | 115                                                                                 | 20                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 135                                                                               | 894                                                                               | 0                                                                                 | 31                                                                                | 794                                                                               | 159                                                                                | 18                                                                                  | 1                                                                                   | 8                                                                                   | 115                                                                                 | 20                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                              | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                    |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                              | 1.00                                                                               | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                  | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                              | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                 | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                 | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | pm+ov                                                                              | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                  | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   | 8                                                                                   |

|                            |       |
|----------------------------|-------|
| Lane Group                 | SBR   |
| Lane Configurations        | ↗     |
| Traffic Volume (vph)       | 72    |
| Future Volume (vph)        | 72    |
| Ideal Flow (vphpl)         | 1900  |
| Storage Length (ft)        | 165   |
| Storage Lanes              | 1     |
| Taper Length (ft)          |       |
| Lane Util. Factor          | 1.00  |
| Frt                        | 0.850 |
| Flt Protected              |       |
| Satd. Flow (prot)          | 1553  |
| Flt Permitted              |       |
| Satd. Flow (perm)          | 1553  |
| Right Turn on Red          | Yes   |
| Satd. Flow (RTOR)          | 82    |
| Link Speed (mph)           |       |
| Link Distance (ft)         |       |
| Travel Time (s)            |       |
| Peak Hour Factor           | 0.88  |
| Heavy Vehicles (%)         | 4%    |
| Adj. Flow (vph)            | 82    |
| Shared Lane Traffic (%)    |       |
| Lane Group Flow (vph)      | 82    |
| Enter Blocked Intersection | No    |
| Lane Alignment             | Right |
| Median Width(ft)           |       |
| Link Offset(ft)            |       |
| Crosswalk Width(ft)        |       |
| Two way Left Turn Lane     |       |
| Headway Factor             | 1.00  |
| Turning Speed (mph)        | 9     |
| Number of Detectors        | 1     |
| Detector Template          | Right |
| Leading Detector (ft)      | 20    |
| Trailing Detector (ft)     | 0     |
| Detector 1 Position(ft)    | 0     |
| Detector 1 Size(ft)        | 20    |
| Detector 1 Type            | Cl+Ex |
| Detector 1 Channel         |       |
| Detector 1 Extend (s)      | 0.0   |
| Detector 1 Queue (s)       | 0.0   |
| Detector 1 Delay (s)       | 0.0   |
| Detector 2 Position(ft)    |       |
| Detector 2 Size(ft)        |       |
| Detector 2 Type            |       |
| Detector 2 Channel         |       |
| Detector 2 Extend (s)      |       |
| Turn Type                  | pm+ov |
| Protected Phases           | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                  | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 24.5                                                                              | 9.5                                                                                | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                |
| Total Split (s)         | 20.0                                                                              | 20.0                                                                              | 45.0                                                                              |                                                                                   | 20.0                                                                              | 45.0                                                                              | 25.0                                                                               | 25.0                                                                                | 30.0                                                                                | 20.0                                                                                | 25.0                                                                                | 30.0                                                                                |
| Total Split (%)         | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                             |                                                                                   | 16.7%                                                                             | 37.5%                                                                             | 20.8%                                                                              | 20.8%                                                                               | 25.0%                                                                               | 16.7%                                                                               | 20.8%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 15.5                                                                              | 15.5                                                                              | 39.0                                                                              |                                                                                   | 15.5                                                                              | 39.0                                                                              | 21.5                                                                               | 21.5                                                                                | 24.0                                                                                | 15.5                                                                                | 21.5                                                                                | 24.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 4.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.5                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   | 4.5                                                                               | 6.0                                                                               | 3.5                                                                                | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    |                                                                                   | 14.4                                                                              | 87.2                                                                              |                                                                                   | 6.6                                                                               | 75.3                                                                              | 95.3                                                                               | 8.5                                                                                 | 5.6                                                                                 | 9.0                                                                                 | 16.3                                                                                | 9.2                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.12                                                                              | 0.73                                                                              |                                                                                   | 0.06                                                                              | 0.63                                                                              | 0.79                                                                               | 0.07                                                                                | 0.05                                                                                | 0.08                                                                                | 0.14                                                                                | 0.08                                                                                |
| v/c Ratio               |                                                                                   | 0.64                                                                              | 0.36                                                                              |                                                                                   | 0.17                                                                              | 0.36                                                                              | 0.12                                                                               | 0.16                                                                                | 0.01                                                                                | 0.05                                                                                | 0.48                                                                                | 0.13                                                                                |
| Control Delay (s/veh)   |                                                                                   | 63.5                                                                              | 8.4                                                                               |                                                                                   | 55.7                                                                              | 13.1                                                                              | 1.1                                                                                | 48.6                                                                                | 55.0                                                                                | 0.4                                                                                 | 52.4                                                                                | 52.0                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 63.5                                                                              | 8.4                                                                               |                                                                                   | 55.7                                                                              | 13.1                                                                              | 1.1                                                                                | 48.6                                                                                | 55.0                                                                                | 0.4                                                                                 | 52.4                                                                                | 52.0                                                                                |
| LOS                     |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | B                                                                                 | A                                                                                  | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   | 12.5                                                                              |                                                                                    |                                                                                     | 34.5                                                                                |                                                                                     |                                                                                     | 35.4                                                                                |
| Approach LOS            |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| 90th %ile Green (s)     | 19.7                                                                              | 19.7                                                                              | 69.5                                                                              |                                                                                   | 7.9                                                                               | 57.7                                                                              | 16.7                                                                               | 8.3                                                                                 | 5.9                                                                                 | 7.9                                                                                 | 16.7                                                                                | 14.3                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 70th %ile Green (s)     | 16.5                                                                              | 16.5                                                                              | 77.8                                                                              |                                                                                   | 7.1                                                                               | 68.4                                                                              | 21.1                                                                               | 7.7                                                                                 | 0.0                                                                                 | 7.1                                                                                 | 21.1                                                                                | 7.4                                                                                 |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Hold                                                                               | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Hold                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 14.4                                                                              | 14.4                                                                              | 86.5                                                                              |                                                                                   | 6.5                                                                               | 78.6                                                                              | 13.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 6.5                                                                                 | 13.0                                                                                | 10.5                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 30th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 99.6                                                                              |                                                                                   | 0.0                                                                               | 82.9                                                                              | 10.9                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 10.9                                                                                | 8.4                                                                                 |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| 10th %ile Green (s)     | 9.0                                                                               | 9.0                                                                               | 102.5                                                                             |                                                                                   | 0.0                                                                               | 89.0                                                                              | 8.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 8.0                                                                                 | 5.5                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 101                                                                               | 121                                                                               |                                                                                   | 11                                                                                | 132                                                                               | 0                                                                                  | 14                                                                                  | 1                                                                                   | 0                                                                                   | 86                                                                                  | 15                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 157                                                                               | 236                                                                               |                                                                                   | 27                                                                                | 256                                                                               | 20                                                                                 | 30                                                                                  | 7                                                                                   | 0                                                                                   | 124                                                                                 | 38                                                                                  |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   | 1814                                                                              |                                                                                    |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 491                                                                                 |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   | 400                                                                               |                                                                                   | 200                                                                                | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 243                                                                               | 2493                                                                              |                                                                                   | 434                                                                               | 2228                                                                              | 1387                                                                               | 306                                                                                 | 400                                                                                 | 290                                                                                 | 339                                                                                 | 400                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.36                                                                              |                                                                                   | 0.07                                                                              | 0.36                                                                              | 0.11                                                                               | 0.06                                                                                | 0.00                                                                                | 0.03                                                                                | 0.34                                                                                | 0.05                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Permitted Phases        | 8     |
| Detector Phase          | 5     |
| Switch Phase            |       |
| Minimum Initial (s)     | 5.0   |
| Minimum Split (s)       | 9.5   |
| Total Split (s)         | 20.0  |
| Total Split (%)         | 16.7% |
| Maximum Green (s)       | 15.5  |
| Yellow Time (s)         | 3.5   |
| All-Red Time (s)        | 1.0   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 4.5   |
| Lead/Lag                | Lead  |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | None  |
| Walk Time (s)           |       |
| Flash Don't Walk (s)    |       |
| Pedestrian Calls (#/hr) |       |
| Act Effct Green (s)     | 29.6  |
| Actuated g/C Ratio      | 0.25  |
| v/c Ratio               | 0.18  |
| Control Delay (s/veh)   | 7.4   |
| Queue Delay             | 0.0   |
| Total Delay (s/veh)     | 7.4   |
| LOS                     | A     |
| Approach Delay (s/veh)  |       |
| Approach LOS            |       |
| 90th %ile Green (s)     | 19.7  |
| 90th %ile Term Code     | Gap   |
| 70th %ile Green (s)     | 16.5  |
| 70th %ile Term Code     | Gap   |
| 50th %ile Green (s)     | 14.4  |
| 50th %ile Term Code     | Gap   |
| 30th %ile Green (s)     | 12.2  |
| 30th %ile Term Code     | Gap   |
| 10th %ile Green (s)     | 9.0   |
| 10th %ile Term Code     | Gap   |
| Queue Length 50th (ft)  | 0     |
| Queue Length 95th (ft)  | 33    |
| Internal Link Dist (ft) |       |
| Turn Bay Length (ft)    | 165   |
| Base Capacity (vph)     | 471   |
| Starvation Cap Reductn  | 0     |
| Spillback Cap Reductn   | 0     |
| Storage Cap Reductn     | 0     |
| Reduced v/c Ratio       | 0.17  |
| Intersection Summary    |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 16.4

Intersection LOS: B

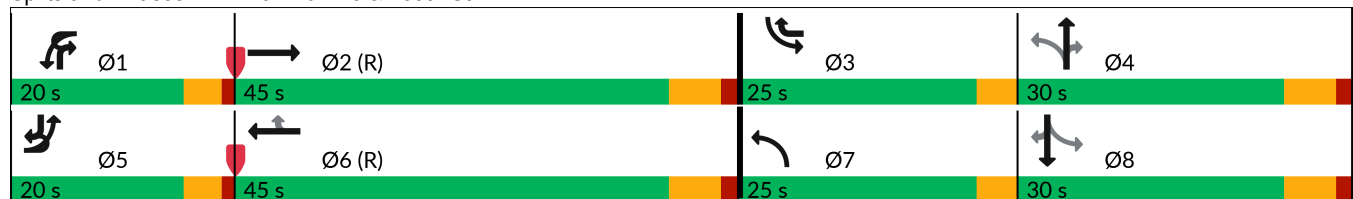
Intersection Capacity Utilization 52.0%

ICU Level of Service A

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
1: Costco RIRO Dwy & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

Intersection

Int Delay, s/veh 0.4

| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 858  | 34   | 0    | 787  | 0    | 48   |
| Future Vol, veh/h        | 858  | 34   | 0    | 787  | 0    | 48   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 89   | 89   | 89   | 89   | 89   | 89   |
| Heavy Vehicles, %        | 5    | 0    | 0    | 7    | 0    | 8    |
| Mvmt Flow                | 964  | 38   | 0    | 884  | 0    | 54   |

| Major/Minor          | Major1 | Major2 | Minor1     |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0      | 0      | - - - 501  |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |
| Critical Hdwy        | -      | -      | - - - 7.06 |
| Critical Hdwy Stg 1  | -      | -      | - - -      |
| Critical Hdwy Stg 2  | -      | -      | - - -      |
| Follow-up Hdwy       | -      | -      | - - - 3.38 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 500  |
| Stage 1              | -      | -      | 0 - 0      |
| Stage 2              | -      | -      | 0 - 0      |
| Platoon blocked, %   | -      | -      | -          |
| Mov Cap-1 Maneuver   | -      | -      | - - - 500  |
| Mov Cap-2 Maneuver   | -      | -      | - - -      |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 13.07 |
| HCM LOS           |    |    | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 500   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.108 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 13.1  | -   | -   | -   |
| HCM Lane LOS          | B     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.4   | -   | -   | -   |

Costco Wholesale, Orland Park, IL  
3: Ravinia Ave & North Costco Dwy

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

Intersection

Int Delay, s/veh 2.2

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 19 0 0 6 5 46

Future Vol, veh/h 19 0 0 6 5 46

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - 65 - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 74 74 74 74 74 74

Heavy Vehicles, % 10 0 0 17 20 2

Mvmt Flow 26 0 0 8 7 62

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 42 34 69 0 - 0

Stage 1 38 - - - - -

Stage 2 4 - - - - -

Critical Hdwy 7 6.9 4.1 - - -

Critical Hdwy Stg 1 6 - - - - -

Critical Hdwy Stg 2 6 - - - - -

Follow-up Hdwy 3.6 3.3 2.2 - - -

Pot Cap-1 Maneuver 941 1037 1545 - - -

Stage 1 957 - - - - -

Stage 2 995 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 941 1037 1545 - - -

Mov Cap-2 Maneuver 941 - - - - -

Stage 1 957 - - - - -

Stage 2 995 - - - - -

Approach EB NB SB

HCM Ctrl Dly, s/v 8.93 0 0

HCM LOS A

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1545 - 941 - -

HCM Lane V/C Ratio - - 0.027 - -

HCM Ctrl Dly (s/v) 0 - 8.9 - -

HCM Lane LOS A - A - -

HCM 95th %tile Q(veh) 0 - 0.1 - -

Costco Wholesale, Orland Park, IL  
4: Ravinia Ave & South Costco Dwy

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.3  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↔    |      | ↔    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 5    | 1    | 0    | 1    | 0    | 5    |
| Future Vol, veh/h        | 5    | 1    | 0    | 1    | 0    | 5    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 110  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 75   | 75   | 75   | 75   | 75   | 75   |
| Heavy Vehicles, %        | 20   | 0    | 0    | 0    | 0    | 20   |
| Mvmt Flow                | 7    | 1    | 0    | 1    | 0    | 7    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 4      | 3      | 7      | 0 | - | 0 |
| Stage 1              | 3      | -      | -      | - | - | - |
| Stage 2              | 1      | -      | -      | - | - | - |
| Critical Hdwy        | 7.2    | 6.9    | 4.1    | - | - | - |
| Critical Hdwy Stg 1  | 6.2    | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 6.2    | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.7    | 3.3    | 2.2    | - | - | - |
| Pot Cap-1 Maneuver   | 967    | 1086   | 1627   | - | - | - |
| Stage 1              | 969    | -      | -      | - | - | - |
| Stage 2              | 972    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 967    | 1086   | 1627   | - | - | - |
| Mov Cap-2 Maneuver   | 967    | -      | -      | - | - | - |
| Stage 1              | 969    | -      | -      | - | - | - |
| Stage 2              | 972    | -      | -      | - | - | - |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 8.68 | 0  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1627 | -   | 985   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | 0.008 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 8.7   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | 0     | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

Existing Traffic Volumes  
Timing Plan: Weekday AM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1412                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1004                                                                                | 31                                                                                  |
| Future Vol, veh/h        | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1412                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1004                                                                                | 31                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94   | 94   | 94                                                                                | 94                                                                                | 94                                                                                  | 94   | 94                                                                                  | 94                                                                                  | 94                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 6                                                                                 | 0                                                                                   | 0    | 2                                                                                   | 9                                                                                   | 3                                                                                   |
| Mvmt Flow                | 20                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 15   | 4    | 27                                                                                | 1502                                                                              | 11                                                                                  | 2    | 44                                                                                  | 1068                                                                                | 33                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 1839   | 2751 | 551    | 2088 | 2762   | 756 | 804    | 1101 | 0 | 0 | 1104 | 1513 | 0 | 0 |
| Stage 1              | 1176   | 1176 | -      | 1569 | 1569   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 663    | 1574 | -      | 519  | 1193   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 82     | 20   | 414    | 57   | 20     | 304 | 573    | 355  | - | - | 392  | 220  | - | - |
| Stage 1              | 152    | 267  | -      | 80   | 173    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 384    | 172  | -      | 469  | 263    | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | 57     | 15   | 414    | 42   | 14     | 304 | 375    | 375  | - | - | 224  | 224  | - | - |
| Mov Cap-2 Maneuver   | 98     | 73   | -      | 65   | 83     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | 121    | 213  | -      | 74   | 159    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 335    | 158  | -      | 370  | 209    | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB    |  | WB    |  | NB   |  | SB |  |
|-------------------|-------|--|-------|--|------|--|----|--|
| HCM Ctrl Dly, s/v | 46.02 |  | 17.44 |  | 0.31 |  | 1  |  |
| HCM LOS           | E     |  | C     |  |      |  |    |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 375   | -   | -   | 98    | -     | 414   | -     | 304   | 224   | -   | -   |
| HCM Lane V/C Ratio    | 0.082 | -   | -   | 0.207 | -     | 0.008 | -     | 0.049 | 0.204 | -   | -   |
| HCM Ctrl Dly (s/v)    | 15.5  | -   | -   | 51.1  | 0     | 13.8  | 0     | 17.4  | 25.2  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | B     | A     | C     | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | -   | 0.7   | -     | 0     | -     | 0.2   | 0.7   | -   | -   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 6                                                                                 | 170                                                                               | 898                                                                               | 15                                                                                | 8                                                                                 | 284                                                                               | 932                                                                                | 177                                                                                 | 115                                                                                 | 70                                                                                  | 240                                                                                 | 180                                                                                 |
| Future Volume (vph)        | 6                                                                                 | 170                                                                               | 898                                                                               | 15                                                                                | 8                                                                                 | 284                                                                               | 932                                                                                | 177                                                                                 | 115                                                                                 | 70                                                                                  | 240                                                                                 | 180                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1788                                                                              | 3529                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1770                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.681                                                                               |                                                                                     |                                                                                     | 0.507                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1788                                                                              | 3529                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1269                                                                                | 2000                                                                                | 1615                                                                                | 954                                                                                 |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 173                                                                                 |                                                                                     |                                                                                     | 210                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 7%                                                                                | 0%                                                                                | 1%                                                                                | 3%                                                                                 | 1%                                                                                  | 2%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  |
| Adj. Flow (vph)            | 6                                                                                 | 173                                                                               | 916                                                                               | 15                                                                                | 8                                                                                 | 290                                                                               | 951                                                                                | 181                                                                                 | 117                                                                                 | 71                                                                                  | 245                                                                                 | 184                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 179                                                                               | 931                                                                               | 0                                                                                 | 0                                                                                 | 298                                                                               | 951                                                                                | 181                                                                                 | 117                                                                                 | 71                                                                                  | 245                                                                                 | 184                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 117   | 169   |
| Future Volume (vph)        | 117   | 169   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 172   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.98  | 0.98  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 119   | 172   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 119   | 172   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 18.2                                                                              | 66.6                                                                              |                                                                                   |                                                                                   | 16.6                                                                              | 65.0                                                                               | 90.3                                                                                | 23.0                                                                                | 10.0                                                                                | 30.1                                                                                | 32.9                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.51                                                                              |                                                                                   |                                                                                   | 0.13                                                                              | 0.50                                                                               | 0.69                                                                                | 0.18                                                                                | 0.08                                                                                | 0.23                                                                                | 0.25                                                                                |
| v/c Ratio               |                                                                                   | 0.72                                                                              | 0.52                                                                              |                                                                                   |                                                                                   | 0.68                                                                              | 0.52                                                                               | 0.16                                                                                | 0.43                                                                                | 0.46                                                                                | 0.46                                                                                | 0.51                                                                                |
| Control Delay (s/veh)   |                                                                                   | 68.9                                                                              | 24.1                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.3                                                                               | 2.0                                                                                 | 43.4                                                                                | 66.5                                                                                | 10.1                                                                                | 44.1                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 68.9                                                                              | 24.1                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.3                                                                               | 2.0                                                                                 | 43.4                                                                                | 66.5                                                                                | 10.1                                                                                | 44.1                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | E                                                                                   | B                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 31.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.9                                                                               |                                                                                     |                                                                                     | 28.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 24.5                                                                              | 24.5                                                                              | 52.3                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 49.3                                                                               | 22.5                                                                                | 16.0                                                                                | 13.7                                                                                | 21.5                                                                                | 22.5                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Max                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 20.8                                                                              | 20.8                                                                              | 61.0                                                                              |                                                                                   | 18.2                                                                              | 18.2                                                                              | 58.4                                                                               | 19.3                                                                                | 13.9                                                                                | 11.5                                                                                | 18.2                                                                                | 19.3                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 18.2                                                                              | 18.2                                                                              | 66.5                                                                              |                                                                                   | 16.4                                                                              | 16.4                                                                              | 64.7                                                                               | 17.1                                                                                | 12.3                                                                                | 10.0                                                                                | 16.4                                                                                | 17.1                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.6                                                                              | 15.6                                                                              | 72.1                                                                              |                                                                                   | 14.6                                                                              | 14.6                                                                              | 71.1                                                                               | 14.8                                                                                | 10.7                                                                                | 8.5                                                                                 | 14.6                                                                                | 14.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.8                                                                              | 11.8                                                                              | 81.0                                                                              |                                                                                   | 12.1                                                                              | 12.1                                                                              | 81.3                                                                               | 22.9                                                                                | 8.6                                                                                 | 0.0                                                                                 | 12.1                                                                                | 22.9                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Hold                                                                                | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 146                                                                               | 265                                                                               |                                                                                   |                                                                                   | 125                                                                               | 277                                                                                | 2                                                                                   | 79                                                                                  | 58                                                                                  | 23                                                                                  | 130                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 216                                                                               | 405                                                                               |                                                                                   |                                                                                   | 167                                                                               | 425                                                                                | 32                                                                                  | 121                                                                                 | 107                                                                                 | 85                                                                                  | 181                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 303                                                                               | 1807                                                                              |                                                                                   |                                                                                   | 573                                                                               | 1843                                                                               | 1199                                                                                | 399                                                                                 | 492                                                                                 | 588                                                                                 | 385                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.59                                                                              | 0.52                                                                              |                                                                                   |                                                                                   | 0.52                                                                              | 0.52                                                                               | 0.15                                                                                | 0.29                                                                                | 0.14                                                                                | 0.42                                                                                | 0.48                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 14.6  | 38.7  |
| Actuated g/C Ratio      | 0.11  | 0.30  |
| v/c Ratio               | 0.53  | 0.29  |
| Control Delay (s/veh)   | 62.3  | 5.1   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 62.3  | 5.1   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 34.5  |       |
| Approach LOS            | C     |       |
| 90th %ile Green (s)     | 20.2  | 24.5  |
| 90th %ile Term Code     | Hold  | Gap   |
| 70th %ile Green (s)     | 16.9  | 20.8  |
| 70th %ile Term Code     | Hold  | Gap   |
| 50th %ile Green (s)     | 14.8  | 18.2  |
| 50th %ile Term Code     | Hold  | Gap   |
| 30th %ile Green (s)     | 12.6  | 15.6  |
| 30th %ile Term Code     | Hold  | Gap   |
| 10th %ile Green (s)     | 8.3   | 11.8  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 96    | 0     |
| Queue Length 95th (ft)  | 153   | 46    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 640   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.24  | 0.27  |
| Intersection Summary    |       |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay (s/veh): 30.8

Intersection LOS: C

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
1: Costco RIRO Dwy & 159th St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.1  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 932  | 138  | 0    | 1216 | 0    | 157  |
| Future Vol, veh/h        | 932  | 138  | 0    | 1216 | 0    | 157  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 3    | 0    | 1    |
| Mvmt Flow                | 971  | 144  | 0    | 1267 | 0    | 164  |

| Major/Minor          | Major1 | Major2 | Minor1  |
|----------------------|--------|--------|---------|
| Conflicting Flow All | 0      | 0      | - 557   |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |
| Critical Hdwy        | -      | -      | - 6.92  |
| Critical Hdwy Stg 1  | -      | -      | - -     |
| Critical Hdwy Stg 2  | -      | -      | - -     |
| Follow-up Hdwy       | -      | -      | - 3.31  |
| Pot Cap-1 Maneuver   | -      | - 0    | - 0 476 |
| Stage 1              | -      | - 0    | - 0 -   |
| Stage 2              | -      | - 0    | - 0 -   |
| Platoon blocked, %   | -      | -      | -       |
| Mov Cap-1 Maneuver   | -      | -      | - 476   |
| Mov Cap-2 Maneuver   | -      | -      | - -     |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 16.46 |
| HCM LOS           |    |    | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 476   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.343 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 16.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 1.5   | -   | -   | -   |

Costco Wholesale, Orland Park, IL  
3: Ravinia Ave & North Costco Dwy

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

Intersection

Int Delay, s/veh 6.6

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 333 1 1 83 74 330

Future Vol, veh/h 333 1 1 83 74 330

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - 65 - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 94 94 94 94 94 94

Heavy Vehicles, % 1 0 0 2 3 0

Mvmt Flow 354 1 1 88 79 351

Major/Minor Minor2 Major1 Major2

Conflicting Flow All 301 215 430 0 - 0

Stage 1 254 - - - - -

Stage 2 46 - - - - -

Critical Hdwy 6.82 6.9 4.1 - - -

Critical Hdwy Stg 1 5.82 - - - - -

Critical Hdwy Stg 2 5.82 - - - - -

Follow-up Hdwy 3.51 3.3 2.2 - - -

Pot Cap-1 Maneuver 670 796 1140 - - -

Stage 1 768 - - - - -

Stage 2 973 - - - - -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 669 796 1140 - - -

Mov Cap-2 Maneuver 669 - - - - -

Stage 1 767 - - - - -

Stage 2 973 - - - - -

Approach EB NB SB

HCM Ctrl Dly, s/v 16.3 0.1 0

HCM LOS C

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 1140 - 669 - -

HCM Lane V/C Ratio 0.001 - 0.531 - -

HCM Ctrl Dly (s/v) 8.2 - 16.3 - -

HCM Lane LOS A - C - -

HCM 95th %tile Q(veh) 0 - 3.1 - -

Costco Wholesale, Orland Park, IL  
4: Ravinia Ave & South Costco Dwy

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 5                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 83                                                                                | 1    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 69                                                                                |
| Future Vol, veh/h        | 83                                                                                | 1    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 69                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 110                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 84                                                                                | 84   | 84                                                                                | 84                                                                                | 84                                                                                | 84                                                                                |
| Heavy Vehicles, %        | 2                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |
| Mvmt Flow                | 99                                                                                | 1    | 1                                                                                 | 1                                                                                 | 1                                                                                 | 82                                                                                |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 45     | 42     | 83     |
| Stage 1              | 42     | -      | -      |
| Stage 2              | 3      | -      | -      |
| Critical Hdwy        | 6.84   | 6.9    | 4.1    |
| Critical Hdwy Stg 1  | 5.84   | -      | -      |
| Critical Hdwy Stg 2  | 5.84   | -      | -      |
| Follow-up Hdwy       | 3.52   | 3.3    | 2.2    |
| Pot Cap-1 Maneuver   | 959    | 1027   | 1526   |
| Stage 1              | 975    | -      | -      |
| Stage 2              | 1019   | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | 959    | 1027   | 1526   |
| Mov Cap-2 Maneuver   | 959    | -      | -      |
| Stage 1              | 974    | -      | -      |
| Stage 2              | 1019   | -      | -      |

| Approach          | EB   | NB   | SB |
|-------------------|------|------|----|
| HCM Ctrl Dly, s/v | 9.19 | 3.68 | 0  |
| HCM LOS           | A    |      |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1526  | -   | 959   | -   | -   |
| HCM Lane V/C Ratio    | 0.001 | -   | 0.104 | -   | -   |
| HCM Ctrl Dly (s/v)    | 7.4   | -   | 9.2   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.3   | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

Existing Traffic Volumes  
Timing Plan: Weekday PM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 9.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1718                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1819                                                                                | 67                                                                                  |
| Future Vol, veh/h        | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1718                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1819                                                                                | 67                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96   | 96   | 96                                                                                | 96                                                                                | 96                                                                                  | 96   | 96                                                                                  | 96                                                                                  | 96                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 3                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Mvmt Flow                | 34                                                                                | 0                                                                                 | 16                                                                                | 7                                                                                 | 0                                                                                 | 51   | 2    | 41                                                                                | 1790                                                                              | 24                                                                                  | 6    | 61                                                                                  | 1895                                                                                | 70                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2866   | 3964 | 982    | 2780 | 3987   | 907 | 1434   | 1965 | 0 | 0 | 1324 | 1814 | 0 | 0 |
| Stage 1              | 2065   | 2065 | -      | 1887 | 1887   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 801    | 1899 | -      | 893  | 2100   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.3  | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.1  | - | - |
| Pot Cap-1 Maneuver   | ~ 18   | 3    | 216    | 21   | 3      | 242 | 257    | 134  | - | - | 296  | 159  | - | - |
| Stage 1              | 35     | 98   | -      | 48   | 120    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 316    | 119  | -      | 277  | 94     | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 6    | 1    | 216    | 8    | 1      | 242 | 136    | 136  | - | - | 164  | 164  | - | - |
| Mov Cap-2 Maneuver   | ~ 17   | 11   | -      | 25   | 10     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | ~ 21   | 57   | -      | 33   | 83     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 171    | 82   | -      | 151  | 55     | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB        | WB    | NB   | SB   |
|-------------------|-----------|-------|------|------|
| HCM Ctrl Dly, s/v | \$ 648.04 | 45.38 | 0.99 | 1.39 |
| HCM LOS           | F         | E     |      |      |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1    | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|----------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 136   | -   | -   | 17       | -     | 216   | 25    | 242   | 164   | -   | -   |
| HCM Lane V/C Ratio    | 0.313 | -   | -   | 2.006    | -     | 0.072 | 0.288 | 0.211 | 0.413 | -   | -   |
| HCM Ctrl Dly (s/v)    | 43    | -   | -   | \$ 932.2 | 0     | 23    | 196.7 | 23.8  | 41.7  | -   | -   |
| HCM Lane LOS          | E     | -   | -   | F        | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 1.2   | -   | -   | 4.8      | -     | 0.2   | 0.9   | 0.8   | 1.8   | -   | -   |

| Notes                      |  |                                |  |  |  |  |  |  |  |  |  |
|----------------------------|--|--------------------------------|--|--|--|--|--|--|--|--|--|
| ~: Volume exceeds capacity |  | \$: Delay exceeds 300s         |  |  |  |  |  |  |  |  |  |
| +: Computation Not Defined |  | *: All major volume in platoon |  |  |  |  |  |  |  |  |  |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 19                                                                                | 156                                                                               | 844                                                                               | 13                                                                                | 2                                                                                 | 405                                                                               | 781                                                                                | 172                                                                                 | 137                                                                                 | 88                                                                                  | 281                                                                                 | 110                                                                                 |
| Future Volume (vph)        | 19                                                                                | 156                                                                               | 844                                                                               | 13                                                                                | 2                                                                                 | 405                                                                               | 781                                                                                | 172                                                                                 | 137                                                                                 | 88                                                                                  | 281                                                                                 | 110                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1789                                                                              | 3533                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 1805                                                                                | 1980                                                                                | 1615                                                                                | 1752                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.403                                                                               |                                                                                     |                                                                                     | 0.696                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1789                                                                              | 3533                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 766                                                                                 | 1980                                                                                | 1615                                                                                | 1284                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 183                                                                                 |                                                                                     |                                                                                     | 295                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 2%                                                                                 | 1%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)            | 20                                                                                | 166                                                                               | 898                                                                               | 14                                                                                | 2                                                                                 | 431                                                                               | 831                                                                                | 183                                                                                 | 146                                                                                 | 94                                                                                  | 299                                                                                 | 117                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 186                                                                               | 912                                                                               | 0                                                                                 | 0                                                                                 | 433                                                                               | 831                                                                                | 183                                                                                 | 146                                                                                 | 94                                                                                  | 299                                                                                 | 117                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 148   | 138   |
| Future Volume (vph)        | 148   | 138   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 147   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.94  | 0.94  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 157   | 147   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 157   | 147   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 18.7                                                                              | 58.3                                                                              |                                                                                   |                                                                                   | 22.0                                                                              | 61.6                                                                               | 80.0                                                                                | 34.1                                                                                | 17.4                                                                                | 45.3                                                                                | 30.4                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.45                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 0.47                                                                               | 0.62                                                                                | 0.26                                                                                | 0.13                                                                                | 0.35                                                                                | 0.23                                                                                |
| v/c Ratio               |                                                                                   | 0.72                                                                              | 0.58                                                                              |                                                                                   |                                                                                   | 0.74                                                                              | 0.47                                                                               | 0.17                                                                                | 0.46                                                                                | 0.36                                                                                | 0.40                                                                                | 0.34                                                                                |
| Control Delay (s/veh)   |                                                                                   | 68.8                                                                              | 30.7                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.5                                                                               | 2.4                                                                                 | 40.5                                                                                | 53.7                                                                                | 4.3                                                                                 | 37.6                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 68.8                                                                              | 30.7                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.5                                                                               | 2.4                                                                                 | 40.5                                                                                | 53.7                                                                                | 4.3                                                                                 | 37.6                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 37.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.2                                                                               |                                                                                     |                                                                                     | 22.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 25.1                                                                              | 25.1                                                                              | 42.3                                                                              |                                                                                   | 27.9                                                                              | 27.9                                                                              | 45.1                                                                               | 16.3                                                                                | 18.8                                                                                | 23.5                                                                                | 27.9                                                                                | 16.3                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 21.4                                                                              | 21.4                                                                              | 51.9                                                                              |                                                                                   | 24.2                                                                              | 24.2                                                                              | 54.7                                                                               | 14.1                                                                                | 16.1                                                                                | 19.8                                                                                | 24.2                                                                                | 14.1                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 18.7                                                                              | 18.7                                                                              | 58.0                                                                              |                                                                                   | 22.2                                                                              | 22.2                                                                              | 61.5                                                                               | 12.5                                                                                | 14.3                                                                                | 17.3                                                                                | 22.2                                                                                | 12.5                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 16.0                                                                              | 16.0                                                                              | 65.0                                                                              |                                                                                   | 19.3                                                                              | 19.3                                                                              | 68.3                                                                               | 10.8                                                                                | 12.4                                                                                | 14.9                                                                                | 19.3                                                                                | 10.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 74.3                                                                              |                                                                                   | 16.2                                                                              | 16.2                                                                              | 78.3                                                                               | 8.2                                                                                 | 9.4                                                                                 | 11.3                                                                                | 16.2                                                                                | 8.2                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 152                                                                               | 296                                                                               |                                                                                   |                                                                                   | 180                                                                               | 244                                                                                | 0                                                                                   | 97                                                                                  | 73                                                                                  | 2                                                                                   | 77                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 222                                                                               | 449                                                                               |                                                                                   |                                                                                   | 225                                                                               | 380                                                                                | 36                                                                                  | 140                                                                                 | 122                                                                                 | 54                                                                                  | 116                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 305                                                                               | 1585                                                                              |                                                                                   |                                                                                   | 625                                                                               | 1764                                                                               | 1164                                                                                | 390                                                                                 | 487                                                                                 | 770                                                                                 | 434                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.61                                                                              | 0.58                                                                              |                                                                                   |                                                                                   | 0.69                                                                              | 0.47                                                                               | 0.16                                                                                | 0.37                                                                                | 0.19                                                                                | 0.39                                                                                | 0.27                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 15.5  | 40.2  |
| Actuated g/C Ratio      | 0.12  | 0.31  |
| v/c Ratio               | 0.66  | 0.25  |
| Control Delay (s/veh)   | 67.3  | 5.0   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 67.3  | 5.0   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 37.3  |       |
| Approach LOS            | D     |       |
| 90th %ile Green (s)     | 21.0  | 25.1  |
| 90th %ile Term Code     | Gap   | Gap   |
| 70th %ile Green (s)     | 17.8  | 21.4  |
| 70th %ile Term Code     | Gap   | Gap   |
| 50th %ile Green (s)     | 15.5  | 18.7  |
| 50th %ile Term Code     | Gap   | Gap   |
| 30th %ile Green (s)     | 13.3  | 16.0  |
| 30th %ile Term Code     | Gap   | Gap   |
| 10th %ile Green (s)     | 10.1  | 12.2  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 128   | 0     |
| Queue Length 95th (ft)  | 194   | 42    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 635   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.32  | 0.23  |
| Intersection Summary    |       |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday MIDDAY Peak

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 33.3

Intersection LOS: C

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
1: Costco RIRO Dwy & 159th St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.9  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 810  | 142  | 0    | 1056 | 0    | 222  |
| Future Vol, veh/h        | 810  | 142  | 0    | 1056 | 0    | 222  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 91   | 91   | 91   | 91   | 91   | 91   |
| Heavy Vehicles, %        | 2    | 1    | 0    | 2    | 0    | 1    |
| Mvmt Flow                | 890  | 156  | 0    | 1160 | 0    | 244  |

| Major/Minor          | Major1 | Major2 | Minor1  |
|----------------------|--------|--------|---------|
| Conflicting Flow All | 0      | 0      | - 523   |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |
| Critical Hdwy        | -      | -      | - 6.92  |
| Critical Hdwy Stg 1  | -      | -      | - -     |
| Critical Hdwy Stg 2  | -      | -      | - -     |
| Follow-up Hdwy       | -      | -      | - 3.31  |
| Pot Cap-1 Maneuver   | -      | - 0    | - 0 501 |
| Stage 1              | -      | - 0    | - 0 -   |
| Stage 2              | -      | - 0    | - 0 -   |
| Platoon blocked, %   | -      | -      | -       |
| Mov Cap-1 Maneuver   | -      | -      | - 501   |
| Mov Cap-2 Maneuver   | -      | -      | - -     |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |

| Approach          | EB | WB | NB   |
|-------------------|----|----|------|
| HCM Ctrl Dly, s/v | 0  | 0  | 18.8 |
| HCM LOS           |    |    | C    |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 501   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.487 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 18.8  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 2.6   | -   | -   | -   |

Costco Wholesale, Orland Park, IL  
3: Ravinia Ave & North Costco Dwy

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 12.1                                                                              |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 389                                                                               | 1    | 0                                                                                 | 114                                                                               | 123                                                                               | 432                                                                               |
| Future Vol, veh/h        | 389                                                                               | 1    | 0                                                                                 | 114                                                                               | 123                                                                               | 432                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 65                                                                                | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 89                                                                                | 89   | 89                                                                                | 89                                                                                | 89                                                                                | 89                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 |
| Mvmt Flow                | 437                                                                               | 1    | 0                                                                                 | 128                                                                               | 138                                                                               | 485                                                                               |

| Major/Minor          | Minor2 | Major1 |     | Major2 |   |   |
|----------------------|--------|--------|-----|--------|---|---|
| Conflicting Flow All | 445    | 312    | 624 | 0      | - | 0 |
| Stage 1              | 381    | -      | -   | -      | - | - |
| Stage 2              | 64     | -      | -   | -      | - | - |
| Critical Hdwy        | 6.8    | 6.9    | 4.1 | -      | - | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -   | -      | - | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -   | -      | - | - |
| Follow-up Hdwy       | 3.5    | 3.3    | 2.2 | -      | - | - |
| Pot Cap-1 Maneuver   | 547    | 690    | 967 | -      | - | - |
| Stage 1              | 666    | -      | -   | -      | - | - |
| Stage 2              | 957    | -      | -   | -      | - | - |
| Platoon blocked, %   |        |        |     | -      | - | - |
| Mov Cap-1 Maneuver   | 547    | 690    | 967 | -      | - | - |
| Mov Cap-2 Maneuver   | 547    | -      | -   | -      | - | - |
| Stage 1              | 666    | -      | -   | -      | - | - |
| Stage 2              | 957    | -      | -   | -      | - | - |

| Approach          | EB    | NB | SB |
|-------------------|-------|----|----|
| HCM Ctrl Dly, s/v | 32.97 | 0  | 0  |
| HCM LOS           | D     |    |    |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-----|-----|-------|-----|-----|
| Capacity (veh/h)      | 967 | -   | 547   | -   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.801 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0   | -   | 33    | -   | -   |
| HCM Lane LOS          | A   | -   | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0   | -   | 7.7   | -   | -   |

Costco Wholesale, Orland Park, IL  
4: Ravinia Ave & South Costco Dwy

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.5                                                                               |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 109                                                                               | 1    | 0                                                                                 | 2                                                                                 | 1                                                                                 | 122                                                                               |
| Future Vol, veh/h        | 109                                                                               | 1    | 0                                                                                 | 2                                                                                 | 1                                                                                 | 122                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 110                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 80                                                                                | 80   | 80                                                                                | 80                                                                                | 80                                                                                | 80                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Mvmt Flow                | 136                                                                               | 1    | 0                                                                                 | 3                                                                                 | 1                                                                                 | 153                                                                               |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 79     | 77     | 154  | 0      | - | 0 |
| Stage 1              | 78     | -      | -    | -      | - | - |
| Stage 2              | 1      | -      | -    | -      | - | - |
| Critical Hdwy        | 6.8    | 6.9    | 4.1  | -      | - | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.5    | 3.3    | 2.2  | -      | - | - |
| Pot Cap-1 Maneuver   | 921    | 975    | 1439 | -      | - | - |
| Stage 1              | 942    | -      | -    | -      | - | - |
| Stage 2              | 1027   | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      | -      | - | - |
| Mov Cap-1 Maneuver   | 921    | 975    | 1439 | -      | - | - |
| Mov Cap-2 Maneuver   | 921    | -      | -    | -      | - | - |
| Stage 1              | 942    | -      | -    | -      | - | - |
| Stage 2              | 1027   | -      | -    | -      | - | - |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 9.59 | 0  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1439 | -   | 921   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | 0.149 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 9.6   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | 0.5   | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

Existing Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1789                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1542                                                                                | 29                                                                                  |
| Future Vol, veh/h        | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1789                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1542                                                                                | 29                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98   | 98   | 98                                                                                | 98                                                                                | 98                                                                                  | 98   | 98                                                                                  | 98                                                                                  | 98                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 1                                                                                 | 6                                                                                   | 0    | 2                                                                                   | 1                                                                                   | 0                                                                                   |
| Mvmt Flow                | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 35   | 7    | 27                                                                                | 1826                                                                              | 17                                                                                  | 13   | 40                                                                                  | 1573                                                                                | 30                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2492   | 3605 | 802    | 2637 | 3611   | 921 | 1170   | 1603 | 0 | 0 | 1345 | 1843 | 0 | 0 |
| Stage 1              | 1694   | 1694 | -      | 1902 | 1902   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 798    | 1910 | -      | 736  | 1709   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 32     | 5    | 284    | 26   | 5      | 237 | 360    | 202  | - | - | 288  | 150  | - | - |
| Stage 1              | 66     | 150  | -      | 46   | 118    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 318    | 117  | -      | 347  | 148    | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 16   | 3    | 284    | 14   | 3      | 237 | 221    | 221  | - | - | 166  | 166  | - | - |
| Mov Cap-2 Maneuver   | 37     | 30   | -      | 33   | 38     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | 45     | 102  | -      | 39   | 100    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 230    | 99   | -      | 223  | 101    | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB    |  | WB    |  | NB   |  | SB   |  |
|-------------------|-------|--|-------|--|------|--|------|--|
| HCM Ctrl Dly, s/v | 94.45 |  | 46.33 |  | 0.43 |  | 1.17 |  |
| HCM LOS           | F     |  | E     |  |      |  |      |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 221   | -   | -   | 37    | -     | 284   | 33    | 237   | 166   | -   | -   |
| HCM Lane V/C Ratio    | 0.152 | -   | -   | 0.445 | -     | 0.054 | 0.247 | 0.146 | 0.319 | -   | -   |
| HCM Ctrl Dly (s/v)    | 24.2  | -   | -   | 165.8 | 0     | 18.4  | 146.5 | 22.8  | 36.5  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | -   | 1.5   | -     | 0.2   | 0.8   | 0.5   | 1.3   | -   | -   |

| Notes                      |  |  |                                |  |  |  |  |  |  |  |  |
|----------------------------|--|--|--------------------------------|--|--|--|--|--|--|--|--|
| ~: Volume exceeds capacity |  |  | \$: Delay exceeds 300s         |  |  |  |  |  |  |  |  |
| +: Computation Not Defined |  |  | *: All major volume in platoon |  |  |  |  |  |  |  |  |



## **APPENDIX E**

### **CAPACITY ANALYSIS WORKSHEETS 2025 BACKGROUND**

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday AM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |  |  |   |  |  |  |  |  |
| Traffic Volume (vph)       | 3                                                                                 | 117                                                                               | 785                                                                               | 7                                                                                 | 27                                                                                | 703                                                                               | 141                                                                                 | 16                                                                                  | 1                                                                                   | 7                                                                                   | 102                                                                                 | 18                                                                                  |
| Future Volume (vph)        | 3                                                                                 | 117                                                                               | 785                                                                               | 7                                                                                 | 27                                                                                | 703                                                                               | 141                                                                                 | 16                                                                                  | 1                                                                                   | 7                                                                                   | 102                                                                                 | 18                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                              | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                | 2000                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 | 400                                                                               |                                                                                   | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |                                                                                     |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   | 290                                                                               |                                                                                   |                                                                                     | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)          | 0                                                                                 | 1770                                                                              | 3432                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 1597                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                | 2000                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.851                                                                               |                                                                                     |
| Satd. Flow (perm)          | 0                                                                                 | 1770                                                                              | 3432                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 1681                                                                                | 2000                                                                                | 1615                                                                                | 1601                                                                                | 2000                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   | 160                                                                                 |                                                                                     |                                                                                     | 59                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   | 1894                                                                              |                                                                                     |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     | 571                                                                                 |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     | 13.0                                                                                |
| Peak Hour Factor           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 2%                                                                                | 5%                                                                                | 14%                                                                               | 4%                                                                                | 7%                                                                                | 2%                                                                                  | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 3                                                                                 | 133                                                                               | 892                                                                               | 8                                                                                 | 31                                                                                | 799                                                                               | 160                                                                                 | 18                                                                                  | 1                                                                                   | 8                                                                                   | 116                                                                                 | 20                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 136                                                                               | 900                                                                               | 0                                                                                 | 31                                                                                | 799                                                                               | 160                                                                                 | 18                                                                                  | 1                                                                                   | 8                                                                                   | 116                                                                                 | 20                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                              | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   | 8                                                                                   |

|                            |       |
|----------------------------|-------|
| Lane Group                 | SBR   |
| Lane Configurations        | ↗     |
| Traffic Volume (vph)       | 72    |
| Future Volume (vph)        | 72    |
| Ideal Flow (vphpl)         | 1900  |
| Storage Length (ft)        | 165   |
| Storage Lanes              | 1     |
| Taper Length (ft)          |       |
| Lane Util. Factor          | 1.00  |
| Frt                        | 0.850 |
| Flt Protected              |       |
| Satd. Flow (prot)          | 1553  |
| Flt Permitted              |       |
| Satd. Flow (perm)          | 1553  |
| Right Turn on Red          | Yes   |
| Satd. Flow (RTOR)          | 82    |
| Link Speed (mph)           |       |
| Link Distance (ft)         |       |
| Travel Time (s)            |       |
| Peak Hour Factor           | 0.88  |
| Heavy Vehicles (%)         | 4%    |
| Adj. Flow (vph)            | 82    |
| Shared Lane Traffic (%)    |       |
| Lane Group Flow (vph)      | 82    |
| Enter Blocked Intersection | No    |
| Lane Alignment             | Right |
| Median Width(ft)           |       |
| Link Offset(ft)            |       |
| Crosswalk Width(ft)        |       |
| Two way Left Turn Lane     |       |
| Headway Factor             | 1.00  |
| Turning Speed (mph)        | 9     |
| Number of Detectors        | 1     |
| Detector Template          | Right |
| Leading Detector (ft)      | 20    |
| Trailing Detector (ft)     | 0     |
| Detector 1 Position(ft)    | 0     |
| Detector 1 Size(ft)        | 20    |
| Detector 1 Type            | Cl+Ex |
| Detector 1 Channel         |       |
| Detector 1 Extend (s)      | 0.0   |
| Detector 1 Queue (s)       | 0.0   |
| Detector 1 Delay (s)       | 0.0   |
| Detector 2 Position(ft)    |       |
| Detector 2 Size(ft)        |       |
| Detector 2 Type            |       |
| Detector 2 Channel         |       |
| Detector 2 Extend (s)      |       |
| Turn Type                  | pm+ov |
| Protected Phases           | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                  | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 24.5                                                                              | 9.5                                                                                | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                |
| Total Split (s)         | 20.0                                                                              | 20.0                                                                              | 45.0                                                                              |                                                                                   | 20.0                                                                              | 45.0                                                                              | 25.0                                                                               | 25.0                                                                                | 30.0                                                                                | 20.0                                                                                | 25.0                                                                                | 30.0                                                                                |
| Total Split (%)         | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                             |                                                                                   | 16.7%                                                                             | 37.5%                                                                             | 20.8%                                                                              | 20.8%                                                                               | 25.0%                                                                               | 16.7%                                                                               | 20.8%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 15.5                                                                              | 15.5                                                                              | 39.0                                                                              |                                                                                   | 15.5                                                                              | 39.0                                                                              | 21.5                                                                               | 21.5                                                                                | 24.0                                                                                | 15.5                                                                                | 21.5                                                                                | 24.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 4.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.5                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   | 4.5                                                                               | 6.0                                                                               | 3.5                                                                                | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    |                                                                                   | 14.4                                                                              | 87.1                                                                              |                                                                                   | 6.6                                                                               | 75.2                                                                              | 95.2                                                                               | 8.5                                                                                 | 5.6                                                                                 | 9.0                                                                                 | 16.4                                                                                | 9.3                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.12                                                                              | 0.73                                                                              |                                                                                   | 0.06                                                                              | 0.63                                                                              | 0.79                                                                               | 0.07                                                                                | 0.05                                                                                | 0.08                                                                                | 0.14                                                                                | 0.08                                                                                |
| v/c Ratio               |                                                                                   | 0.64                                                                              | 0.36                                                                              |                                                                                   | 0.17                                                                              | 0.36                                                                              | 0.12                                                                               | 0.16                                                                                | 0.01                                                                                | 0.05                                                                                | 0.48                                                                                | 0.13                                                                                |
| Control Delay (s/veh)   |                                                                                   | 63.5                                                                              | 8.5                                                                               |                                                                                   | 55.7                                                                              | 13.2                                                                              | 1.1                                                                                | 48.6                                                                                | 55.0                                                                                | 0.4                                                                                 | 52.4                                                                                | 51.9                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 63.5                                                                              | 8.5                                                                               |                                                                                   | 55.7                                                                              | 13.2                                                                              | 1.1                                                                                | 48.6                                                                                | 55.0                                                                                | 0.4                                                                                 | 52.4                                                                                | 51.9                                                                                |
| LOS                     |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | B                                                                                 | A                                                                                  | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   | 12.6                                                                              |                                                                                    |                                                                                     | 34.5                                                                                |                                                                                     |                                                                                     | 35.5                                                                                |
| Approach LOS            |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| 90th %ile Green (s)     | 19.8                                                                              | 19.8                                                                              | 69.4                                                                              |                                                                                   | 7.9                                                                               | 57.5                                                                              | 16.8                                                                               | 8.3                                                                                 | 5.9                                                                                 | 7.9                                                                                 | 16.8                                                                                | 14.4                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 70th %ile Green (s)     | 16.7                                                                              | 16.7                                                                              | 77.8                                                                              |                                                                                   | 7.1                                                                               | 68.2                                                                              | 21.1                                                                               | 7.7                                                                                 | 0.0                                                                                 | 7.1                                                                                 | 21.1                                                                                | 7.4                                                                                 |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Hold                                                                               | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Hold                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 14.4                                                                              | 14.4                                                                              | 86.4                                                                              |                                                                                   | 6.5                                                                               | 78.5                                                                              | 13.1                                                                               | 0.0                                                                                 | 0.0                                                                                 | 6.5                                                                                 | 13.1                                                                                | 10.6                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 30th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 99.5                                                                              |                                                                                   | 0.0                                                                               | 82.8                                                                              | 11.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 11.0                                                                                | 8.5                                                                                 |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| 10th %ile Green (s)     | 9.0                                                                               | 9.0                                                                               | 102.5                                                                             |                                                                                   | 0.0                                                                               | 89.0                                                                              | 8.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 8.0                                                                                 | 5.5                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 102                                                                               | 123                                                                               |                                                                                   | 11                                                                                | 133                                                                               | 0                                                                                  | 14                                                                                  | 1                                                                                   | 0                                                                                   | 87                                                                                  | 15                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 158                                                                               | 239                                                                               |                                                                                   | 27                                                                                | 259                                                                               | 20                                                                                 | 30                                                                                  | 7                                                                                   | 0                                                                                   | 124                                                                                 | 38                                                                                  |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   | 1814                                                                              |                                                                                    |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     | 491                                                                                 |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   | 400                                                                               |                                                                                   | 200                                                                                | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 244                                                                               | 2491                                                                              |                                                                                   | 434                                                                               | 2225                                                                              | 1385                                                                               | 306                                                                                 | 400                                                                                 | 290                                                                                 | 339                                                                                 | 400                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.36                                                                              |                                                                                   | 0.07                                                                              | 0.36                                                                              | 0.12                                                                               | 0.06                                                                                | 0.00                                                                                | 0.03                                                                                | 0.34                                                                                | 0.05                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Permitted Phases        | 8     |
| Detector Phase          | 5     |
| Switch Phase            |       |
| Minimum Initial (s)     | 5.0   |
| Minimum Split (s)       | 9.5   |
| Total Split (s)         | 20.0  |
| Total Split (%)         | 16.7% |
| Maximum Green (s)       | 15.5  |
| Yellow Time (s)         | 3.5   |
| All-Red Time (s)        | 1.0   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 4.5   |
| Lead/Lag                | Lead  |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | None  |
| Walk Time (s)           |       |
| Flash Don't Walk (s)    |       |
| Pedestrian Calls (#/hr) |       |
| Act Effct Green (s)     | 29.7  |
| Actuated g/C Ratio      | 0.25  |
| v/c Ratio               | 0.18  |
| Control Delay (s/veh)   | 7.4   |
| Queue Delay             | 0.0   |
| Total Delay (s/veh)     | 7.4   |
| LOS                     | A     |
| Approach Delay (s/veh)  |       |
| Approach LOS            |       |
| 90th %ile Green (s)     | 19.8  |
| 90th %ile Term Code     | Gap   |
| 70th %ile Green (s)     | 16.7  |
| 70th %ile Term Code     | Gap   |
| 50th %ile Green (s)     | 14.4  |
| 50th %ile Term Code     | Gap   |
| 30th %ile Green (s)     | 12.2  |
| 30th %ile Term Code     | Gap   |
| 10th %ile Green (s)     | 9.0   |
| 10th %ile Term Code     | Gap   |
| Queue Length 50th (ft)  | 0     |
| Queue Length 95th (ft)  | 33    |
| Internal Link Dist (ft) |       |
| Turn Bay Length (ft)    | 165   |
| Base Capacity (vph)     | 472   |
| Starvation Cap Reductn  | 0     |
| Spillback Cap Reductn   | 0     |
| Storage Cap Reductn     | 0     |
| Reduced v/c Ratio       | 0.17  |
| Intersection Summary    |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday AM Peak

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 16.5

Intersection LOS: B

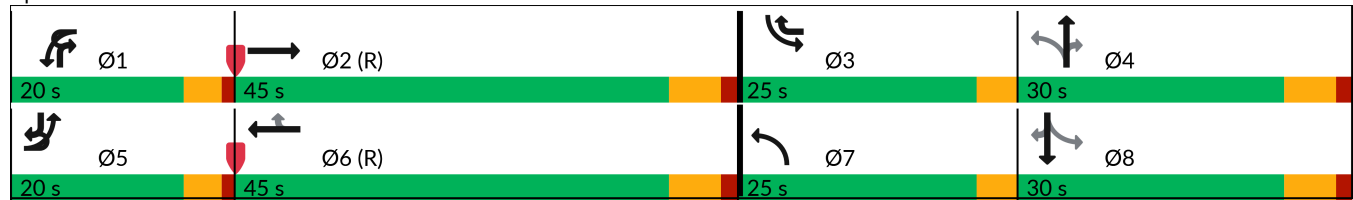
Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
1: Costco RIRO Dwy & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday AM Peak

| Intersection             |        |      |        |      |        |      |
|--------------------------|--------|------|--------|------|--------|------|
| Int Delay, s/veh         | 0.4    |      |        |      |        |      |
| Movement                 | EBT    | EBR  | WBL    | WBT  | NBL    | NBR  |
| Lane Configurations      | ↑↑↱    |      |        | ↑↑   |        | ↱↑   |
| Traffic Vol, veh/h       | 863    | 34   | 0      | 792  | 0      | 48   |
| Future Vol, veh/h        | 863    | 34   | 0      | 792  | 0      | 48   |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0    |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop |
| RT Channelized           | -      | None | -      | None | -      | None |
| Storage Length           | -      | -    | -      | -    | -      | 0    |
| Veh in Median Storage, # | 0      | -    | -      | 0    | 0      | -    |
| Grade, %                 | 0      | -    | -      | 0    | 0      | -    |
| Peak Hour Factor         | 89     | 89   | 89     | 89   | 89     | 89   |
| Heavy Vehicles, %        | 5      | 0    | 0      | 7    | 0      | 8    |
| Mvmt Flow                | 970    | 38   | 0      | 890  | 0      | 54   |
|                          |        |      |        |      |        |      |
| Major/Minor              | Major1 |      | Major2 |      | Minor1 |      |
| Conflicting Flow All     | 0      | 0    | -      | -    | -      | 504  |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
| Critical Hdwy            | -      | -    | -      | -    | -      | 7.06 |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | -      | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | -      | -    |
| Follow-up Hdwy           | -      | -    | -      | -    | -      | 3.38 |
| Pot Cap-1 Maneuver       | -      | -    | 0      | -    | 0      | 498  |
| Stage 1                  | -      | -    | 0      | -    | 0      | -    |
| Stage 2                  | -      | -    | 0      | -    | 0      | -    |
| Platoon blocked, %       | -      | -    |        | -    |        |      |
| Mov Cap-1 Maneuver       | -      | -    | -      | -    | -      | 498  |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | -      | -    |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Approach                 | EB     |      | WB     |      | NB     |      |
| HCM Ctrl Dly, s/v        | 0      |      | 0      |      | 13.11  |      |
| HCM LOS                  |        |      |        |      | B      |      |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBT  |        |      |
| Capacity (veh/h)         | 498    | -    | -      | -    |        |      |
| HCM Lane V/C Ratio       | 0.108  | -    | -      | -    |        |      |
| HCM Ctrl Dly (s/v)       | 13.1   | -    | -      | -    |        |      |
| HCM Lane LOS             | B      | -    | -      | -    |        |      |
| HCM 95th %tile Q(veh)    | 0.4    | -    | -      | -    |        |      |

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 19                                                                                | 0    | 0                                                                                 | 6                                                                                 | 5                                                                                 | 46                                                                                |
| Future Vol, veh/h        | 19                                                                                | 0    | 0                                                                                 | 6                                                                                 | 5                                                                                 | 46                                                                                |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 65                                                                                | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 74                                                                                | 74   | 74                                                                                | 74                                                                                | 74                                                                                | 74                                                                                |
| Heavy Vehicles, %        | 10                                                                                | 0    | 0                                                                                 | 17                                                                                | 20                                                                                | 2                                                                                 |
| Mvmt Flow                | 26                                                                                | 0    | 0                                                                                 | 8                                                                                 | 7                                                                                 | 62                                                                                |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 42     | 34     | 69   | 0      | - | 0 |
| Stage 1              | 38     | -      | -    | -      | - | - |
| Stage 2              | 4      | -      | -    | -      | - | - |
| Critical Hdwy        | 7      | 6.9    | 4.1  | -      | - | - |
| Critical Hdwy Stg 1  | 6      | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 6      | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.6    | 3.3    | 2.2  | -      | - | - |
| Pot Cap-1 Maneuver   | 941    | 1037   | 1545 | -      | - | - |
| Stage 1              | 957    | -      | -    | -      | - | - |
| Stage 2              | 995    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      | -      | - | - |
| Mov Cap-1 Maneuver   | 941    | 1037   | 1545 | -      | - | - |
| Mov Cap-2 Maneuver   | 941    | -      | -    | -      | - | - |
| Stage 1              | 957    | -      | -    | -      | - | - |
| Stage 2              | 995    | -      | -    | -      | - | - |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 8.93 | 0  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1545 | -   | 941   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | 0.027 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 8.9   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | 0.1   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.3  |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | ↔    |      | ↔    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 5    | 1    | 0    | 1    | 0    | 5    |
| Future Vol, veh/h        | 5    | 1    | 0    | 1    | 0    | 5    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 110  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 75   | 75   | 75   | 75   | 75   | 75   |
| Heavy Vehicles, %        | 20   | 0    | 0    | 0    | 0    | 20   |
| Mvmt Flow                | 7    | 1    | 0    | 1    | 0    | 7    |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 4      | 3      | 7      | 0 | - | 0 |
| Stage 1              | 3      | -      | -      | - | - | - |
| Stage 2              | 1      | -      | -      | - | - | - |
| Critical Hdwy        | 7.2    | 6.9    | 4.1    | - | - | - |
| Critical Hdwy Stg 1  | 6.2    | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 6.2    | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.7    | 3.3    | 2.2    | - | - | - |
| Pot Cap-1 Maneuver   | 967    | 1086   | 1627   | - | - | - |
| Stage 1              | 969    | -      | -      | - | - | - |
| Stage 2              | 972    | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 967    | 1086   | 1627   | - | - | - |
| Mov Cap-2 Maneuver   | 967    | -      | -      | - | - | - |
| Stage 1              | 969    | -      | -      | - | - | - |
| Stage 2              | 972    | -      | -      | - | - | - |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 8.68 | 0  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1627 | -   | 985   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | 0.008 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 8.7   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | 0     | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Background Traffic Volumes  
Timing Plan: Weekday AM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1420                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1010                                                                                | 31                                                                                  |
| Future Vol, veh/h        | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1420                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1010                                                                                | 31                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94   | 94   | 94                                                                                | 94                                                                                | 94                                                                                  | 94   | 94                                                                                  | 94                                                                                  | 94                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 6                                                                                 | 0                                                                                   | 0    | 2                                                                                   | 9                                                                                   | 3                                                                                   |
| Mvmt Flow                | 20                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 15   | 4    | 27                                                                                | 1511                                                                              | 11                                                                                  | 2    | 44                                                                                  | 1074                                                                                | 33                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 1848   | 2765 | 554    | 2099 | 2777   | 761 | 808    | 1107 | 0 | 0 | 1111 | 1521 | 0 | 0 |
| Stage 1              | 1182   | 1182 | -      | 1578 | 1578   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 666    | 1583 | -      | 521  | 1199   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 81     | 20   | 412    | 56   | 19     | 302 | 570    | 353  | - | - | 388  | 217  | - | - |
| Stage 1              | 151    | 266  | -      | 79   | 171    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 382    | 170  | -      | 467  | 261    | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | 56     | 14   | 412    | 41   | 14     | 302 | 372    | 372  | - | - | 222  | 222  | - | - |
| Mov Cap-2 Maneuver   | 97     | 72   | -      | 64   | 82     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | 120    | 211  | -      | 73   | 157    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 333    | 156  | -      | 368  | 207    | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB    |  | WB    |  | NB   |  | SB   |  |
|-------------------|-------|--|-------|--|------|--|------|--|
| HCM Ctrl Dly, s/v | 46.67 |  | 17.52 |  | 0.31 |  | 1.01 |  |
| HCM LOS           | E     |  | C     |  |      |  |      |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 372   | -   | -   | 97    | -     | 412   | -     | 302   | 222   | -   | -   |
| HCM Lane V/C Ratio    | 0.083 | -   | -   | 0.209 | -     | 0.008 | -     | 0.049 | 0.206 | -   | -   |
| HCM Ctrl Dly (s/v)    | 15.5  | -   | -   | 51.9  | 0     | 13.8  | 0     | 17.5  | 25.4  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | B     | A     | C     | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | -   | 0.7   | -     | 0     | -     | 0.2   | 0.8   | -   | -   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 6                                                                                 | 171                                                                               | 903                                                                               | 15                                                                                | 8                                                                                 | 284                                                                               | 938                                                                                | 178                                                                                 | 115                                                                                 | 70                                                                                  | 240                                                                                 | 181                                                                                 |
| Future Volume (vph)        | 6                                                                                 | 171                                                                               | 903                                                                               | 15                                                                                | 8                                                                                 | 284                                                                               | 938                                                                                | 178                                                                                 | 115                                                                                 | 70                                                                                  | 240                                                                                 | 181                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1788                                                                              | 3529                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1770                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.681                                                                               |                                                                                     |                                                                                     | 0.507                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1788                                                                              | 3529                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1269                                                                                | 2000                                                                                | 1615                                                                                | 954                                                                                 |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 173                                                                                 |                                                                                     |                                                                                     | 209                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 7%                                                                                | 0%                                                                                | 1%                                                                                | 3%                                                                                 | 1%                                                                                  | 2%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  |
| Adj. Flow (vph)            | 6                                                                                 | 174                                                                               | 921                                                                               | 15                                                                                | 8                                                                                 | 290                                                                               | 957                                                                                | 182                                                                                 | 117                                                                                 | 71                                                                                  | 245                                                                                 | 185                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 180                                                                               | 936                                                                               | 0                                                                                 | 0                                                                                 | 298                                                                               | 957                                                                                | 182                                                                                 | 117                                                                                 | 71                                                                                  | 245                                                                                 | 185                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 117   | 170   |
| Future Volume (vph)        | 117   | 170   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 173   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.98  | 0.98  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 119   | 173   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 119   | 173   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 18.3                                                                              | 66.5                                                                              |                                                                                   |                                                                                   | 16.6                                                                              | 64.8                                                                               | 90.2                                                                                | 23.0                                                                                | 10.0                                                                                | 30.1                                                                                | 32.9                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.51                                                                              |                                                                                   |                                                                                   | 0.13                                                                              | 0.50                                                                               | 0.69                                                                                | 0.18                                                                                | 0.08                                                                                | 0.23                                                                                | 0.25                                                                                |
| v/c Ratio               |                                                                                   | 0.72                                                                              | 0.52                                                                              |                                                                                   |                                                                                   | 0.68                                                                              | 0.52                                                                               | 0.16                                                                                | 0.43                                                                                | 0.46                                                                                | 0.46                                                                                | 0.51                                                                                |
| Control Delay (s/veh)   |                                                                                   | 68.9                                                                              | 24.2                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.5                                                                               | 2.0                                                                                 | 43.3                                                                                | 66.5                                                                                | 10.2                                                                                | 44.1                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 68.9                                                                              | 24.2                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.5                                                                               | 2.0                                                                                 | 43.3                                                                                | 66.5                                                                                | 10.2                                                                                | 44.1                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | E                                                                                   | B                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 31.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.0                                                                               |                                                                                     |                                                                                     | 28.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 24.6                                                                              | 24.6                                                                              | 52.3                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 49.2                                                                               | 22.5                                                                                | 16.0                                                                                | 13.7                                                                                | 21.5                                                                                | 22.5                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Max                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Max                                                                                 |
| 70th %ile Green (s)     | 20.9                                                                              | 20.9                                                                              | 60.8                                                                              |                                                                                   | 18.2                                                                              | 18.2                                                                              | 58.1                                                                               | 19.5                                                                                | 13.9                                                                                | 11.5                                                                                | 18.2                                                                                | 19.5                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 18.3                                                                              | 18.3                                                                              | 66.4                                                                              |                                                                                   | 16.4                                                                              | 16.4                                                                              | 64.5                                                                               | 17.2                                                                                | 12.3                                                                                | 10.0                                                                                | 16.4                                                                                | 17.2                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.7                                                                              | 15.7                                                                              | 72.1                                                                              |                                                                                   | 14.6                                                                              | 14.6                                                                              | 71.0                                                                               | 14.8                                                                                | 10.7                                                                                | 8.5                                                                                 | 14.6                                                                                | 14.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.8                                                                              | 11.8                                                                              | 81.0                                                                              |                                                                                   | 12.1                                                                              | 12.1                                                                              | 81.3                                                                               | 22.9                                                                                | 8.6                                                                                 | 0.0                                                                                 | 12.1                                                                                | 22.9                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Hold                                                                                | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 147                                                                               | 267                                                                               |                                                                                   |                                                                                   | 125                                                                               | 281                                                                                | 2                                                                                   | 79                                                                                  | 58                                                                                  | 23                                                                                  | 130                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 216                                                                               | 407                                                                               |                                                                                   |                                                                                   | 167                                                                               | 430                                                                                | 33                                                                                  | 121                                                                                 | 107                                                                                 | 86                                                                                  | 183                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 304                                                                               | 1806                                                                              |                                                                                   |                                                                                   | 573                                                                               | 1839                                                                               | 1197                                                                                | 399                                                                                 | 492                                                                                 | 587                                                                                 | 386                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.59                                                                              | 0.52                                                                              |                                                                                   |                                                                                   | 0.52                                                                              | 0.52                                                                               | 0.15                                                                                | 0.29                                                                                | 0.14                                                                                | 0.42                                                                                | 0.48                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 14.6  | 38.9  |
| Actuated g/C Ratio      | 0.11  | 0.30  |
| v/c Ratio               | 0.53  | 0.29  |
| Control Delay (s/veh)   | 62.1  | 5.1   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 62.1  | 5.1   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 34.4  |       |
| Approach LOS            | C     |       |
| 90th %ile Green (s)     | 20.2  | 24.6  |
| 90th %ile Term Code     | Hold  | Gap   |
| 70th %ile Green (s)     | 17.1  | 20.9  |
| 70th %ile Term Code     | Hold  | Gap   |
| 50th %ile Green (s)     | 14.9  | 18.3  |
| 50th %ile Term Code     | Hold  | Gap   |
| 30th %ile Green (s)     | 12.6  | 15.7  |
| 30th %ile Term Code     | Hold  | Gap   |
| 10th %ile Green (s)     | 8.3   | 11.8  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 96    | 0     |
| Queue Length 95th (ft)  | 153   | 46    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 641   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.24  | 0.27  |
| Intersection Summary    |       |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Weekday PM Peak

|                                                                     |                        |
|---------------------------------------------------------------------|------------------------|
| Area Type:                                                          | Other                  |
| Cycle Length: 130                                                   |                        |
| Actuated Cycle Length: 130                                          |                        |
| Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green |                        |
| Natural Cycle: 80                                                   |                        |
| Control Type: Actuated-Coordinated                                  |                        |
| Maximum v/c Ratio: 0.72                                             |                        |
| Intersection Signal Delay (s/veh): 30.9                             | Intersection LOS: C    |
| Intersection Capacity Utilization 74.5%                             | ICU Level of Service D |
| Analysis Period (min) 15                                            |                        |
| ! Phase conflict between lane groups.                               |                        |

Splits and Phases: 2: Ravinia Ave & 159th St

|                                                                                      |                                                                                          |                                                                                      |                                                                                        |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 26 s                                                                                 | 40 s                                                                                     | 26 s                                                                                 | 38 s                                                                                   |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 26 s                                                                                 | 40 s                                                                                     | 26 s                                                                                 | 38 s                                                                                   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.1  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 938  | 138  | 0    | 1223 | 0    | 157  |
| Future Vol, veh/h        | 938  | 138  | 0    | 1223 | 0    | 157  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 3    | 0    | 1    |
| Mvmt Flow                | 977  | 144  | 0    | 1274 | 0    | 164  |

| Major/Minor          | Major1 | Major2 | Minor1  |
|----------------------|--------|--------|---------|
| Conflicting Flow All | 0      | 0      | - 560   |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |
| Critical Hdwy        | -      | -      | - 6.92  |
| Critical Hdwy Stg 1  | -      | -      | - -     |
| Critical Hdwy Stg 2  | -      | -      | - -     |
| Follow-up Hdwy       | -      | -      | - 3.31  |
| Pot Cap-1 Maneuver   | -      | - 0    | - 0 474 |
| Stage 1              | -      | - 0    | - 0 -   |
| Stage 2              | -      | - 0    | - 0 -   |
| Platoon blocked, %   | -      | -      | -       |
| Mov Cap-1 Maneuver   | -      | -      | - 474   |
| Mov Cap-2 Maneuver   | -      | -      | - -     |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 16.54 |
| HCM LOS           |    |    | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 474   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.345 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 16.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 1.5   | -   | -   | -   |

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 6.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 333                                                                               | 1    | 1                                                                                 | 83                                                                                | 74                                                                                | 330                                                                               |
| Future Vol, veh/h        | 333                                                                               | 1    | 1                                                                                 | 83                                                                                | 74                                                                                | 330                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 65                                                                                | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 94                                                                                | 94   | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                |
| Heavy Vehicles, %        | 1                                                                                 | 0    | 0                                                                                 | 2                                                                                 | 3                                                                                 | 0                                                                                 |
| Mvmt Flow                | 354                                                                               | 1    | 1                                                                                 | 88                                                                                | 79                                                                                | 351                                                                               |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 301    | 215    | 430  | 0      | - | 0 |
| Stage 1              | 254    | -      | -    | -      | - | - |
| Stage 2              | 46     | -      | -    | -      | - | - |
| Critical Hdwy        | 6.82   | 6.9    | 4.1  | -      | - | - |
| Critical Hdwy Stg 1  | 5.82   | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.82   | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.51   | 3.3    | 2.2  | -      | - | - |
| Pot Cap-1 Maneuver   | 670    | 796    | 1140 | -      | - | - |
| Stage 1              | 768    | -      | -    | -      | - | - |
| Stage 2              | 973    | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      | -      | - | - |
| Mov Cap-1 Maneuver   | 669    | 796    | 1140 | -      | - | - |
| Mov Cap-2 Maneuver   | 669    | -      | -    | -      | - | - |
| Stage 1              | 767    | -      | -    | -      | - | - |
| Stage 2              | 973    | -      | -    | -      | - | - |

| Approach          | EB   | NB  | SB |
|-------------------|------|-----|----|
| HCM Ctrl Dly, s/v | 16.3 | 0.1 | 0  |
| HCM LOS           | C    |     |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1140  | -   | 669   | -   | -   |
| HCM Lane V/C Ratio    | 0.001 | -   | 0.531 | -   | -   |
| HCM Ctrl Dly (s/v)    | 8.2   | -   | 16.3  | -   | -   |
| HCM Lane LOS          | A     | -   | C     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 3.1   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      | YY   |      | Y    | ↑↑   | ↑↑   |      |
| Traffic Vol, veh/h       | 83   | 1    | 1    | 1    | 1    | 69   |
| Future Vol, veh/h        | 83   | 1    | 1    | 1    | 1    | 69   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | 0    | -    | 110  | -    | -    | -    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 84   | 84   | 84   | 84   | 84   | 84   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 0    | 0    | 3    |
| Mvmt Flow                | 99   | 1    | 1    | 1    | 1    | 82   |

| Major/Minor          | Minor2 | Major1 | Major2 |   |   |   |
|----------------------|--------|--------|--------|---|---|---|
| Conflicting Flow All | 45     | 42     | 83     | 0 | - | 0 |
| Stage 1              | 42     | -      | -      | - | - | - |
| Stage 2              | 3      | -      | -      | - | - | - |
| Critical Hdwy        | 6.84   | 6.9    | 4.1    | - | - | - |
| Critical Hdwy Stg 1  | 5.84   | -      | -      | - | - | - |
| Critical Hdwy Stg 2  | 5.84   | -      | -      | - | - | - |
| Follow-up Hdwy       | 3.52   | 3.3    | 2.2    | - | - | - |
| Pot Cap-1 Maneuver   | 959    | 1027   | 1526   | - | - | - |
| Stage 1              | 975    | -      | -      | - | - | - |
| Stage 2              | 1019   | -      | -      | - | - | - |
| Platoon blocked, %   |        |        |        | - | - | - |
| Mov Cap-1 Maneuver   | 959    | 1027   | 1526   | - | - | - |
| Mov Cap-2 Maneuver   | 959    | -      | -      | - | - | - |
| Stage 1              | 974    | -      | -      | - | - | - |
| Stage 2              | 1019   | -      | -      | - | - | - |

| Approach          | EB   | NB   | SB |
|-------------------|------|------|----|
| HCM Ctrl Dly, s/v | 9.19 | 3.68 | 0  |
| HCM LOS           | A    |      |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1526  | -   | 959   | -   | -   |
| HCM Lane V/C Ratio    | 0.001 | -   | 0.104 | -   | -   |
| HCM Ctrl Dly (s/v)    | 7.4   | -   | 9.2   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0     | -   | 0.3   | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Background Traffic Volumes  
Timing Plan: Weekday PM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1728                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1830                                                                                | 67                                                                                  |
| Future Vol, veh/h        | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1728                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1830                                                                                | 67                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96   | 96   | 96                                                                                | 96                                                                                | 96                                                                                  | 96   | 96                                                                                  | 96                                                                                  | 96                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 3                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Mvmt Flow                | 34                                                                                | 0                                                                                 | 16                                                                                | 7                                                                                 | 0                                                                                 | 51   | 2    | 41                                                                                | 1800                                                                              | 24                                                                                  | 6    | 61                                                                                  | 1906                                                                                | 70                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2882   | 3986 | 988    | 2795 | 4009   | 912 | 1443   | 1976 | 0 | 0 | 1331 | 1824 | 0 | 0 |
| Stage 1              | 2077   | 2077 | -      | 1897 | 1897   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 805    | 1909 | -      | 898  | 2111   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.3  | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.1  | - | - |
| Pot Cap-1 Maneuver   | ~ 18   | 3    | 214    | 20   | 3      | 241 | 254    | 132  | - | - | 293  | 157  | - | - |
| Stage 1              | 35     | 97   | -      | 47   | 119    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 314    | 117  | -      | 276  | 93     | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 6    | 1    | 214    | 8    | 1      | 241 | 135    | 135  | - | - | 162  | 162  | - | - |
| Mov Cap-2 Maneuver   | ~ 17   | 10   | -      | 25   | 9      | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | ~ 20   | 56   | -      | 32   | 81     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 169    | 80   | -      | 149  | 54     | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB        |  | WB    |  | NB |  | SB  |  |
|-------------------|-----------|--|-------|--|----|--|-----|--|
| HCM Ctrl Dly, s/v | \$ 672.81 |  | 46.31 |  | 1  |  | 1.4 |  |
| HCM LOS           | F         |  | E     |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1    | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|----------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 135   | -   | -   | 17       | -     | 214   | 25    | 241   | 162   | -   | -   |
| HCM Lane V/C Ratio    | 0.317 | -   | -   | 2.063    | -     | 0.073 | 0.295 | 0.212 | 0.418 | -   | -   |
| HCM Ctrl Dly (s/v)    | 43.7  | -   | -   | \$ 968.1 | 0     | 23.1  | 202.8 | 24    | 42.4  | -   | -   |
| HCM Lane LOS          | E     | -   | -   | F        | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 1.3   | -   | -   | 4.9      | -     | 0.2   | 0.9   | 0.8   | 1.9   | -   | -   |

| Notes                      |                                |
|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s         |
| +: Computation Not Defined | *: All major volume in platoon |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 19                                                                                | 157                                                                               | 849                                                                               | 13                                                                                | 2                                                                                 | 405                                                                               | 786                                                                                | 173                                                                                 | 137                                                                                 | 88                                                                                  | 281                                                                                 | 111                                                                                 |
| Future Volume (vph)        | 19                                                                                | 157                                                                               | 849                                                                               | 13                                                                                | 2                                                                                 | 405                                                                               | 786                                                                                | 173                                                                                 | 137                                                                                 | 88                                                                                  | 281                                                                                 | 111                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 95                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1789                                                                              | 3533                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 1805                                                                                | 1980                                                                                | 1615                                                                                | 1752                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.405                                                                               |                                                                                     |                                                                                     | 0.696                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1789                                                                              | 3533                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 770                                                                                 | 1980                                                                                | 1615                                                                                | 1284                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 1                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 184                                                                                 |                                                                                     |                                                                                     | 294                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 530                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 12.0                                                                                |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 2%                                                                                 | 1%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)            | 20                                                                                | 167                                                                               | 903                                                                               | 14                                                                                | 2                                                                                 | 431                                                                               | 836                                                                                | 184                                                                                 | 146                                                                                 | 94                                                                                  | 299                                                                                 | 118                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 187                                                                               | 917                                                                               | 0                                                                                 | 0                                                                                 | 433                                                                               | 836                                                                                | 184                                                                                 | 146                                                                                 | 94                                                                                  | 299                                                                                 | 118                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Saturday Middy Peak



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 148   | 139   |
| Future Volume (vph)        | 148   | 139   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 148   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.94  | 0.94  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 157   | 148   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 157   | 148   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 18.7                                                                              | 58.3                                                                              |                                                                                   |                                                                                   | 22.0                                                                              | 61.5                                                                               | 80.0                                                                                | 34.0                                                                                | 17.3                                                                                | 45.2                                                                                | 30.5                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.45                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 0.47                                                                               | 0.62                                                                                | 0.26                                                                                | 0.13                                                                                | 0.35                                                                                | 0.23                                                                                |
| v/c Ratio               |                                                                                   | 0.73                                                                              | 0.58                                                                              |                                                                                   |                                                                                   | 0.74                                                                              | 0.47                                                                               | 0.17                                                                                | 0.46                                                                                | 0.36                                                                                | 0.40                                                                                | 0.34                                                                                |
| Control Delay (s/veh)   |                                                                                   | 68.9                                                                              | 30.8                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.6                                                                               | 2.4                                                                                 | 40.5                                                                                | 53.9                                                                                | 4.4                                                                                 | 37.7                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 68.9                                                                              | 30.8                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.6                                                                               | 2.4                                                                                 | 40.5                                                                                | 53.9                                                                                | 4.4                                                                                 | 37.7                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 37.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.2                                                                               |                                                                                     |                                                                                     | 22.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 25.1                                                                              | 25.1                                                                              | 42.3                                                                              |                                                                                   | 27.9                                                                              | 27.9                                                                              | 45.1                                                                               | 16.4                                                                                | 18.8                                                                                | 23.4                                                                                | 27.9                                                                                | 16.4                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 21.4                                                                              | 21.4                                                                              | 51.9                                                                              |                                                                                   | 24.2                                                                              | 24.2                                                                              | 54.7                                                                               | 14.2                                                                                | 16.1                                                                                | 19.7                                                                                | 24.2                                                                                | 14.2                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 18.8                                                                              | 18.8                                                                              | 58.0                                                                              |                                                                                   | 22.2                                                                              | 22.2                                                                              | 61.4                                                                               | 12.6                                                                                | 14.3                                                                                | 17.2                                                                                | 22.2                                                                                | 12.6                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 16.1                                                                              | 16.1                                                                              | 65.0                                                                              |                                                                                   | 19.3                                                                              | 19.3                                                                              | 68.2                                                                               | 10.8                                                                                | 12.4                                                                                | 14.9                                                                                | 19.3                                                                                | 10.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 74.3                                                                              |                                                                                   | 16.2                                                                              | 16.2                                                                              | 78.3                                                                               | 8.3                                                                                 | 9.4                                                                                 | 11.2                                                                                | 16.2                                                                                | 8.3                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 153                                                                               | 298                                                                               |                                                                                   |                                                                                   | 180                                                                               | 246                                                                                | 0                                                                                   | 97                                                                                  | 73                                                                                  | 3                                                                                   | 78                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 223                                                                               | 452                                                                               |                                                                                   |                                                                                   | 225                                                                               | 382                                                                                | 36                                                                                  | 140                                                                                 | 122                                                                                 | 55                                                                                  | 117                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 450                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 295                                                                                 |                                                                                     | 150                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 305                                                                               | 1585                                                                              |                                                                                   |                                                                                   | 625                                                                               | 1763                                                                               | 1164                                                                                | 390                                                                                 | 487                                                                                 | 769                                                                                 | 434                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.61                                                                              | 0.58                                                                              |                                                                                   |                                                                                   | 0.69                                                                              | 0.47                                                                               | 0.16                                                                                | 0.37                                                                                | 0.19                                                                                | 0.39                                                                                | 0.27                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 15.5  | 40.3  |
| Actuated g/C Ratio      | 0.12  | 0.31  |
| v/c Ratio               | 0.66  | 0.25  |
| Control Delay (s/veh)   | 67.3  | 5.0   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 67.3  | 5.0   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 37.3  |       |
| Approach LOS            | D     |       |
| 90th %ile Green (s)     | 21.0  | 25.1  |
| 90th %ile Term Code     | Gap   | Gap   |
| 70th %ile Green (s)     | 17.8  | 21.4  |
| 70th %ile Term Code     | Gap   | Gap   |
| 50th %ile Green (s)     | 15.5  | 18.8  |
| 50th %ile Term Code     | Gap   | Gap   |
| 30th %ile Green (s)     | 13.3  | 16.1  |
| 30th %ile Term Code     | Gap   | Gap   |
| 10th %ile Green (s)     | 10.1  | 12.2  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 128   | 0     |
| Queue Length 95th (ft)  | 194   | 42    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 636   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.32  | 0.23  |
| Intersection Summary    |       |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Background Traffic Volumes  
Timing Plan: Saturday MIDDAY Peak

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 33.4

Intersection LOS: C

Intersection Capacity Utilization 74.9%

ICU Level of Service D

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.9  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 815  | 142  | 0    | 1062 | 0    | 222  |
| Future Vol, veh/h        | 815  | 142  | 0    | 1062 | 0    | 222  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 91   | 91   | 91   | 91   | 91   | 91   |
| Heavy Vehicles, %        | 2    | 1    | 0    | 2    | 0    | 1    |
| Mvmt Flow                | 896  | 156  | 0    | 1167 | 0    | 244  |

| Major/Minor          | Major1 | Major2 | Minor1  |
|----------------------|--------|--------|---------|
| Conflicting Flow All | 0      | 0      | - 526   |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |
| Critical Hdwy        | -      | -      | - 6.92  |
| Critical Hdwy Stg 1  | -      | -      | - -     |
| Critical Hdwy Stg 2  | -      | -      | - -     |
| Follow-up Hdwy       | -      | -      | - 3.31  |
| Pot Cap-1 Maneuver   | -      | - 0    | - 0 499 |
| Stage 1              | -      | - 0    | - 0 -   |
| Stage 2              | -      | - 0    | - 0 -   |
| Platoon blocked, %   | -      | -      | -       |
| Mov Cap-1 Maneuver   | -      | -      | - 499   |
| Mov Cap-2 Maneuver   | -      | -      | - -     |
| Stage 1              | -      | -      | - -     |
| Stage 2              | -      | -      | - -     |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 18.91 |
| HCM LOS           |    |    | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 499   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.489 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 18.9  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 2.6   | -   | -   | -   |

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 12.1                                                                              |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 389                                                                               | 1    | 0                                                                                 | 114                                                                               | 123                                                                               | 432                                                                               |
| Future Vol, veh/h        | 389                                                                               | 1    | 0                                                                                 | 114                                                                               | 123                                                                               | 432                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 65                                                                                | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 89                                                                                | 89   | 89                                                                                | 89                                                                                | 89                                                                                | 89                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 2                                                                                 | 0                                                                                 |
| Mvmt Flow                | 437                                                                               | 1    | 0                                                                                 | 128                                                                               | 138                                                                               | 485                                                                               |

| Major/Minor          | Minor2 | Major1 |     | Major2 |   |   |
|----------------------|--------|--------|-----|--------|---|---|
| Conflicting Flow All | 445    | 312    | 624 | 0      | - | 0 |
| Stage 1              | 381    | -      | -   | -      | - | - |
| Stage 2              | 64     | -      | -   | -      | - | - |
| Critical Hdwy        | 6.8    | 6.9    | 4.1 | -      | - | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -   | -      | - | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -   | -      | - | - |
| Follow-up Hdwy       | 3.5    | 3.3    | 2.2 | -      | - | - |
| Pot Cap-1 Maneuver   | 547    | 690    | 967 | -      | - | - |
| Stage 1              | 666    | -      | -   | -      | - | - |
| Stage 2              | 957    | -      | -   | -      | - | - |
| Platoon blocked, %   |        |        |     | -      | - | - |
| Mov Cap-1 Maneuver   | 547    | 690    | 967 | -      | - | - |
| Mov Cap-2 Maneuver   | 547    | -      | -   | -      | - | - |
| Stage 1              | 666    | -      | -   | -      | - | - |
| Stage 2              | 957    | -      | -   | -      | - | - |

| Approach          | EB    | NB | SB |
|-------------------|-------|----|----|
| HCM Ctrl Dly, s/v | 32.97 | 0  | 0  |
| HCM LOS           | D     |    |    |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|-----------------------|-----|-----|-------|-----|-----|
| Capacity (veh/h)      | 967 | -   | 547   | -   | -   |
| HCM Lane V/C Ratio    | -   | -   | 0.801 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0   | -   | 33    | -   | -   |
| HCM Lane LOS          | A   | -   | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0   | -   | 7.7   | -   | -   |

| Intersection             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 4.5                                                                               |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |  |      |  |  |  |  |
| Traffic Vol, veh/h       | 109                                                                               | 1    | 0                                                                                 | 2                                                                                 | 1                                                                                 | 122                                                                               |
| Future Vol, veh/h        | 109                                                                               | 1    | 0                                                                                 | 2                                                                                 | 1                                                                                 | 122                                                                               |
| Conflicting Peds, #/hr   | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -                                                                                 | None | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | 0                                                                                 | -    | 110                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Veh in Median Storage, # | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 80                                                                                | 80   | 80                                                                                | 80                                                                                | 80                                                                                | 80                                                                                |
| Heavy Vehicles, %        | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Mvmt Flow                | 136                                                                               | 1    | 0                                                                                 | 3                                                                                 | 1                                                                                 | 153                                                                               |

| Major/Minor          | Minor2 | Major1 |      | Major2 |   |   |
|----------------------|--------|--------|------|--------|---|---|
| Conflicting Flow All | 79     | 77     | 154  | 0      | - | 0 |
| Stage 1              | 78     | -      | -    | -      | - | - |
| Stage 2              | 1      | -      | -    | -      | - | - |
| Critical Hdwy        | 6.8    | 6.9    | 4.1  | -      | - | - |
| Critical Hdwy Stg 1  | 5.8    | -      | -    | -      | - | - |
| Critical Hdwy Stg 2  | 5.8    | -      | -    | -      | - | - |
| Follow-up Hdwy       | 3.5    | 3.3    | 2.2  | -      | - | - |
| Pot Cap-1 Maneuver   | 921    | 975    | 1439 | -      | - | - |
| Stage 1              | 942    | -      | -    | -      | - | - |
| Stage 2              | 1027   | -      | -    | -      | - | - |
| Platoon blocked, %   |        |        |      | -      | - | - |
| Mov Cap-1 Maneuver   | 921    | 975    | 1439 | -      | - | - |
| Mov Cap-2 Maneuver   | 921    | -      | -    | -      | - | - |
| Stage 1              | 942    | -      | -    | -      | - | - |
| Stage 2              | 1027   | -      | -    | -      | - | - |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 9.59 | 0  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1439 | -   | 921   | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | 0.149 | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 9.6   | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | 0.5   | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Background Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1800                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1551                                                                                | 29                                                                                  |
| Future Vol, veh/h        | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1800                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1551                                                                                | 29                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98   | 98   | 98                                                                                | 98                                                                                | 98                                                                                  | 98   | 98                                                                                  | 98                                                                                  | 98                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 1                                                                                 | 6                                                                                   | 0    | 2                                                                                   | 1                                                                                   | 0                                                                                   |
| Mvmt Flow                | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 35   | 7    | 27                                                                                | 1837                                                                              | 17                                                                                  | 13   | 40                                                                                  | 1583                                                                                | 30                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2506   | 3625 | 806    | 2652 | 3631   | 927 | 1177   | 1612 | 0 | 0 | 1353 | 1854 | 0 | 0 |
| Stage 1              | 1704   | 1704 | -      | 1913 | 1913   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 802    | 1921 | -      | 739  | 1718   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 31     | 5    | 282    | 25   | 5      | 235 | 357    | 200  | - | - | 285  | 148  | - | - |
| Stage 1              | 65     | 149  | -      | 46   | 117    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 316    | 116  | -      | 345  | 146    | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 15   | 3    | 282    | 14   | 3      | 235 | 219    | 219  | - | - | 164  | 164  | - | - |
| Mov Cap-2 Maneuver   | 36     | 29   | -      | 32   | 37     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | 44     | 101  | -      | 39   | 99     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 228    | 98   | -      | 221  | 99     | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB    |  | WB    |  | NB   |  | SB   |  |
|-------------------|-------|--|-------|--|------|--|------|--|
| HCM Ctrl Dly, s/v | 97.12 |  | 47.19 |  | 0.44 |  | 1.18 |  |
| HCM LOS           | F     |  | E     |  |      |  |      |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 219   | -   | -   | 36    | -     | 282   | 32    | 235   | 164   | -   | -   |
| HCM Lane V/C Ratio    | 0.154 | -   | -   | 0.454 | -     | 0.054 | 0.252 | 0.148 | 0.323 | -   | -   |
| HCM Ctrl Dly (s/v)    | 24.4  | -   | -   | 170.8 | 0     | 18.5  | 150.2 | 22.9  | 37.1  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | -   | 1.5   | -     | 0.2   | 0.8   | 0.5   | 1.3   | -   | -   |

| Notes                      |                                |
|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$. Delay exceeds 300s         |
| +: Computation Not Defined | *: All major volume in platoon |



**APPENDIX F**

**CAPACITY ANALYSIS WORKSHEETS**

**2025 FUTURE WITH PROJECT: GAS RELOCATION**

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday AM Peak

|                            |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 3                                                                                 | 117                                                                               | 737                                                                               | 32                                                                                | 27                                                                                | 703                                                                               | 141                                                                                 | 16                                                                                  | 2                                                                                   | 55                                                                                  | 102                                                                                 | 18                                                                                  |
| Future Volume (vph)        | 3                                                                                 | 117                                                                               | 737                                                                               | 32                                                                                | 27                                                                                | 703                                                                               | 141                                                                                 | 16                                                                                  | 2                                                                                   | 55                                                                                  | 102                                                                                 | 18                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                              | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                | 2000                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 | 400                                                                               |                                                                                   | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |                                                                                     |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   | 290                                                                               |                                                                                   |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.994                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)          | 0                                                                                 | 1770                                                                              | 3405                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 1597                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                | 2000                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.851                                                                               |                                                                                     |
| Satd. Flow (perm)          | 0                                                                                 | 1770                                                                              | 3405                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 1681                                                                                | 2000                                                                                | 1615                                                                                | 1601                                                                                | 2000                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   | 160                                                                                 |                                                                                     |                                                                                     | 63                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   | 1894                                                                              |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     | 571                                                                                 |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 32.3                                                                              |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |                                                                                     | 13.0                                                                                |
| Peak Hour Factor           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 2%                                                                                | 5%                                                                                | 14%                                                                               | 4%                                                                                | 7%                                                                                | 2%                                                                                  | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 3                                                                                 | 133                                                                               | 838                                                                               | 36                                                                                | 31                                                                                | 799                                                                               | 160                                                                                 | 18                                                                                  | 2                                                                                   | 63                                                                                  | 116                                                                                 | 20                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 136                                                                               | 874                                                                               | 0                                                                                 | 31                                                                                | 799                                                                               | 160                                                                                 | 18                                                                                  | 2                                                                                   | 63                                                                                  | 116                                                                                 | 20                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                              | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   | 8                                                                                   |

|                            |       |
|----------------------------|-------|
| Lane Group                 | SBR   |
| Lane Configurations        | ↗     |
| Traffic Volume (vph)       | 72    |
| Future Volume (vph)        | 72    |
| Ideal Flow (vphpl)         | 1900  |
| Storage Length (ft)        | 165   |
| Storage Lanes              | 1     |
| Taper Length (ft)          |       |
| Lane Util. Factor          | 1.00  |
| Frt                        | 0.850 |
| Flt Protected              |       |
| Satd. Flow (prot)          | 1553  |
| Flt Permitted              |       |
| Satd. Flow (perm)          | 1553  |
| Right Turn on Red          | Yes   |
| Satd. Flow (RTOR)          | 82    |
| Link Speed (mph)           |       |
| Link Distance (ft)         |       |
| Travel Time (s)            |       |
| Peak Hour Factor           | 0.88  |
| Heavy Vehicles (%)         | 4%    |
| Adj. Flow (vph)            | 82    |
| Shared Lane Traffic (%)    |       |
| Lane Group Flow (vph)      | 82    |
| Enter Blocked Intersection | No    |
| Lane Alignment             | Right |
| Median Width(ft)           |       |
| Link Offset(ft)            |       |
| Crosswalk Width(ft)        |       |
| Two way Left Turn Lane     |       |
| Headway Factor             | 1.00  |
| Turning Speed (mph)        | 9     |
| Number of Detectors        | 1     |
| Detector Template          | Right |
| Leading Detector (ft)      | 20    |
| Trailing Detector (ft)     | 0     |
| Detector 1 Position(ft)    | 0     |
| Detector 1 Size(ft)        | 20    |
| Detector 1 Type            | Cl+Ex |
| Detector 1 Channel         |       |
| Detector 1 Extend (s)      | 0.0   |
| Detector 1 Queue (s)       | 0.0   |
| Detector 1 Delay (s)       | 0.0   |
| Detector 2 Position(ft)    |       |
| Detector 2 Size(ft)        |       |
| Detector 2 Type            |       |
| Detector 2 Channel         |       |
| Detector 2 Extend (s)      |       |
| Turn Type                  | pm+ov |
| Protected Phases           | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                  | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 24.5                                                                              | 9.5                                                                                | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                |
| Total Split (s)         | 20.0                                                                              | 20.0                                                                              | 45.0                                                                              |                                                                                   | 20.0                                                                              | 45.0                                                                              | 25.0                                                                               | 25.0                                                                                | 30.0                                                                                | 20.0                                                                                | 25.0                                                                                | 30.0                                                                                |
| Total Split (%)         | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                             |                                                                                   | 16.7%                                                                             | 37.5%                                                                             | 20.8%                                                                              | 20.8%                                                                               | 25.0%                                                                               | 16.7%                                                                               | 20.8%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 15.5                                                                              | 15.5                                                                              | 39.0                                                                              |                                                                                   | 15.5                                                                              | 39.0                                                                              | 21.5                                                                               | 21.5                                                                                | 24.0                                                                                | 15.5                                                                                | 21.5                                                                                | 24.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 4.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.5                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   | 4.5                                                                               | 6.0                                                                               | 3.5                                                                                | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    |                                                                                   | 14.4                                                                              | 84.9                                                                              |                                                                                   | 6.6                                                                               | 75.1                                                                              | 95.1                                                                               | 8.6                                                                                 | 5.7                                                                                 | 9.1                                                                                 | 16.4                                                                                | 9.3                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.12                                                                              | 0.71                                                                              |                                                                                   | 0.06                                                                              | 0.63                                                                              | 0.79                                                                               | 0.07                                                                                | 0.05                                                                                | 0.08                                                                                | 0.14                                                                                | 0.08                                                                                |
| v/c Ratio               |                                                                                   | 0.64                                                                              | 0.36                                                                              |                                                                                   | 0.17                                                                              | 0.36                                                                              | 0.12                                                                               | 0.16                                                                                | 0.02                                                                                | 0.35                                                                                | 0.48                                                                                | 0.13                                                                                |
| Control Delay (s/veh)   |                                                                                   | 63.5                                                                              | 9.0                                                                               |                                                                                   | 55.7                                                                              | 13.3                                                                              | 1.1                                                                                | 48.4                                                                                | 55.0                                                                                | 16.9                                                                                | 52.3                                                                                | 51.8                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 63.5                                                                              | 9.0                                                                               |                                                                                   | 55.7                                                                              | 13.3                                                                              | 1.1                                                                                | 48.4                                                                                | 55.0                                                                                | 16.9                                                                                | 52.3                                                                                | 51.8                                                                                |
| LOS                     |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | B                                                                                 | A                                                                                  | D                                                                                   | D                                                                                   | B                                                                                   | D                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                   | 12.7                                                                              |                                                                                    |                                                                                     | 24.6                                                                                |                                                                                     |                                                                                     | 35.3                                                                                |
| Approach LOS            |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |
| 90th %ile Green (s)     | 19.8                                                                              | 19.8                                                                              | 69.1                                                                              |                                                                                   | 7.9                                                                               | 57.2                                                                              | 16.8                                                                               | 8.3                                                                                 | 6.2                                                                                 | 7.9                                                                                 | 16.8                                                                                | 14.7                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 70th %ile Green (s)     | 16.7                                                                              | 16.7                                                                              | 77.7                                                                              |                                                                                   | 7.2                                                                               | 68.2                                                                              | 21.1                                                                               | 7.7                                                                                 | 0.0                                                                                 | 7.2                                                                                 | 21.1                                                                                | 7.4                                                                                 |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Hold                                                                               | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Hold                                                                                | Gap                                                                                 |
| 50th %ile Green (s)     | 14.4                                                                              | 14.4                                                                              | 86.4                                                                              |                                                                                   | 6.5                                                                               | 78.5                                                                              | 13.1                                                                               | 0.0                                                                                 | 0.0                                                                                 | 6.5                                                                                 | 13.1                                                                                | 10.6                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 30th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 89.0                                                                              |                                                                                   | 6.0                                                                               | 82.8                                                                              | 11.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 6.0                                                                                 | 11.0                                                                                | 8.5                                                                                 |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 10th %ile Green (s)     | 9.0                                                                               | 9.0                                                                               | 102.5                                                                             |                                                                                   | 0.0                                                                               | 89.0                                                                              | 8.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 8.0                                                                                 | 5.5                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Skip                                                                                | Skip                                                                                | Skip                                                                                | Gap                                                                                 | Hold                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 102                                                                               | 118                                                                               |                                                                                   | 11                                                                                | 133                                                                               | 0                                                                                  | 14                                                                                  | 2                                                                                   | 0                                                                                   | 87                                                                                  | 15                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 158                                                                               | 232                                                                               |                                                                                   | 27                                                                                | 261                                                                               | 20                                                                                 | 30                                                                                  | 10                                                                                  | 38                                                                                  | 123                                                                                 | 38                                                                                  |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   | 1814                                                                              |                                                                                    |                                                                                     | 295                                                                                 |                                                                                     |                                                                                     | 491                                                                                 |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   | 400                                                                               |                                                                                   | 200                                                                                | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 244                                                                               | 2411                                                                              |                                                                                   | 434                                                                               | 2223                                                                              | 1385                                                                               | 307                                                                                 | 400                                                                                 | 295                                                                                 | 340                                                                                 | 400                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.36                                                                              |                                                                                   | 0.07                                                                              | 0.36                                                                              | 0.12                                                                               | 0.06                                                                                | 0.01                                                                                | 0.21                                                                                | 0.34                                                                                | 0.05                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Permitted Phases        | 8     |
| Detector Phase          | 5     |
| Switch Phase            |       |
| Minimum Initial (s)     | 5.0   |
| Minimum Split (s)       | 9.5   |
| Total Split (s)         | 20.0  |
| Total Split (%)         | 16.7% |
| Maximum Green (s)       | 15.5  |
| Yellow Time (s)         | 3.5   |
| All-Red Time (s)        | 1.0   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 4.5   |
| Lead/Lag                | Lead  |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | None  |
| Walk Time (s)           |       |
| Flash Don't Walk (s)    |       |
| Pedestrian Calls (#/hr) |       |
| Act Effct Green (s)     | 29.8  |
| Actuated g/C Ratio      | 0.25  |
| v/c Ratio               | 0.18  |
| Control Delay (s/veh)   | 7.4   |
| Queue Delay             | 0.0   |
| Total Delay (s/veh)     | 7.4   |
| LOS                     | A     |
| Approach Delay (s/veh)  |       |
| Approach LOS            |       |
| 90th %ile Green (s)     | 19.8  |
| 90th %ile Term Code     | Gap   |
| 70th %ile Green (s)     | 16.7  |
| 70th %ile Term Code     | Gap   |
| 50th %ile Green (s)     | 14.4  |
| 50th %ile Term Code     | Gap   |
| 30th %ile Green (s)     | 12.2  |
| 30th %ile Term Code     | Gap   |
| 10th %ile Green (s)     | 9.0   |
| 10th %ile Term Code     | Gap   |
| Queue Length 50th (ft)  | 0     |
| Queue Length 95th (ft)  | 33    |
| Internal Link Dist (ft) |       |
| Turn Bay Length (ft)    | 165   |
| Base Capacity (vph)     | 473   |
| Starvation Cap Reductn  | 0     |
| Spillback Cap Reductn   | 0     |
| Storage Cap Reductn     | 0     |
| Reduced v/c Ratio       | 0.17  |
| Intersection Summary    |       |

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 16.9

Intersection LOS: B

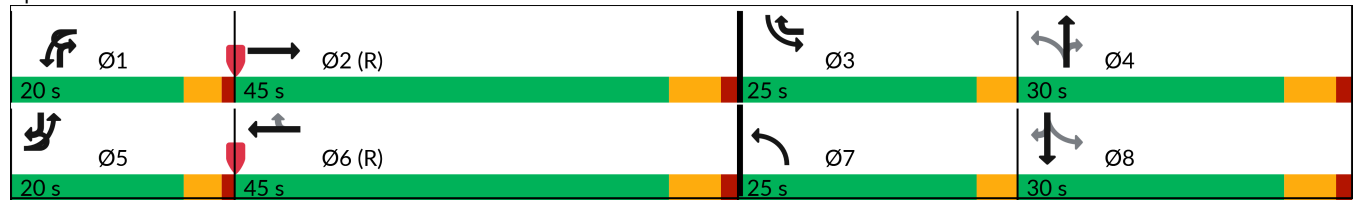
Intersection Capacity Utilization 51.6%

ICU Level of Service A

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 895  | 2    | 0    | 792  | 0    | 0    |
| Future Vol, veh/h        | 895  | 2    | 0    | 792  | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 89   | 89   | 89   | 89   | 89   | 89   |
| Heavy Vehicles, %        | 5    | 0    | 0    | 7    | 0    | 8    |
| Mvmt Flow                | 1006 | 2    | 0    | 890  | 0    | 0    |

| Major/Minor          | Major1 | Major2 | Minor1     |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0      | 0      | - - - 504  |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |
| Critical Hdwy        | -      | -      | - - - 7.06 |
| Critical Hdwy Stg 1  | -      | -      | - - -      |
| Critical Hdwy Stg 2  | -      | -      | - - -      |
| Follow-up Hdwy       | -      | -      | - - - 3.38 |
| Pot Cap-1 Maneuver   | -      | - 0    | - 0 498    |
| Stage 1              | -      | - 0    | - 0 -      |
| Stage 2              | -      | - 0    | - 0 -      |
| Platoon blocked, %   | -      | -      | -          |
| Mov Cap-1 Maneuver   | -      | -      | - - - 498  |
| Mov Cap-2 Maneuver   | -      | -      | - - -      |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |

| Approach          | EB | WB | NB |
|-------------------|----|----|----|
| HCM Ctrl Dly, s/v | 0  | 0  | 0  |
| HCM LOS           |    |    | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | -     | -   | -   | -   |
| HCM Lane V/C Ratio    | -     | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 0     | -   | -   | -   |
| HCM Lane LOS          | A     | -   | -   | -   |
| HCM 95th %tile Q(veh) | -     | -   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      | ↗    | ↖    | ↕    | ↕    | ↗    |
| Traffic Vol, veh/h       | 0    | 0    | 0    | 0    | 0    | 5    |
| Future Vol, veh/h        | 0    | 0    | 0    | 0    | 0    | 5    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | Stop | -    | None | -    | None |
| Storage Length           | -    | 0    | 110  | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 75   | 75   | 75   | 75   | 75   | 75   |
| Heavy Vehicles, %        | 20   | 0    | 0    | 0    | 0    | 20   |
| Mvmt Flow                | 0    | 0    | 0    | 0    | 0    | 7    |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | -      | 0      | 7      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | 6.2    | 4.1    |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | 3.3    | 2.2    |
| Pot Cap-1 Maneuver   | 0      | -      | 1627   |
| Stage 1              | 0      | -      | -      |
| Stage 2              | 0      | -      | -      |
| Platoon blocked, %   |        |        | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1627   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB | NB | SB |
|-------------------|----|----|----|
| HCM Ctrl Dly, s/v | 0  | 0  | 0  |
| HCM LOS           | A  |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1627 | -   | -     | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -     | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 0     | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -     | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday AM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.1                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1420                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1010                                                                                | 31                                                                                  |
| Future Vol, veh/h        | 19                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 14   | 4    | 25                                                                                | 1420                                                                              | 10                                                                                  | 2    | 41                                                                                  | 1010                                                                                | 31                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94                                                                                | 94   | 94   | 94                                                                                | 94                                                                                | 94                                                                                  | 94   | 94                                                                                  | 94                                                                                  | 94                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 6                                                                                 | 0                                                                                   | 0    | 2                                                                                   | 9                                                                                   | 3                                                                                   |
| Mvmt Flow                | 20                                                                                | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 15   | 4    | 27                                                                                | 1511                                                                              | 11                                                                                  | 2    | 44                                                                                  | 1074                                                                                | 33                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     |     | Major2 |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|-----|--------|---|---|------|------|---|---|
| Conflicting Flow All | 1848   | 2765 | 554    | 2099 | 2777   | 761 | 808 | 1107   | 0 | 0 | 1111 | 1521 | 0 | 0 |
| Stage 1              | 1182   | 1182 | -      | 1578 | 1578   | -   | -   | -      | - | - | -    | -    | - | - |
| Stage 2              | 666    | 1583 | -      | 521  | 1199   | -   | -   | -      | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6 | 5.3    | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -   | -      | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -   | -      | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3 | 3.1    | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 81     | 20   | 412    | 56   | 19     | 302 | 570 | 353    | - | - | 388  | 217  | - | - |
| Stage 1              | 151    | 266  | -      | 79   | 171    | -   | -   | -      | - | - | -    | -    | - | - |
| Stage 2              | 382    | 170  | -      | 467  | 261    | -   | -   | -      | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |     |        | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | 56     | 14   | 412    | 41   | 14     | 302 | 372 | 372    | - | - | 222  | 222  | - | - |
| Mov Cap-2 Maneuver   | 97     | 72   | -      | 64   | 82     | -   | -   | -      | - | - | -    | -    | - | - |
| Stage 1              | 120    | 211  | -      | 73   | 157    | -   | -   | -      | - | - | -    | -    | - | - |
| Stage 2              | 333    | 156  | -      | 368  | 207    | -   | -   | -      | - | - | -    | -    | - | - |

| Approach          | EB    |  | WB    |  | NB   |  |  | SB   |  |  |  |  |  |
|-------------------|-------|--|-------|--|------|--|--|------|--|--|--|--|--|
| HCM Ctrl Dly, s/v | 46.67 |  | 17.52 |  | 0.31 |  |  | 1.01 |  |  |  |  |  |
| HCM LOS           | E     |  | C     |  |      |  |  |      |  |  |  |  |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 372   | -   | -   | 97    | -     | 412   | -     | 302   | 222   | -   | -   |
| HCM Lane V/C Ratio    | 0.083 | -   | -   | 0.209 | -     | 0.008 | -     | 0.049 | 0.206 | -   | -   |
| HCM Ctrl Dly (s/v)    | 15.5  | -   | -   | 51.9  | 0     | 13.8  | 0     | 17.5  | 25.4  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | B     | A     | C     | D     | -   | -   |
| HCM 95th %tile Q(veh) | 0.3   | -   | -   | 0.7   | -     | 0     | -     | 0.2   | 0.8   | -   | -   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 6                                                                                 | 161                                                                               | 831                                                                               | 51                                                                                | 8                                                                                 | 284                                                                               | 938                                                                                | 178                                                                                 | 126                                                                                 | 82                                                                                  | 287                                                                                 | 181                                                                                 |
| Future Volume (vph)        | 6                                                                                 | 161                                                                               | 831                                                                               | 51                                                                                | 8                                                                                 | 284                                                                               | 938                                                                                | 178                                                                                 | 126                                                                                 | 82                                                                                  | 287                                                                                 | 181                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1788                                                                              | 3497                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1770                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.681                                                                               |                                                                                     |                                                                                     | 0.531                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1788                                                                              | 3497                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1269                                                                                | 2000                                                                                | 1615                                                                                | 999                                                                                 |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 173                                                                                 |                                                                                     |                                                                                     | 215                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 7%                                                                                | 0%                                                                                | 1%                                                                                | 3%                                                                                 | 1%                                                                                  | 2%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  |
| Adj. Flow (vph)            | 6                                                                                 | 164                                                                               | 848                                                                               | 52                                                                                | 8                                                                                 | 290                                                                               | 957                                                                                | 182                                                                                 | 129                                                                                 | 84                                                                                  | 293                                                                                 | 185                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 170                                                                               | 900                                                                               | 0                                                                                 | 0                                                                                 | 298                                                                               | 957                                                                                | 182                                                                                 | 129                                                                                 | 84                                                                                  | 293                                                                                 | 185                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |

|                            | ↓     | ↙     |
|----------------------------|-------|-------|
| Lane Group                 | SBT   | SBR   |
| Lane Configurations        | ↑     | ↗     |
| Traffic Volume (vph)       | 117   | 170   |
| Future Volume (vph)        | 117   | 170   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 173   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.98  | 0.98  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 119   | 173   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 119   | 173   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 17.5                                                                              | 65.6                                                                              |                                                                                   |                                                                                   | 16.6                                                                              | 64.6                                                                               | 87.6                                                                                | 26.2                                                                                | 10.8                                                                                | 33.4                                                                                | 33.7                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.13                                                                              | 0.50                                                                              |                                                                                   |                                                                                   | 0.13                                                                              | 0.50                                                                               | 0.67                                                                                | 0.20                                                                                | 0.08                                                                                | 0.26                                                                                | 0.26                                                                                |
| v/c Ratio               |                                                                                   | 0.71                                                                              | 0.51                                                                              |                                                                                   |                                                                                   | 0.68                                                                              | 0.52                                                                               | 0.16                                                                                | 0.42                                                                                | 0.51                                                                                | 0.51                                                                                | 0.51                                                                                |
| Control Delay (s/veh)   |                                                                                   | 69.0                                                                              | 24.4                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.5                                                                               | 2.1                                                                                 | 41.4                                                                                | 66.9                                                                                | 13.8                                                                                | 43.5                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 69.0                                                                              | 24.4                                                                              |                                                                                   |                                                                                   | 61.7                                                                              | 25.5                                                                               | 2.1                                                                                 | 41.4                                                                                | 66.9                                                                                | 13.8                                                                                | 43.5                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | E                                                                                   | B                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.1                                                                               |                                                                                     |                                                                                     | 29.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 23.7                                                                              | 23.7                                                                              | 51.3                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 49.1                                                                               | 22.4                                                                                | 16.9                                                                                | 14.8                                                                                | 21.5                                                                                | 22.4                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 20.1                                                                              | 20.1                                                                              | 60.1                                                                              |                                                                                   | 18.2                                                                              | 18.2                                                                              | 58.2                                                                               | 19.3                                                                                | 14.6                                                                                | 12.4                                                                                | 18.2                                                                                | 19.3                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 17.6                                                                              | 17.6                                                                              | 65.7                                                                              |                                                                                   | 16.4                                                                              | 16.4                                                                              | 64.5                                                                               | 17.1                                                                                | 13.0                                                                                | 10.8                                                                                | 16.4                                                                                | 17.1                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.0                                                                              | 15.0                                                                              | 71.4                                                                              |                                                                                   | 14.6                                                                              | 14.6                                                                              | 71.0                                                                               | 14.8                                                                                | 11.3                                                                                | 9.2                                                                                 | 14.6                                                                                | 14.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.3                                                                              | 11.3                                                                              | 79.6                                                                              |                                                                                   | 12.1                                                                              | 12.1                                                                              | 80.4                                                                               | 11.4                                                                                | 8.6                                                                                 | 6.9                                                                                 | 12.1                                                                                | 11.4                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 139                                                                               | 256                                                                               |                                                                                   |                                                                                   | 125                                                                               | 281                                                                                | 2                                                                                   | 87                                                                                  | 69                                                                                  | 52                                                                                  | 129                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 207                                                                               | 393                                                                               |                                                                                   |                                                                                   | 167                                                                               | 431                                                                                | 33                                                                                  | 129                                                                                 | 120                                                                                 | 125                                                                                 | 181                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 295                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 301                                                                               | 1767                                                                              |                                                                                   |                                                                                   | 573                                                                               | 1834                                                                               | 1194                                                                                | 409                                                                                 | 492                                                                                 | 627                                                                                 | 396                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.51                                                                              |                                                                                   |                                                                                   | 0.52                                                                              | 0.52                                                                               | 0.15                                                                                | 0.32                                                                                | 0.17                                                                                | 0.47                                                                                | 0.47                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 14.9  | 38.5  |
| Actuated g/C Ratio      | 0.11  | 0.30  |
| v/c Ratio               | 0.52  | 0.29  |
| Control Delay (s/veh)   | 61.4  | 5.2   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 61.4  | 5.2   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 34.1  |       |
| Approach LOS            | C     |       |
| 90th %ile Green (s)     | 20.3  | 23.7  |
| 90th %ile Term Code     | Hold  | Gap   |
| 70th %ile Green (s)     | 17.1  | 20.1  |
| 70th %ile Term Code     | Hold  | Gap   |
| 50th %ile Green (s)     | 14.9  | 17.6  |
| 50th %ile Term Code     | Hold  | Gap   |
| 30th %ile Green (s)     | 12.7  | 15.0  |
| 30th %ile Term Code     | Hold  | Gap   |
| 10th %ile Green (s)     | 9.7   | 11.3  |
| 10th %ile Term Code     | Hold  | Gap   |
| Queue Length 50th (ft)  | 96    | 0     |
| Queue Length 95th (ft)  | 153   | 46    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 643   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.24  | 0.27  |
| Intersection Summary    |       |       |

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay (s/veh): 31.0

Intersection LOS: C

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.5  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 974  | 85   | 0    | 1233 | 0    | 85   |
| Future Vol, veh/h        | 974  | 85   | 0    | 1233 | 0    | 85   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 3    | 0    | 1    |
| Mvmt Flow                | 1015 | 89   | 0    | 1284 | 0    | 89   |

| Major/Minor          | Major1 | Major2 | Minor1     |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0      | 0      | - - - 552  |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |
| Critical Hdwy        | -      | -      | - - - 6.92 |
| Critical Hdwy Stg 1  | -      | -      | - - -      |
| Critical Hdwy Stg 2  | -      | -      | - - -      |
| Follow-up Hdwy       | -      | -      | - - - 3.31 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 480  |
| Stage 1              | -      | -      | 0 - 0      |
| Stage 2              | -      | -      | 0 - 0      |
| Platoon blocked, %   | -      | -      | -          |
| Mov Cap-1 Maneuver   | -      | -      | - - - 480  |
| Mov Cap-2 Maneuver   | -      | -      | - - -      |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 14.18 |
| HCM LOS           |    |    | B     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 480   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.184 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 14.2  | -   | -   | -   |
| HCM Lane LOS          | B     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.7   | -   | -   | -   |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      | ↗    | ↘    | ↗↘   | ↗    | ↘    |
| Traffic Vol, veh/h       | 0    | 0    | 0    | 0    | 0    | 29   |
| Future Vol, veh/h        | 0    | 0    | 0    | 0    | 0    | 29   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | Stop | -    | None | -    | None |
| Storage Length           | -    | 0    | 110  | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 84   | 84   | 84   | 84   | 84   | 84   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 0    | 0    | 3    |
| Mvmt Flow                | 0    | 0    | 0    | 0    | 0    | 35   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | -      | 0      | 35     |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | 6.2    | 4.1    |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | 3.3    | 2.2    |
| Pot Cap-1 Maneuver   | 0      | -      | 1590   |
| Stage 1              | 0      | -      | -      |
| Stage 2              | 0      | -      | -      |
| Platoon blocked, %   |        |        | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1590   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB | NB | SB |
|-------------------|----|----|----|
| HCM Ctrl Dly, s/v | 0  | 0  | 0  |
| HCM LOS           | A  |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1590 | -   | -     | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -     | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 0     | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -     | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Weekday PM Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1728                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1830                                                                                | 67                                                                                  |
| Future Vol, veh/h        | 33                                                                                | 0                                                                                 | 15                                                                                | 7                                                                                 | 0                                                                                 | 49   | 2    | 39                                                                                | 1728                                                                              | 23                                                                                  | 6    | 59                                                                                  | 1830                                                                                | 67                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96                                                                                | 96   | 96   | 96                                                                                | 96                                                                                | 96                                                                                  | 96   | 96                                                                                  | 96                                                                                  | 96                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 3                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 2                                                                                   | 0                                                                                   |
| Mvmt Flow                | 34                                                                                | 0                                                                                 | 16                                                                                | 7                                                                                 | 0                                                                                 | 51   | 2    | 41                                                                                | 1800                                                                              | 24                                                                                  | 6    | 61                                                                                  | 1906                                                                                | 70                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2882   | 3986 | 988    | 2795 | 4009   | 912 | 1443   | 1976 | 0 | 0 | 1331 | 1824 | 0 | 0 |
| Stage 1              | 2077   | 2077 | -      | 1897 | 1897   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 805    | 1909 | -      | 898  | 2111   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.3  | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.1  | - | - |
| Pot Cap-1 Maneuver   | ~ 18   | 3    | 214    | 20   | 3      | 241 | 254    | 132  | - | - | 293  | 157  | - | - |
| Stage 1              | 35     | 97   | -      | 47   | 119    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 314    | 117  | -      | 276  | 93     | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 6    | 1    | 214    | 8    | 1      | 241 | 135    | 135  | - | - | 162  | 162  | - | - |
| Mov Cap-2 Maneuver   | ~ 17   | 10   | -      | 25   | 9      | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | ~ 20   | 56   | -      | 32   | 81     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 169    | 80   | -      | 149  | 54     | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB        |  | WB    |  | NB |  | SB  |  |
|-------------------|-----------|--|-------|--|----|--|-----|--|
| HCM Ctrl Dly, s/v | \$ 672.81 |  | 46.31 |  | 1  |  | 1.4 |  |
| HCM LOS           | F         |  | E     |  |    |  |     |  |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1    | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|----------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 135   | -   | -   | 17       | -     | 214   | 25    | 241   | 162   | -   | -   |
| HCM Lane V/C Ratio    | 0.317 | -   | -   | 2.063    | -     | 0.073 | 0.295 | 0.212 | 0.418 | -   | -   |
| HCM Ctrl Dly (s/v)    | 43.7  | -   | -   | \$ 968.1 | 0     | 23.1  | 202.8 | 24    | 42.4  | -   | -   |
| HCM Lane LOS          | E     | -   | -   | F        | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 1.3   | -   | -   | 4.9      | -     | 0.2   | 0.9   | 0.8   | 1.9   | -   | -   |

| Notes                      |                                |
|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$: Delay exceeds 300s         |
| +: Computation Not Defined | *: All major volume in platoon |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 19                                                                                | 143                                                                               | 747                                                                               | 50                                                                                | 2                                                                                 | 405                                                                               | 786                                                                                | 173                                                                                 | 151                                                                                 | 102                                                                                 | 348                                                                                 | 111                                                                                 |
| Future Volume (vph)        | 19                                                                                | 143                                                                               | 747                                                                               | 50                                                                                | 2                                                                                 | 405                                                                               | 786                                                                                | 173                                                                                 | 151                                                                                 | 102                                                                                 | 348                                                                                 | 111                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.991                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1789                                                                              | 3512                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 1805                                                                                | 1980                                                                                | 1615                                                                                | 1752                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.383                                                                               |                                                                                     |                                                                                     | 0.687                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1789                                                                              | 3512                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                               | 1599                                                                                | 728                                                                                 | 1980                                                                                | 1615                                                                                | 1267                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 5                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 184                                                                                 |                                                                                     |                                                                                     | 298                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1894                                                                               |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.3                                                                               |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 2%                                                                                 | 1%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)            | 20                                                                                | 152                                                                               | 795                                                                               | 53                                                                                | 2                                                                                 | 431                                                                               | 836                                                                                | 184                                                                                 | 161                                                                                 | 109                                                                                 | 370                                                                                 | 118                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 172                                                                               | 848                                                                               | 0                                                                                 | 0                                                                                 | 433                                                                               | 836                                                                                | 184                                                                                 | 161                                                                                 | 109                                                                                 | 370                                                                                 | 118                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Saturday Middy Peak

|                            | ↓     | ↙     |
|----------------------------|-------|-------|
| Lane Group                 | SBT   | SBR   |
| Lane Configurations        | ↑     | ↗     |
| Traffic Volume (vph)       | 148   | 139   |
| Future Volume (vph)        | 148   | 139   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 148   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.94  | 0.94  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 157   | 148   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 157   | 148   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 17.7                                                                              | 57.4                                                                              |                                                                                   |                                                                                   | 22.0                                                                              | 61.7                                                                               | 80.1                                                                                | 35.8                                                                                | 18.3                                                                                | 46.2                                                                                | 30.4                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.44                                                                              |                                                                                   |                                                                                   | 0.17                                                                              | 0.47                                                                               | 0.62                                                                                | 0.28                                                                                | 0.14                                                                                | 0.36                                                                                | 0.23                                                                                |
| v/c Ratio               |                                                                                   | 0.71                                                                              | 0.55                                                                              |                                                                                   |                                                                                   | 0.74                                                                              | 0.47                                                                               | 0.17                                                                                | 0.50                                                                                | 0.39                                                                                | 0.48                                                                                | 0.35                                                                                |
| Control Delay (s/veh)   |                                                                                   | 69.1                                                                              | 30.5                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.5                                                                               | 2.4                                                                                 | 40.6                                                                                | 53.8                                                                                | 7.9                                                                                 | 37.1                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 69.1                                                                              | 30.5                                                                              |                                                                                   |                                                                                   | 59.0                                                                              | 26.5                                                                               | 2.4                                                                                 | 40.6                                                                                | 53.8                                                                                | 7.9                                                                                 | 37.1                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 37.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 33.1                                                                               |                                                                                     |                                                                                     | 24.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 23.8                                                                              | 23.8                                                                              | 41.2                                                                              |                                                                                   | 27.9                                                                              | 27.9                                                                              | 45.3                                                                               | 16.2                                                                                | 19.9                                                                                | 24.7                                                                                | 27.9                                                                                | 16.2                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 20.2                                                                              | 20.2                                                                              | 50.9                                                                              |                                                                                   | 24.2                                                                              | 24.2                                                                              | 54.9                                                                               | 14.1                                                                                | 17.1                                                                                | 20.8                                                                                | 24.2                                                                                | 14.1                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 17.7                                                                              | 17.7                                                                              | 57.1                                                                              |                                                                                   | 22.2                                                                              | 22.2                                                                              | 61.6                                                                               | 12.5                                                                                | 15.2                                                                                | 18.2                                                                                | 22.2                                                                                | 12.5                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.2                                                                              | 15.2                                                                              | 64.2                                                                              |                                                                                   | 19.3                                                                              | 19.3                                                                              | 68.3                                                                               | 10.8                                                                                | 13.2                                                                                | 15.7                                                                                | 19.3                                                                                | 10.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.4                                                                              | 11.4                                                                              | 73.6                                                                              |                                                                                   | 16.2                                                                              | 16.2                                                                              | 78.4                                                                               | 8.3                                                                                 | 10.1                                                                                | 11.9                                                                                | 16.2                                                                                | 8.3                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 141                                                                               | 271                                                                               |                                                                                   |                                                                                   | 180                                                                               | 245                                                                                | 0                                                                                   | 107                                                                                 | 85                                                                                  | 41                                                                                  | 77                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 209                                                                               | 415                                                                               |                                                                                   |                                                                                   | 225                                                                               | 381                                                                                | 36                                                                                  | 151                                                                                 | 136                                                                                 | 102                                                                                 | 115                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1814                                                                               |                                                                                     |                                                                                     | 295                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 301                                                                               | 1553                                                                              |                                                                                   |                                                                                   | 625                                                                               | 1768                                                                               | 1165                                                                                | 391                                                                                 | 487                                                                                 | 781                                                                                 | 439                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.57                                                                              | 0.55                                                                              |                                                                                   |                                                                                   | 0.69                                                                              | 0.47                                                                               | 0.16                                                                                | 0.41                                                                                | 0.22                                                                                | 0.47                                                                                | 0.27                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 15.5  | 39.2  |
| Actuated g/C Ratio      | 0.12  | 0.30  |
| v/c Ratio               | 0.66  | 0.25  |
| Control Delay (s/veh)   | 67.3  | 5.2   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 67.3  | 5.2   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 37.2  |       |
| Approach LOS            | D     |       |
| 90th %ile Green (s)     | 21.0  | 23.8  |
| 90th %ile Term Code     | Gap   | Gap   |
| 70th %ile Green (s)     | 17.8  | 20.2  |
| 70th %ile Term Code     | Gap   | Gap   |
| 50th %ile Green (s)     | 15.5  | 17.7  |
| 50th %ile Term Code     | Gap   | Gap   |
| 30th %ile Green (s)     | 13.3  | 15.2  |
| 30th %ile Term Code     | Gap   | Gap   |
| 10th %ile Green (s)     | 10.1  | 11.4  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 128   | 0     |
| Queue Length 95th (ft)  | 194   | 43    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 633   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.32  | 0.23  |
| Intersection Summary    |       |       |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Saturday MIDDAY Peak

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 33.1

Intersection LOS: C

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



| Intersection             |        |      |        |      |        |      |
|--------------------------|--------|------|--------|------|--------|------|
| Int Delay, s/veh         | 0.8    |      |        |      |        |      |
| Movement                 | EBT    | EBR  | WBL    | WBT  | NBL    | NBR  |
| Lane Configurations      | ↑↑↱    |      |        | ↑↑   |        | ↱    |
| Traffic Vol, veh/h       | 852    | 106  | 0      | 1076 | 0      | 120  |
| Future Vol, veh/h        | 852    | 106  | 0      | 1076 | 0      | 120  |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0    |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop |
| RT Channelized           | -      | None | -      | None | -      | None |
| Storage Length           | -      | -    | -      | -    | -      | 0    |
| Veh in Median Storage, # | 0      | -    | -      | 0    | 0      | -    |
| Grade, %                 | 0      | -    | -      | 0    | 0      | -    |
| Peak Hour Factor         | 91     | 91   | 91     | 91   | 91     | 91   |
| Heavy Vehicles, %        | 2      | 1    | 0      | 2    | 0      | 1    |
| Mvmt Flow                | 936    | 116  | 0      | 1182 | 0      | 132  |
|                          |        |      |        |      |        |      |
| Major/Minor              | Major1 |      | Major2 |      | Minor1 |      |
| Conflicting Flow All     | 0      | 0    | -      | -    | -      | 526  |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
| Critical Hdwy            | -      | -    | -      | -    | -      | 6.92 |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | -      | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | -      | -    |
| Follow-up Hdwy           | -      | -    | -      | -    | -      | 3.31 |
| Pot Cap-1 Maneuver       | -      | -    | 0      | -    | 0      | 499  |
| Stage 1                  | -      | -    | 0      | -    | 0      | -    |
| Stage 2                  | -      | -    | 0      | -    | 0      | -    |
| Platoon blocked, %       | -      | -    |        | -    |        |      |
| Mov Cap-1 Maneuver       | -      | -    | -      | -    | -      | 499  |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | -      | -    |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Approach                 | EB     |      | WB     |      | NB     |      |
| HCM Ctrl Dly, s/v        | 0      |      | 0      |      | 14.79  |      |
| HCM LOS                  |        |      |        |      | B      |      |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBT  |        |      |
| Capacity (veh/h)         | 499    | -    | -      | -    |        |      |
| HCM Lane V/C Ratio       | 0.264  | -    | -      | -    |        |      |
| HCM Ctrl Dly (s/v)       | 14.8   | -    | -      | -    |        |      |
| HCM Lane LOS             | B      | -    | -      | -    |        |      |
| HCM 95th %tile Q(veh)    | 1.1    | -    | -      | -    |        |      |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0    |      |      |      |      |      |
| Movement                 | EBL  | EBR  | NBL  | NBT  | SBT  | SBR  |
| Lane Configurations      |      | ↗    | ↖    | ↕    | ↕    | ↗    |
| Traffic Vol, veh/h       | 0    | 0    | 0    | 0    | 0    | 40   |
| Future Vol, veh/h        | 0    | 0    | 0    | 0    | 0    | 40   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Free | Free | Free | Free |
| RT Channelized           | -    | Stop | -    | None | -    | None |
| Storage Length           | -    | 0    | 110  | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 80   | 80   | 80   | 80   | 80   | 80   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 0    | 0    | 0    | 0    | 0    | 50   |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | -      | 0      | 50     |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | 6.2    | 4.1    |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | 3.3    | 2.2    |
| Pot Cap-1 Maneuver   | 0      | -      | 1570   |
| Stage 1              | 0      | -      | -      |
| Stage 2              | 0      | -      | -      |
| Platoon blocked, %   |        |        | -      |
| Mov Cap-1 Maneuver   | -      | -      | 1570   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB | NB | SB |
|-------------------|----|----|----|
| HCM Ctrl Dly, s/v | 0  | 0  | 0  |
| HCM LOS           | A  |    |    |

| Minor Lane/Major Mvmt | NBL  | NBT | EBLn1 | SBT | SBR |
|-----------------------|------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1570 | -   | -     | -   | -   |
| HCM Lane V/C Ratio    | -    | -   | -     | -   | -   |
| HCM Ctrl Dly (s/v)    | 0    | -   | 0     | -   | -   |
| HCM Lane LOS          | A    | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -     | -   | -   |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2025 Future Reconfiguration Traffic Volumes  
Timing Plan: Saturday Midday Peak

| Intersection             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Int Delay, s/veh         | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |      |      |                                                                                   |                                                                                   |                                                                                     |      |                                                                                     |                                                                                     |                                                                                     |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR  | NBU  | NBL                                                                               | NBT                                                                               | NBR                                                                                 | SBU  | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations      |  |  |  |  |  |      |      |  |  |  |      |  |  |  |
| Traffic Vol, veh/h       | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1800                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1551                                                                                | 29                                                                                  |
| Future Vol, veh/h        | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 34   | 7    | 26                                                                                | 1800                                                                              | 17                                                                                  | 13   | 39                                                                                  | 1551                                                                                | 29                                                                                  |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0    | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop                                                                              | Stop | Free | Free                                                                              | Free                                                                              | Free                                                                                | Free | Free                                                                                | Free                                                                                | Free                                                                                |
| RT Channelized           | -                                                                                 | -                                                                                 | None                                                                              | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | -                                                                                 | None                                                                                | -    | -                                                                                   | -                                                                                   | None                                                                                |
| Storage Length           | 70                                                                                | -                                                                                 | -                                                                                 | 0                                                                                 | -                                                                                 | -    | -    | 190                                                                               | -                                                                                 | -                                                                                   | -    | 270                                                                                 | -                                                                                   | -                                                                                   |
| Veh in Median Storage, # | -                                                                                 | 1                                                                                 | -                                                                                 | -                                                                                 | 1                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Grade, %                 | -                                                                                 | 0                                                                                 | -                                                                                 | -                                                                                 | 0                                                                                 | -    | -    | -                                                                                 | 0                                                                                 | -                                                                                   | -    | -                                                                                   | 0                                                                                   | -                                                                                   |
| Peak Hour Factor         | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98                                                                                | 98   | 98   | 98                                                                                | 98                                                                                | 98                                                                                  | 98   | 98                                                                                  | 98                                                                                  | 98                                                                                  |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 1                                                                                 | 6                                                                                   | 0    | 2                                                                                   | 1                                                                                   | 0                                                                                   |
| Mvmt Flow                | 16                                                                                | 0                                                                                 | 15                                                                                | 8                                                                                 | 0                                                                                 | 35   | 7    | 27                                                                                | 1837                                                                              | 17                                                                                  | 13   | 40                                                                                  | 1583                                                                                | 30                                                                                  |

| Major/Minor          | Minor2 |      | Minor1 |      | Major1 |     | Major2 |      |   |   |      |      |   |   |
|----------------------|--------|------|--------|------|--------|-----|--------|------|---|---|------|------|---|---|
| Conflicting Flow All | 2506   | 3625 | 806    | 2652 | 3631   | 927 | 1177   | 1612 | 0 | 0 | 1353 | 1854 | 0 | 0 |
| Stage 1              | 1704   | 1704 | -      | 1913 | 1913   | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 802    | 1921 | -      | 739  | 1718   | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy        | 6.4    | 6.5  | 7.1    | 6.4  | 6.5    | 7.1 | 5.6    | 5.3  | - | - | 5.6  | 5.34 | - | - |
| Critical Hdwy Stg 1  | 7.3    | 5.5  | -      | 7.3  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Critical Hdwy Stg 2  | 6.7    | 5.5  | -      | 6.7  | 5.5    | -   | -      | -    | - | - | -    | -    | - | - |
| Follow-up Hdwy       | 3.8    | 4    | 3.9    | 3.8  | 4      | 3.9 | 2.3    | 3.1  | - | - | 2.3  | 3.12 | - | - |
| Pot Cap-1 Maneuver   | 31     | 5    | 282    | 25   | 5      | 235 | 357    | 200  | - | - | 285  | 148  | - | - |
| Stage 1              | 65     | 149  | -      | 46   | 117    | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 316    | 116  | -      | 345  | 146    | -   | -      | -    | - | - | -    | -    | - | - |
| Platoon blocked, %   |        |      |        |      |        |     |        |      | - | - |      |      | - | - |
| Mov Cap-1 Maneuver   | ~ 15   | 3    | 282    | 14   | 3      | 235 | 219    | 219  | - | - | 164  | 164  | - | - |
| Mov Cap-2 Maneuver   | 36     | 29   | -      | 32   | 37     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 1              | 44     | 101  | -      | 39   | 99     | -   | -      | -    | - | - | -    | -    | - | - |
| Stage 2              | 228    | 98   | -      | 221  | 99     | -   | -      | -    | - | - | -    | -    | - | - |

| Approach          | EB    | WB    | NB   | SB   |
|-------------------|-------|-------|------|------|
| HCM Ctrl Dly, s/v | 97.12 | 47.19 | 0.44 | 1.18 |
| HCM LOS           | F     | E     |      |      |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 219   | -   | -   | 36    | -     | 282   | 32    | 235   | 164   | -   | -   |
| HCM Lane V/C Ratio    | 0.154 | -   | -   | 0.454 | -     | 0.054 | 0.252 | 0.148 | 0.323 | -   | -   |
| HCM Ctrl Dly (s/v)    | 24.4  | -   | -   | 170.8 | 0     | 18.5  | 150.2 | 22.9  | 37.1  | -   | -   |
| HCM Lane LOS          | C     | -   | -   | F     | A     | C     | F     | C     | E     | -   | -   |
| HCM 95th %tile Q(veh) | 0.5   | -   | -   | 1.5   | -     | 0.2   | 0.8   | 0.5   | 1.3   | -   | -   |

| Notes                      |                                |
|----------------------------|--------------------------------|
| ~: Volume exceeds capacity | \$. Delay exceeds 300s         |
| +: Computation Not Defined | *: All major volume in platoon |

# MOVEMENT SUMMARY

 **Site: [1] Costco Wholesale, Orland Park, IL #647 (2025 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
AM Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|--------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |        | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total      | HV ] | [ Total       | HV ] |           |             |                  | [ Veh.            | Dist ] |            |                |                            |             |
|                              |      |           | veh/h        | %    | veh/h         | %    | v/c       | sec         |                  | veh               | ft     |            |                |                            | mph         |
| South: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 3                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.003     | 2.9         | LOS A            | 0.0               | 0.3    | 0.20       | 0.06           | 0.20                       | 16.3        |
| 8                            | T1   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.003     | 2.9         | LOS A            | 0.0               | 0.3    | 0.20       | 0.06           | 0.20                       | 25.0        |
| 18                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.003     | 2.9         | LOS A            | 0.0               | 0.3    | 0.20       | 0.06           | 0.20                       | 20.7        |
| Approach                     |      |           | 3            | 0.0  | 3             | 0.0  | 0.003     | 2.9         | LOS A            | 0.0               | 0.3    | 0.20       | 0.06           | 0.20                       | 20.8        |
| East: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 1                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.061     | 2.9         | LOS A            | 0.3               | 6.8    | 0.03       | 0.00           | 0.03                       | 21.3        |
| 6                            | T1   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.061     | 2.9         | LOS A            | 0.3               | 6.8    | 0.03       | 0.00           | 0.03                       | 16.2        |
| 16                           | R2   | All MCs   | 79           | 3.0  | 79            | 3.0  | 0.061     | 3.0         | LOS A            | 0.3               | 6.8    | 0.03       | 0.00           | 0.03                       | 24.9        |
| Approach                     |      |           | 82           | 2.9  | 82            | 2.9  | 0.061     | 3.0         | LOS A            | 0.3               | 6.8    | 0.03       | 0.00           | 0.03                       | 24.8        |
| North: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 7                            | L2   | All MCs   | 80           | 3.0  | 80            | 3.0  | 0.068     | 3.1         | LOS A            | 0.3               | 7.6    | 0.03       | 0.00           | 0.03                       | 20.6        |
| 4                            | T1   | All MCs   | 5            | 3.0  | 5             | 3.0  | 0.068     | 3.1         | LOS A            | 0.3               | 7.6    | 0.03       | 0.00           | 0.03                       | 22.5        |
| 14                           | R2   | All MCs   | 5            | 0.0  | 5             | 0.0  | 0.068     | 2.9         | LOS A            | 0.3               | 7.6    | 0.03       | 0.00           | 0.03                       | 20.7        |
| Approach                     |      |           | 91           | 2.8  | 91            | 2.8  | 0.068     | 3.0         | LOS A            | 0.3               | 7.6    | 0.03       | 0.00           | 0.03                       | 20.7        |
| West: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 5                            | L2   | All MCs   | 1            | 3.0  | 1             | 3.0  | 0.003     | 3.0         | LOS A            | 0.0               | 0.3    | 0.21       | 0.06           | 0.21                       | 23.4        |
| 2                            | T1   | All MCs   | 1            | 3.0  | 1             | 3.0  | 0.003     | 3.0         | LOS A            | 0.0               | 0.3    | 0.21       | 0.06           | 0.21                       | 20.0        |
| 12                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.003     | 2.8         | LOS A            | 0.0               | 0.3    | 0.21       | 0.06           | 0.21                       | 21.2        |
| Approach                     |      |           | 3            | 2.0  | 3             | 2.0  | 0.003     | 2.9         | LOS A            | 0.0               | 0.3    | 0.21       | 0.06           | 0.21                       | 21.7        |
| All Vehicles                 |      |           | 179          | 2.8  | 179           | 2.8  | 0.068     | 3.0         | LOS A            | 0.3               | 7.6    | 0.04       | 0.01           | 0.04                       | 22.2        |

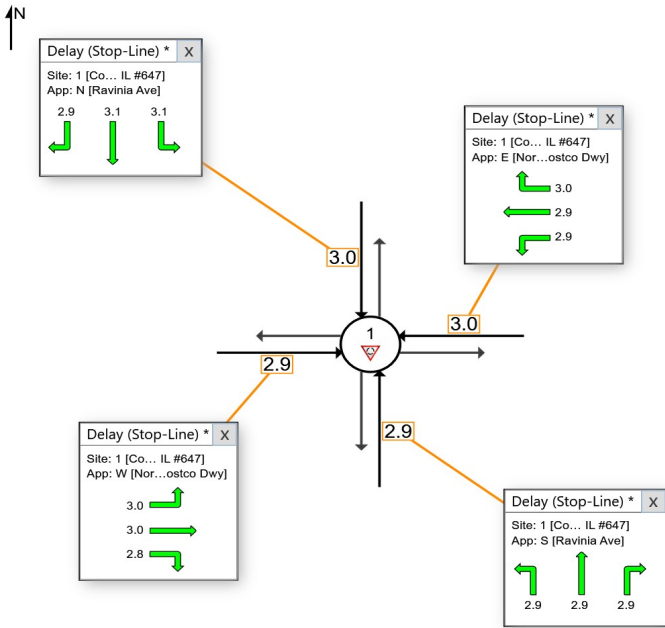
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
AM Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



Colour code based on Level of Service

|       |       |       |       |       |       |    |
|-------|-------|-------|-------|-------|-------|----|
| LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA |
|-------|-------|-------|-------|-------|-------|----|

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

# MOVEMENT SUMMARY

 **Site: [2] Costco Wholesale, Orland Park, IL #647 (2025 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
PM Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|--------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |        | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total      | HV ] | [ Total       | HV ] |           |             |                  | [ Veh.            | Dist ] |            |                |                            |             |
|                              |      |           | veh/h        | %    | veh/h         | %    | v/c       | sec         |                  | veh               | ft     |            |                |                            | mph         |
| South: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 3                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.3         | LOS A            | 0.0               | 0.4    | 0.49       | 0.30           | 0.49                       | 15.4        |
| 8                            | T1   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.3         | LOS A            | 0.0               | 0.4    | 0.49       | 0.30           | 0.49                       | 23.6        |
| 18                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.3         | LOS A            | 0.0               | 0.4    | 0.49       | 0.30           | 0.49                       | 19.4        |
| Approach                     |      |           | 3            | 0.0  | 3             | 0.0  | 0.004     | 4.3         | LOS A            | 0.0               | 0.4    | 0.49       | 0.30           | 0.49                       | 19.5        |
| East: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 1                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.294     | 6.3         | LOS A            | 1.5               | 37.2   | 0.50       | 0.33           | 0.50                       | 17.9        |
| 6                            | T1   | All MCs   | 35           | 0.0  | 35            | 0.0  | 0.294     | 6.3         | LOS A            | 1.5               | 37.2   | 0.50       | 0.33           | 0.50                       | 13.5        |
| 16                           | R2   | All MCs   | 254          | 3.0  | 254           | 3.0  | 0.294     | 6.6         | LOS A            | 1.5               | 37.2   | 0.50       | 0.33           | 0.50                       | 21.4        |
| Approach                     |      |           | 290          | 2.6  | 290           | 2.6  | 0.294     | 6.6         | LOS A            | 1.5               | 37.2   | 0.50       | 0.33           | 0.50                       | 20.5        |
| North: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 7                            | L2   | All MCs   | 159          | 3.0  | 159           | 3.0  | 0.172     | 4.1         | LOS A            | 0.8               | 21.4   | 0.15       | 0.04           | 0.15                       | 20.3        |
| 4                            | T1   | All MCs   | 32           | 3.0  | 32            | 3.0  | 0.172     | 4.1         | LOS A            | 0.8               | 21.4   | 0.15       | 0.04           | 0.15                       | 22.2        |
| 14                           | R2   | All MCs   | 33           | 0.0  | 33            | 0.0  | 0.172     | 3.9         | LOS A            | 0.8               | 21.4   | 0.15       | 0.04           | 0.15                       | 20.4        |
| Approach                     |      |           | 223          | 2.6  | 223           | 2.6  | 0.172     | 4.1         | LOS A            | 0.8               | 21.4   | 0.15       | 0.04           | 0.15                       | 20.6        |
| West: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 5                            | L2   | All MCs   | 285          | 3.0  | 285           | 3.0  | 0.288     | 6.0         | LOS A            | 1.5               | 38.0   | 0.42       | 0.24           | 0.42                       | 19.4        |
| 2                            | T1   | All MCs   | 28           | 3.0  | 28            | 3.0  | 0.288     | 6.0         | LOS A            | 1.5               | 38.0   | 0.42       | 0.24           | 0.42                       | 15.9        |
| 12                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.288     | 5.7         | LOS A            | 1.5               | 38.0   | 0.42       | 0.24           | 0.42                       | 17.1        |
| Approach                     |      |           | 314          | 3.0  | 314           | 3.0  | 0.288     | 6.0         | LOS A            | 1.5               | 38.0   | 0.42       | 0.24           | 0.42                       | 19.1        |
| All Vehicles                 |      |           | 830          | 2.7  | 830           | 2.7  | 0.294     | 5.7         | LOS A            | 1.5               | 38.0   | 0.37       | 0.22           | 0.37                       | 20.0        |

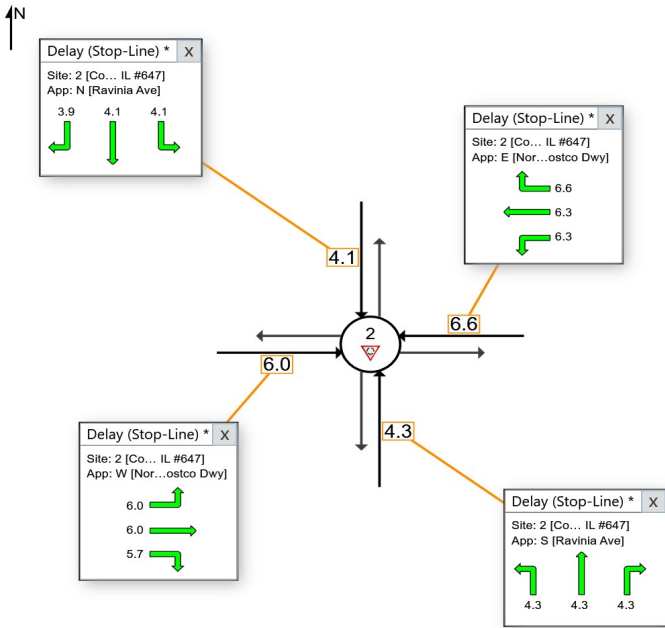
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
PM Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



Colour code based on Level of Service

|       |       |       |       |       |       |    |
|-------|-------|-------|-------|-------|-------|----|
| LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA |
|-------|-------|-------|-------|-------|-------|----|

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

# MOVEMENT SUMMARY

 **Site: [3] Costco Wholesale, Orland Park, IL #647 (2025 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
Sat MD Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
|------------------------------|------|-----------|--------------|------|---------------|------|-----------|-------------|------------------|-------------------|--------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows |      | Arrival Flows |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |        | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total      | HV ] | [ Total       | HV ] |           |             |                  | [ Veh.            | Dist ] |            |                |                            |             |
|                              |      |           | veh/h        | %    | veh/h         | %    | v/c       | sec         |                  | veh               | ft     |            |                |                            | mph         |
| South: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 3                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.8         | LOS A            | 0.0               | 0.4    | 0.54       | 0.35           | 0.54                       | 15.1        |
| 8                            | T1   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.8         | LOS A            | 0.0               | 0.4    | 0.54       | 0.35           | 0.54                       | 23.2        |
| 18                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.004     | 4.8         | LOS A            | 0.0               | 0.4    | 0.54       | 0.35           | 0.54                       | 19.0        |
| Approach                     |      |           | 3            | 0.0  | 3             | 0.0  | 0.004     | 4.8         | LOS A            | 0.0               | 0.4    | 0.54       | 0.35           | 0.54                       | 19.2        |
| East: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 1                            | L2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.388     | 7.8         | LOS A            | 2.0               | 52.2   | 0.58       | 0.41           | 0.58                       | 16.6        |
| 6                            | T1   | All MCs   | 46           | 0.0  | 46            | 0.0  | 0.388     | 7.8         | LOS A            | 2.0               | 52.2   | 0.58       | 0.41           | 0.58                       | 12.6        |
| 16                           | R2   | All MCs   | 315          | 3.0  | 315           | 3.0  | 0.388     | 8.2         | LOS A            | 2.0               | 52.2   | 0.58       | 0.41           | 0.58                       | 20.1        |
| Approach                     |      |           | 362          | 2.6  | 362           | 2.6  | 0.388     | 8.2         | LOS A            | 2.0               | 52.2   | 0.58       | 0.41           | 0.58                       | 19.2        |
| North: Ravinia Ave           |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 7                            | L2   | All MCs   | 199          | 3.0  | 199           | 3.0  | 0.224     | 4.6         | LOS A            | 1.2               | 29.6   | 0.18       | 0.06           | 0.18                       | 20.0        |
| 4                            | T1   | All MCs   | 43           | 3.0  | 43            | 3.0  | 0.224     | 4.6         | LOS A            | 1.2               | 29.6   | 0.18       | 0.06           | 0.18                       | 21.9        |
| 14                           | R2   | All MCs   | 46           | 0.0  | 46            | 0.0  | 0.224     | 4.4         | LOS A            | 1.2               | 29.6   | 0.18       | 0.06           | 0.18                       | 20.1        |
| Approach                     |      |           | 288          | 2.5  | 288           | 2.5  | 0.224     | 4.6         | LOS A            | 1.2               | 29.6   | 0.18       | 0.06           | 0.18                       | 20.3        |
| West: North Costco Dwy       |      |           |              |      |               |      |           |             |                  |                   |        |            |                |                            |             |
| 5                            | L2   | All MCs   | 338          | 3.0  | 338           | 3.0  | 0.361     | 7.2         | LOS A            | 2.0               | 50.1   | 0.50       | 0.31           | 0.50                       | 18.6        |
| 2                            | T1   | All MCs   | 34           | 3.0  | 34            | 3.0  | 0.361     | 7.2         | LOS A            | 2.0               | 50.1   | 0.50       | 0.31           | 0.50                       | 15.1        |
| 12                           | R2   | All MCs   | 1            | 0.0  | 1             | 0.0  | 0.361     | 6.9         | LOS A            | 2.0               | 50.1   | 0.50       | 0.31           | 0.50                       | 16.4        |
| Approach                     |      |           | 373          | 3.0  | 373           | 3.0  | 0.361     | 7.2         | LOS A            | 2.0               | 50.1   | 0.50       | 0.31           | 0.50                       | 18.4        |
| All Vehicles                 |      |           | 1026         | 2.7  | 1026          | 2.7  | 0.388     | 6.8         | LOS A            | 2.0               | 52.2   | 0.44       | 0.28           | 0.44                       | 19.2        |

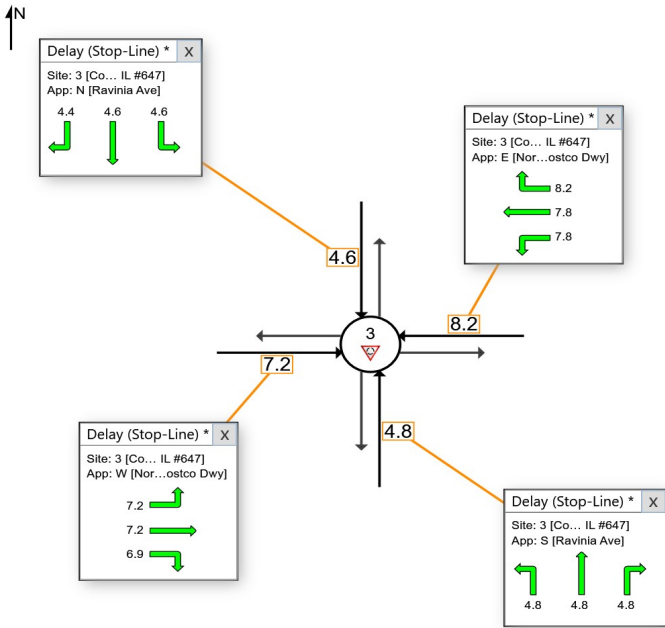
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2025 Future Reconfiguration Traffic Volumes  
North Costco Dwy & Ravinia Ave  
Sat MD Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).



**APPENDIX G**

**CAPACITY ANALYSIS WORKSHEETS**  
**2050 FUTURE WITH RAVINIA EXTENSION**

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday AM Peak

|                            |  |  |  |  |  |  |   |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 3                                                                                 | 116                                                                               | 894                                                                               | 101                                                                               | 26                                                                                | 803                                                                               | 107                                                                                 | 109                                                                                 | 91                                                                                  | 36                                                                                  | 97                                                                                  | 48                                                                                  |
| Future Volume (vph)        | 3                                                                                 | 116                                                                               | 894                                                                               | 101                                                                               | 26                                                                                | 803                                                                               | 107                                                                                 | 109                                                                                 | 91                                                                                  | 36                                                                                  | 97                                                                                  | 48                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                              | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                | 2000                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 | 400                                                                               |                                                                                   | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |                                                                                     |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |                                                                                     |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   | 290                                                                               |                                                                                   |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |                                                                                     |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.985                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)          | 0                                                                                 | 1770                                                                              | 3357                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 1597                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                | 2000                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     | 0.514                                                                               |                                                                                     |                                                                                     | 0.690                                                                               |                                                                                     |
| Satd. Flow (perm)          | 0                                                                                 | 1770                                                                              | 3357                                                                              | 0                                                                                 | 3367                                                                              | 3551                                                                              | 1583                                                                                | 864                                                                                 | 2000                                                                                | 1615                                                                                | 1298                                                                                | 2000                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   |                                                                                   | 122                                                                                 |                                                                                     |                                                                                     | 59                                                                                  |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   | 40                                                                                |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   | 1880                                                                              |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     | 571                                                                                 |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   | 32.0                                                                              |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |                                                                                     | 13.0                                                                                |
| Peak Hour Factor           | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                              | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                | 0.88                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 2%                                                                                | 5%                                                                                | 14%                                                                               | 4%                                                                                | 7%                                                                                | 2%                                                                                  | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 3                                                                                 | 132                                                                               | 1016                                                                              | 115                                                                               | 30                                                                                | 913                                                                               | 122                                                                                 | 124                                                                                 | 103                                                                                 | 41                                                                                  | 110                                                                                 | 55                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 135                                                                               | 1131                                                                              | 0                                                                                 | 30                                                                                | 913                                                                               | 122                                                                                 | 124                                                                                 | 103                                                                                 | 41                                                                                  | 110                                                                                 | 55                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   | 24                                                                                |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                              | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   | Left                                                                              | Thru                                                                              | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   | 20                                                                                | 100                                                                               | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   | 20                                                                                | 6                                                                                 | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   | 8                                                                                   |

|                            |       |
|----------------------------|-------|
| Lane Group                 | SBR   |
| Lane Configurations        | ↗     |
| Traffic Volume (vph)       | 72    |
| Future Volume (vph)        | 72    |
| Ideal Flow (vphpl)         | 1900  |
| Storage Length (ft)        | 165   |
| Storage Lanes              | 1     |
| Taper Length (ft)          |       |
| Lane Util. Factor          | 1.00  |
| Frt                        | 0.850 |
| Flt Protected              |       |
| Satd. Flow (prot)          | 1553  |
| Flt Permitted              |       |
| Satd. Flow (perm)          | 1553  |
| Right Turn on Red          | Yes   |
| Satd. Flow (RTOR)          | 82    |
| Link Speed (mph)           |       |
| Link Distance (ft)         |       |
| Travel Time (s)            |       |
| Peak Hour Factor           | 0.88  |
| Heavy Vehicles (%)         | 4%    |
| Adj. Flow (vph)            | 82    |
| Shared Lane Traffic (%)    |       |
| Lane Group Flow (vph)      | 82    |
| Enter Blocked Intersection | No    |
| Lane Alignment             | Right |
| Median Width(ft)           |       |
| Link Offset(ft)            |       |
| Crosswalk Width(ft)        |       |
| Two way Left Turn Lane     |       |
| Headway Factor             | 1.00  |
| Turning Speed (mph)        | 9     |
| Number of Detectors        | 1     |
| Detector Template          | Right |
| Leading Detector (ft)      | 20    |
| Trailing Detector (ft)     | 0     |
| Detector 1 Position(ft)    | 0     |
| Detector 1 Size(ft)        | 20    |
| Detector 1 Type            | Cl+Ex |
| Detector 1 Channel         |       |
| Detector 1 Extend (s)      | 0.0   |
| Detector 1 Queue (s)       | 0.0   |
| Detector 1 Delay (s)       | 0.0   |
| Detector 2 Position(ft)    |       |
| Detector 2 Size(ft)        |       |
| Detector 2 Type            |       |
| Detector 2 Channel         |       |
| Detector 2 Extend (s)      |       |
| Turn Type                  | pm+ov |
| Protected Phases           | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |                                                                                     |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 6                                                                                 | 3                                                                                  | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 24.5                                                                              | 9.5                                                                                | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                |
| Total Split (s)         | 20.0                                                                              | 20.0                                                                              | 45.0                                                                              |                                                                                   | 20.0                                                                              | 45.0                                                                              | 25.0                                                                               | 25.0                                                                                | 30.0                                                                                | 20.0                                                                                | 25.0                                                                                | 30.0                                                                                |
| Total Split (%)         | 16.7%                                                                             | 16.7%                                                                             | 37.5%                                                                             |                                                                                   | 16.7%                                                                             | 37.5%                                                                             | 20.8%                                                                              | 20.8%                                                                               | 25.0%                                                                               | 16.7%                                                                               | 20.8%                                                                               | 25.0%                                                                               |
| Maximum Green (s)       | 15.5                                                                              | 15.5                                                                              | 39.0                                                                              |                                                                                   | 15.5                                                                              | 39.0                                                                              | 21.5                                                                               | 21.5                                                                                | 24.0                                                                                | 15.5                                                                                | 21.5                                                                                | 24.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 4.5                                                                               | 3.5                                                                                | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.5                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   | 4.5                                                                               | 6.0                                                                               | 3.5                                                                                | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | C-Max                                                                             | None                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     | 7.0                                                                                 |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 11.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    |                                                                                   | 14.4                                                                              | 72.4                                                                              |                                                                                   | 6.6                                                                               | 62.6                                                                              | 80.1                                                                               | 27.6                                                                                | 11.5                                                                                | 24.1                                                                                | 22.3                                                                                | 9.8                                                                                 |
| Actuated g/C Ratio      |                                                                                   | 0.12                                                                              | 0.60                                                                              |                                                                                   | 0.06                                                                              | 0.52                                                                              | 0.67                                                                               | 0.23                                                                                | 0.10                                                                                | 0.20                                                                                | 0.19                                                                                | 0.08                                                                                |
| v/c Ratio               |                                                                                   | 0.64                                                                              | 0.56                                                                              |                                                                                   | 0.16                                                                              | 0.49                                                                              | 0.11                                                                               | 0.42                                                                                | 0.54                                                                                | 0.11                                                                                | 0.38                                                                                | 0.34                                                                                |
| Control Delay (s/veh)   |                                                                                   | 63.5                                                                              | 17.1                                                                              |                                                                                   | 55.7                                                                              | 21.4                                                                              | 2.0                                                                                | 40.5                                                                                | 61.5                                                                                | 5.1                                                                                 | 40.0                                                                                | 56.5                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 63.5                                                                              | 17.1                                                                              |                                                                                   | 55.7                                                                              | 21.4                                                                              | 2.0                                                                                | 40.5                                                                                | 61.5                                                                                | 5.1                                                                                 | 40.0                                                                                | 56.5                                                                                |
| LOS                     |                                                                                   | E                                                                                 | B                                                                                 |                                                                                   | E                                                                                 | C                                                                                 | A                                                                                  | D                                                                                   | E                                                                                   | A                                                                                   | D                                                                                   | E                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   | 20.1                                                                              |                                                                                    |                                                                                     | 43.1                                                                                |                                                                                     |                                                                                     | 32.8                                                                                |
| Approach LOS            |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| 90th %ile Green (s)     | 19.7                                                                              | 19.7                                                                              | 61.2                                                                              |                                                                                   | 7.8                                                                               | 49.3                                                                              | 15.3                                                                               | 17.5                                                                                | 15.7                                                                                | 7.8                                                                                 | 15.3                                                                                | 13.5                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 70th %ile Green (s)     | 16.5                                                                              | 16.5                                                                              | 66.6                                                                              |                                                                                   | 7.1                                                                               | 57.2                                                                              | 13.1                                                                               | 14.9                                                                                | 13.2                                                                                | 7.1                                                                                 | 13.1                                                                                | 11.4                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 50th %ile Green (s)     | 14.4                                                                              | 14.4                                                                              | 70.4                                                                              |                                                                                   | 6.5                                                                               | 62.5                                                                              | 11.6                                                                               | 13.1                                                                                | 11.5                                                                                | 6.5                                                                                 | 11.6                                                                                | 10.0                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 30th %ile Green (s)     | 12.2                                                                              | 12.2                                                                              | 74.3                                                                              |                                                                                   | 5.9                                                                               | 68.0                                                                              | 10.0                                                                               | 11.2                                                                                | 9.8                                                                                 | 5.9                                                                                 | 10.0                                                                                | 8.6                                                                                 |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Coord                                                                             | Gap                                                                                | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Gap                                                                                 | Hold                                                                                |
| 10th %ile Green (s)     | 9.0                                                                               | 9.0                                                                               | 89.4                                                                              |                                                                                   | 0.0                                                                               | 75.9                                                                              | 7.8                                                                                | 21.1                                                                                | 7.3                                                                                 | 0.0                                                                                 | 7.8                                                                                 | 0.0                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Skip                                                                              | Coord                                                                             | Gap                                                                                | Hold                                                                                | Gap                                                                                 | Skip                                                                                | Gap                                                                                 | Skip                                                                                |
| Queue Length 50th (ft)  |                                                                                   | 101                                                                               | 268                                                                               |                                                                                   | 11                                                                                | 231                                                                               | 0                                                                                  | 79                                                                                  | 77                                                                                  | 0                                                                                   | 69                                                                                  | 41                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 157                                                                               | 386                                                                               |                                                                                   | 27                                                                                | 349                                                                               | 23                                                                                 | 120                                                                                 | 128                                                                                 | 17                                                                                  | 107                                                                                 | 79                                                                                  |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   | 1800                                                                              |                                                                                    |                                                                                     | 295                                                                                 |                                                                                     |                                                                                     | 491                                                                                 |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   | 400                                                                               |                                                                                   | 200                                                                                | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |                                                                                     |
| Base Capacity (vph)     |                                                                                   | 243                                                                               | 2029                                                                              |                                                                                   | 434                                                                               | 1851                                                                              | 1218                                                                               | 341                                                                                 | 400                                                                                 | 486                                                                                 | 402                                                                                 | 400                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.56                                                                              |                                                                                   | 0.07                                                                              | 0.49                                                                              | 0.10                                                                               | 0.36                                                                                | 0.26                                                                                | 0.08                                                                                | 0.27                                                                                | 0.14                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Permitted Phases        | 8     |
| Detector Phase          | 5     |
| Switch Phase            |       |
| Minimum Initial (s)     | 5.0   |
| Minimum Split (s)       | 9.5   |
| Total Split (s)         | 20.0  |
| Total Split (%)         | 16.7% |
| Maximum Green (s)       | 15.5  |
| Yellow Time (s)         | 3.5   |
| All-Red Time (s)        | 1.0   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 4.5   |
| Lead/Lag                | Lead  |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | None  |
| Walk Time (s)           |       |
| Flash Don't Walk (s)    |       |
| Pedestrian Calls (#/hr) |       |
| Act Effct Green (s)     | 27.9  |
| Actuated g/C Ratio      | 0.23  |
| v/c Ratio               | 0.19  |
| Control Delay (s/veh)   | 7.4   |
| Queue Delay             | 0.0   |
| Total Delay (s/veh)     | 7.4   |
| LOS                     | A     |
| Approach Delay (s/veh)  |       |
| Approach LOS            |       |
| 90th %ile Green (s)     | 19.7  |
| 90th %ile Term Code     | Gap   |
| 70th %ile Green (s)     | 16.5  |
| 70th %ile Term Code     | Gap   |
| 50th %ile Green (s)     | 14.4  |
| 50th %ile Term Code     | Gap   |
| 30th %ile Green (s)     | 12.2  |
| 30th %ile Term Code     | Gap   |
| 10th %ile Green (s)     | 9.0   |
| 10th %ile Term Code     | Gap   |
| Queue Length 50th (ft)  | 0     |
| Queue Length 95th (ft)  | 34    |
| Internal Link Dist (ft) |       |
| Turn Bay Length (ft)    | 165   |
| Base Capacity (vph)     | 450   |
| Starvation Cap Reductn  | 0     |
| Spillback Cap Reductn   | 0     |
| Storage Cap Reductn     | 0     |
| Reduced v/c Ratio       | 0.18  |
| Intersection Summary    |       |

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 24.2

Intersection LOS: C

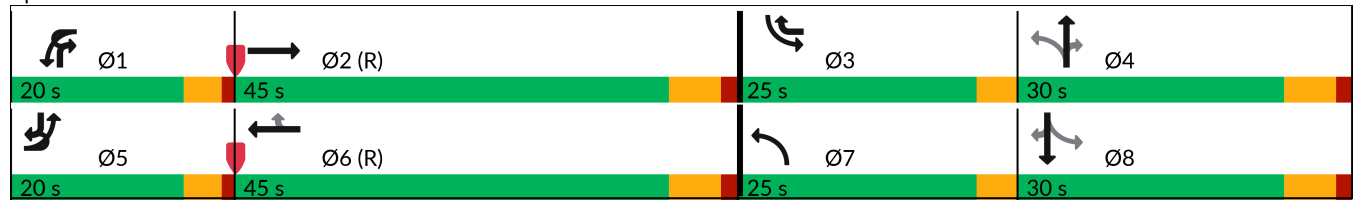
Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday AM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |                                                                                    |  |  |  |                                                                                     |  |
| Traffic Volume (vph)       | 121                                                                               | 6                                                                                 | 99                                                                                | 0                                                                                 | 4                                                                                 | 10                                                                                | 4                                                                                  | 256                                                                                 | 1524                                                                                | 10                                                                                  | 2                                                                                   | 41                                                                                  |
| Future Volume (vph)        | 121                                                                               | 6                                                                                 | 99                                                                                | 0                                                                                 | 4                                                                                 | 10                                                                                | 4                                                                                  | 256                                                                                 | 1524                                                                                | 10                                                                                  | 2                                                                                   | 41                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 2000                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 70                                                                                |                                                                                   | 70                                                                                | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                    | 190                                                                                 |                                                                                     | 0                                                                                   |                                                                                     | 270                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 80                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                    | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 160                                                                                 |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                               | 0.97                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.890                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.999                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 1805                                                                              | 2000                                                                              | 1615                                                                              | 1900                                                                              | 1691                                                                              | 0                                                                                 | 0                                                                                  | 3502                                                                                | 4890                                                                                | 0                                                                                   | 0                                                                                   | 1771                                                                                |
| Flt Permitted              | 0.635                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)          | 1206                                                                              | 2000                                                                              | 1615                                                                              | 1900                                                                              | 1691                                                                              | 0                                                                                 | 0                                                                                  | 3502                                                                                | 4890                                                                                | 0                                                                                   | 0                                                                                   | 1771                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 141                                                                               |                                                                                   | 11                                                                                |                                                                                   |                                                                                    |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   | 368                                                                               |                                                                                   |                                                                                   | 428                                                                               |                                                                                   |                                                                                    |                                                                                     | 508                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                    |                                                                                     | 8.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                 | 0%                                                                                  | 6%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)            | 129                                                                               | 6                                                                                 | 105                                                                               | 0                                                                                 | 4                                                                                 | 11                                                                                | 4                                                                                  | 272                                                                                 | 1621                                                                                | 11                                                                                  | 2                                                                                   | 44                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 129                                                                               | 6                                                                                 | 105                                                                               | 0                                                                                 | 15                                                                                | 0                                                                                 | 0                                                                                  | 276                                                                                 | 1632                                                                                | 0                                                                                   | 0                                                                                   | 46                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | R NA                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 0.94                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 9                                                                                   | 15                                                                                  |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                    | 1                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                    | Left                                                                                | Thru                                                                                |                                                                                     |                                                                                     | Left                                                                                |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   |                                                                                    | 20                                                                                  | 100                                                                                 |                                                                                     |                                                                                     | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                    | 20                                                                                  | 6                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                |                                                                                   | Prot                                                                               | Prot                                                                                | NA                                                                                  |                                                                                     | Prot                                                                                | Prot                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑↑↑   |       |
| Traffic Volume (vph)       | 1151  | 99    |
| Future Volume (vph)        | 1151  | 99    |
| Ideal Flow (vphpl)         | 1900  | 1900  |
| Storage Length (ft)        |       | 0     |
| Storage Lanes              |       | 0     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 0.91  | 0.91  |
| Frt                        | 0.988 |       |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 4722  | 0     |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 4722  | 0     |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          | 13    |       |
| Link Speed (mph)           | 40    |       |
| Link Distance (ft)         | 1443  |       |
| Travel Time (s)            | 24.6  |       |
| Peak Hour Factor           | 0.94  | 0.94  |
| Heavy Vehicles (%)         | 9%    | 3%    |
| Adj. Flow (vph)            | 1224  | 105   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 1329  | 0     |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 24    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 1.00  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     |       |
| Detector Template          | Thru  |       |
| Leading Detector (ft)      | 100   |       |
| Trailing Detector (ft)     | 0     |       |
| Detector 1 Position(ft)    | 0     |       |
| Detector 1 Size(ft)        | 6     |       |
| Detector 1 Type            | Cl+Ex |       |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   |       |
| Detector 1 Queue (s)       | 0.0   |       |
| Detector 1 Delay (s)       | 0.0   |       |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    |       |
| Protected Phases           | 6     |       |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday AM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Permitted Phases        | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 24.0                                                                              | 24.0                                                                              | 9.5                                                                               | 24.0                                                                              |                                                                                   | 9.5                                                                                 | 9.5                                                                                 | 24.0                                                                                |                                                                                     | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 12.6                                                                              | 27.1                                                                              | 27.1                                                                              | 9.5                                                                               | 24.0                                                                              |                                                                                   | 34.0                                                                                | 34.0                                                                                | 70.0                                                                                |                                                                                     | 13.4                                                                                | 13.4                                                                                |
| Total Split (%)         | 10.5%                                                                             | 22.6%                                                                             | 22.6%                                                                             | 7.9%                                                                              | 20.0%                                                                             |                                                                                   | 28.3%                                                                               | 28.3%                                                                               | 58.3%                                                                               |                                                                                     | 11.2%                                                                               | 11.2%                                                                               |
| Maximum Green (s)       | 9.1                                                                               | 21.1                                                                              | 21.1                                                                              | 6.0                                                                               | 18.0                                                                              |                                                                                   | 29.5                                                                                | 29.5                                                                                | 64.0                                                                                |                                                                                     | 8.9                                                                                 | 8.9                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               |                                                                                   | 3.5                                                                                 | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                   | 1.0                                                                                 | 1.0                                                                                 | 2.0                                                                                 |                                                                                     | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 3.5                                                                               | 6.0                                                                               | 6.0                                                                               | 3.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                     | 4.5                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 4.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              |                                                                                   | None                                                                                | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 14.2                                                                              | 11.7                                                                              | 11.7                                                                              |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                     | 14.8                                                                                | 85.2                                                                                |                                                                                     |                                                                                     | 8.5                                                                                 |
| Actuated g/C Ratio      | 0.12                                                                              | 0.10                                                                              | 0.10                                                                              |                                                                                   | 0.05                                                                              |                                                                                   |                                                                                     | 0.12                                                                                | 0.71                                                                                |                                                                                     |                                                                                     | 0.07                                                                                |
| v/c Ratio               | 0.69                                                                              | 0.03                                                                              | 0.37                                                                              |                                                                                   | 0.15                                                                              |                                                                                   |                                                                                     | 0.64                                                                                | 0.47                                                                                |                                                                                     |                                                                                     | 0.37                                                                                |
| Control Delay (s/veh)   | 67.6                                                                              | 44.2                                                                              | 6.6                                                                               |                                                                                   | 34.3                                                                              |                                                                                   |                                                                                     | 56.7                                                                                | 9.7                                                                                 |                                                                                     |                                                                                     | 60.5                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay (s/veh)     | 67.6                                                                              | 44.2                                                                              | 6.6                                                                               |                                                                                   | 34.3                                                                              |                                                                                   |                                                                                     | 56.7                                                                                | 9.7                                                                                 |                                                                                     |                                                                                     | 60.5                                                                                |
| LOS                     | E                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | E                                                                                   | A                                                                                   |                                                                                     |                                                                                     | E                                                                                   |
| Approach Delay (s/veh)  |                                                                                   | 40.3                                                                              |                                                                                   |                                                                                   | 34.3                                                                              |                                                                                   |                                                                                     |                                                                                     | 16.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 9.1                                                                               | 20.2                                                                              | 20.2                                                                              | 0.0                                                                               | 7.6                                                                               |                                                                                   | 18.8                                                                                | 18.8                                                                                | 71.6                                                                                |                                                                                     | 11.7                                                                                | 11.7                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                 | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 9.1                                                                               | 19.1                                                                              | 19.1                                                                              | 0.0                                                                               | 6.5                                                                               |                                                                                   | 16.4                                                                                | 16.4                                                                                | 74.6                                                                                |                                                                                     | 9.8                                                                                 | 9.8                                                                                 |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                 | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 9.1                                                                               | 6.6                                                                               | 6.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 14.8                                                                                | 14.8                                                                                | 88.4                                                                                |                                                                                     | 8.5                                                                                 | 8.5                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                 | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 9.1                                                                               | 6.6                                                                               | 6.6                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 13.2                                                                                | 13.2                                                                                | 89.7                                                                                |                                                                                     | 7.2                                                                                 | 7.2                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                 | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 8.6                                                                               | 6.1                                                                               | 6.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 10.8                                                                                | 10.8                                                                                | 101.9                                                                               |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                 | Gap                                                                                 | Coord                                                                               |                                                                                     | Skip                                                                                | Skip                                                                                |
| Queue Length 50th (ft)  | 101                                                                               | 5                                                                                 | 0                                                                                 |                                                                                   | 3                                                                                 |                                                                                   |                                                                                     | 106                                                                                 | 159                                                                                 |                                                                                     |                                                                                     | 35                                                                                  |
| Queue Length 95th (ft)  | 149                                                                               | 16                                                                                | 24                                                                                |                                                                                   | 26                                                                                |                                                                                   |                                                                                     | 146                                                                                 | 306                                                                                 |                                                                                     |                                                                                     | 72                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 288                                                                               |                                                                                   |                                                                                   | 348                                                                               |                                                                                   |                                                                                     |                                                                                     | 428                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    | 70                                                                                |                                                                                   | 70                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 270                                                                                 |
| Base Capacity (vph)     | 189                                                                               | 351                                                                               | 400                                                                               |                                                                                   | 263                                                                               |                                                                                   |                                                                                     | 860                                                                                 | 3473                                                                                |                                                                                     |                                                                                     | 142                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio       | 0.68                                                                              | 0.02                                                                              | 0.26                                                                              |                                                                                   | 0.06                                                                              |                                                                                   |                                                                                     | 0.32                                                                                | 0.47                                                                                |                                                                                     |                                                                                     | 0.32                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



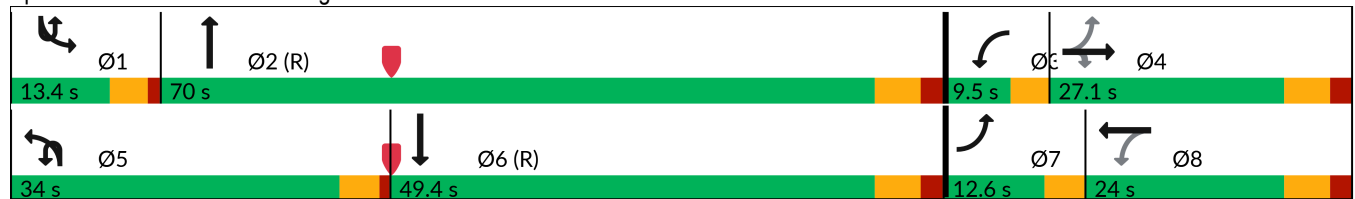
| Lane Group              | SBT   | SBR |
|-------------------------|-------|-----|
| Permitted Phases        |       |     |
| Detector Phase          | 6     |     |
| Switch Phase            |       |     |
| Minimum Initial (s)     | 5.0   |     |
| Minimum Split (s)       | 24.0  |     |
| Total Split (s)         | 49.4  |     |
| Total Split (%)         | 41.2% |     |
| Maximum Green (s)       | 43.4  |     |
| Yellow Time (s)         | 4.0   |     |
| All-Red Time (s)        | 2.0   |     |
| Lost Time Adjust (s)    | 0.0   |     |
| Total Lost Time (s)     | 6.0   |     |
| Lead/Lag                | Lag   |     |
| Lead-Lag Optimize?      | Yes   |     |
| Vehicle Extension (s)   | 3.0   |     |
| Recall Mode             | C-Max |     |
| Walk Time (s)           | 7.0   |     |
| Flash Don't Walk (s)    | 11.0  |     |
| Pedestrian Calls (#/hr) | 0     |     |
| Act Effct Green (s)     | 77.0  |     |
| Actuated g/C Ratio      | 0.64  |     |
| v/c Ratio               | 0.44  |     |
| Control Delay (s/veh)   | 12.4  |     |
| Queue Delay             | 0.0   |     |
| Total Delay (s/veh)     | 12.4  |     |
| LOS                     | B     |     |
| Approach Delay (s/veh)  | 14.0  |     |
| Approach LOS            | B     |     |
| 90th %ile Green (s)     | 64.5  |     |
| 90th %ile Term Code     | Coord |     |
| 70th %ile Green (s)     | 68.0  |     |
| 70th %ile Term Code     | Coord |     |
| 50th %ile Green (s)     | 82.1  |     |
| 50th %ile Term Code     | Coord |     |
| 30th %ile Green (s)     | 83.7  |     |
| 30th %ile Term Code     | Coord |     |
| 10th %ile Green (s)     | 86.6  |     |
| 10th %ile Term Code     | Coord |     |
| Queue Length 50th (ft)  | 148   |     |
| Queue Length 95th (ft)  | 271   |     |
| Internal Link Dist (ft) | 1363  |     |
| Turn Bay Length (ft)    |       |     |
| Base Capacity (vph)     | 3033  |     |
| Starvation Cap Reductn  | 0     |     |
| Spillback Cap Reductn   | 0     |     |
| Storage Cap Reductn     | 0     |     |
| Reduced v/c Ratio       | 0.44  |     |
| Intersection Summary    |       |     |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday AM Peak

|                                    |                                                             |
|------------------------------------|-------------------------------------------------------------|
| Area Type:                         | Other                                                       |
| Cycle Length:                      | 120                                                         |
| Actuated Cycle Length:             | 120                                                         |
| Offset:                            | 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green |
| Natural Cycle:                     | 75                                                          |
| Control Type:                      | Actuated-Coordinated                                        |
| Maximum v/c Ratio:                 | 0.69                                                        |
| Intersection Signal Delay (s/veh): | 17.2                                                        |
| Intersection LOS:                  | B                                                           |
| Intersection Capacity Utilization  | 61.0%                                                       |
| ICU Level of Service               | B                                                           |
| Analysis Period (min)              | 15                                                          |

Splits and Phases: 5: LaGrange Rd & 161st St



| Intersection             |        |      |        |      |        |      |
|--------------------------|--------|------|--------|------|--------|------|
| Int Delay, s/veh         | 0      |      |        |      |        |      |
| Movement                 | EBT    | EBR  | WBL    | WBT  | NBL    | NBR  |
| Lane Configurations      | ↑↑↱    |      |        | ↑↑   |        | ↱    |
| Traffic Vol, veh/h       | 1128   | 2    | 0      | 993  | 0      | 0    |
| Future Vol, veh/h        | 1128   | 2    | 0      | 993  | 0      | 0    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0    | 0      | 0    |
| Sign Control             | Free   | Free | Free   | Free | Stop   | Stop |
| RT Channelized           | -      | None | -      | None | -      | None |
| Storage Length           | -      | -    | -      | -    | -      | 0    |
| Veh in Median Storage, # | 0      | -    | -      | 0    | 0      | -    |
| Grade, %                 | 0      | -    | -      | 0    | 0      | -    |
| Peak Hour Factor         | 89     | 89   | 89     | 89   | 89     | 89   |
| Heavy Vehicles, %        | 5      | 0    | 0      | 7    | 0      | 8    |
| Mvmt Flow                | 1267   | 2    | 0      | 1116 | 0      | 0    |
|                          |        |      |        |      |        |      |
| Major/Minor              | Major1 |      | Major2 |      | Minor1 |      |
| Conflicting Flow All     | 0      | 0    | -      | -    | -      | 635  |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
| Critical Hdwy            | -      | -    | -      | -    | -      | 7.06 |
| Critical Hdwy Stg 1      | -      | -    | -      | -    | -      | -    |
| Critical Hdwy Stg 2      | -      | -    | -      | -    | -      | -    |
| Follow-up Hdwy           | -      | -    | -      | -    | -      | 3.38 |
| Pot Cap-1 Maneuver       | -      | -    | 0      | -    | 0      | 407  |
| Stage 1                  | -      | -    | 0      | -    | 0      | -    |
| Stage 2                  | -      | -    | 0      | -    | 0      | -    |
| Platoon blocked, %       | -      | -    |        | -    |        |      |
| Mov Cap-1 Maneuver       | -      | -    | -      | -    | -      | 407  |
| Mov Cap-2 Maneuver       | -      | -    | -      | -    | -      | -    |
| Stage 1                  | -      | -    | -      | -    | -      | -    |
| Stage 2                  | -      | -    | -      | -    | -      | -    |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Approach                 | EB     |      | WB     |      | NB     |      |
| HCM Ctrl Dly, s/v        | 0      |      | 0      |      | 0      |      |
| HCM LOS                  |        |      |        |      | A      |      |
|                          |        |      |        |      |        |      |
|                          |        |      |        |      |        |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBT  | EBR    | WBT  |        |      |
| Capacity (veh/h)         | -      | -    | -      | -    |        |      |
| HCM Lane V/C Ratio       | -      | -    | -      | -    |        |      |
| HCM Ctrl Dly (s/v)       | 0      | -    | -      | -    |        |      |
| HCM Lane LOS             | A      | -    | -      | -    |        |      |
| HCM 95th %tile Q(veh)    | -      | -    | -      | -    |        |      |

| Intersection             |        |        |       |        |      |      |
|--------------------------|--------|--------|-------|--------|------|------|
| Int Delay, s/veh         | 0      |        |       |        |      |      |
| Movement                 | EBL    | EBR    | NBL   | NBT    | SBT  | SBR  |
| Lane Configurations      |        | ↗      | ↘     | ↗↘     | ↗    | ↘    |
| Traffic Vol, veh/h       | 0      | 0      | 0     | 171    | 103  | 5    |
| Future Vol, veh/h        | 0      | 0      | 0     | 171    | 103  | 5    |
| Conflicting Peds, #/hr   | 0      | 0      | 0     | 0      | 0    | 0    |
| Sign Control             | Stop   | Stop   | Free  | Free   | Free | Free |
| RT Channelized           | -      | Stop   | -     | None   | -    | None |
| Storage Length           | -      | 0      | 110   | -      | -    | 0    |
| Veh in Median Storage, # | 0      | -      | -     | 0      | 0    | -    |
| Grade, %                 | 0      | -      | -     | 0      | 0    | -    |
| Peak Hour Factor         | 75     | 75     | 75    | 75     | 75   | 75   |
| Heavy Vehicles, %        | 20     | 0      | 0     | 0      | 0    | 20   |
| Mvmt Flow                | 0      | 0      | 0     | 228    | 137  | 7    |
| Major/Minor              | Minor2 | Major1 |       | Major2 |      |      |
| Conflicting Flow All     | -      | 137    | 144   | 0      | -    | 0    |
| Stage 1                  | -      | -      | -     | -      | -    | -    |
| Stage 2                  | -      | -      | -     | -      | -    | -    |
| Critical Hdwy            | -      | 6.2    | 4.1   | -      | -    | -    |
| Critical Hdwy Stg 1      | -      | -      | -     | -      | -    | -    |
| Critical Hdwy Stg 2      | -      | -      | -     | -      | -    | -    |
| Follow-up Hdwy           | -      | 3.3    | 2.2   | -      | -    | -    |
| Pot Cap-1 Maneuver       | 0      | 916    | 1451  | -      | -    | -    |
| Stage 1                  | 0      | -      | -     | -      | -    | -    |
| Stage 2                  | 0      | -      | -     | -      | -    | -    |
| Platoon blocked, %       |        |        |       | -      | -    | -    |
| Mov Cap-1 Maneuver       | -      | 916    | 1451  | -      | -    | -    |
| Mov Cap-2 Maneuver       | -      | -      | -     | -      | -    | -    |
| Stage 1                  | -      | -      | -     | -      | -    | -    |
| Stage 2                  | -      | -      | -     | -      | -    | -    |
| Approach                 | EB     | NB     |       | SB     |      |      |
| HCM Ctrl Dly, s/v        | 0      | 0      |       | 0      |      |      |
| HCM LOS                  | A      |        |       |        |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT    | EBLn1 | SBT    | SBR  |      |
| Capacity (veh/h)         | 1451   | -      | -     | -      | -    |      |
| HCM Lane V/C Ratio       | -      | -      | -     | -      | -    |      |
| HCM Ctrl Dly (s/v)       | 0      | -      | 0     | -      | -    |      |
| HCM Lane LOS             | A      | -      | A     | -      | -    |      |
| HCM 95th %tile Q(veh)    | 0      | -      | -     | -      | -    |      |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |  |  |  |  |  |  |
| Traffic Volume (vph)       | 6                                                                                 | 161                                                                               | 1011                                                                              | 131                                                                               | 8                                                                                 | 249                                                                               | 1077                                                                               | 138                                                                                 | 233                                                                                 | 178                                                                                 | 244                                                                                 | 174                                                                                 |
| Future Volume (vph)        | 6                                                                                 | 161                                                                               | 1011                                                                              | 131                                                                               | 8                                                                                 | 249                                                                               | 1077                                                                               | 138                                                                                 | 233                                                                                 | 178                                                                                 | 244                                                                                 | 174                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                               | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                    | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                    |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1788                                                                              | 3460                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 1770                                                                                | 2000                                                                                | 1615                                                                                | 1787                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                    |                                                                                     | 0.365                                                                               |                                                                                     |                                                                                     | 0.517                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1788                                                                              | 3460                                                                              | 0                                                                                 | 0                                                                                 | 3468                                                                              | 3689                                                                               | 1599                                                                                | 680                                                                                 | 2000                                                                                | 1615                                                                                | 973                                                                                 |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                    | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 10                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 117                                                                                 |                                                                                     |                                                                                     | 214                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                 |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1880                                                                               |                                                                                     |                                                                                     | 380                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.0                                                                               |                                                                                     |                                                                                     | 8.6                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 7%                                                                                | 0%                                                                                | 1%                                                                                | 3%                                                                                 | 1%                                                                                  | 2%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  |
| Adj. Flow (vph)            | 6                                                                                 | 164                                                                               | 1032                                                                              | 134                                                                               | 8                                                                                 | 254                                                                               | 1099                                                                               | 141                                                                                 | 238                                                                                 | 182                                                                                 | 249                                                                                 | 178                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 170                                                                               | 1166                                                                              | 0                                                                                 | 0                                                                                 | 262                                                                               | 1099                                                                               | 141                                                                                 | 238                                                                                 | 182                                                                                 | 249                                                                                 | 178                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                               | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                 |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                 |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                               | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                    | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                  | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                               | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                  | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                              | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                 |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                              |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                 | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 156   | 170   |
| Future Volume (vph)        | 156   | 170   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 143   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.98  | 0.98  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 159   | 173   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 159   | 173   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
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2050 Future w/Ravinia Extension Traffic Volumes  
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|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 17.5                                                                              | 60.0                                                                              |                                                                                   |                                                                                   | 15.3                                                                              | 57.8                                                                               | 79.4                                                                                | 40.4                                                                                | 19.1                                                                                | 40.4                                                                                | 33.8                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.13                                                                              | 0.46                                                                              |                                                                                   |                                                                                   | 0.12                                                                              | 0.44                                                                               | 0.61                                                                                | 0.31                                                                                | 0.15                                                                                | 0.31                                                                                | 0.26                                                                                |
| v/c Ratio               |                                                                                   | 0.71                                                                              | 0.73                                                                              |                                                                                   |                                                                                   | 0.64                                                                              | 0.67                                                                               | 0.14                                                                                | 0.64                                                                                | 0.62                                                                                | 0.38                                                                                | 0.51                                                                                |
| Control Delay (s/veh)   |                                                                                   | 69.0                                                                              | 33.3                                                                              |                                                                                   |                                                                                   | 61.9                                                                              | 33.4                                                                               | 4.0                                                                                 | 42.6                                                                                | 60.9                                                                                | 7.6                                                                                 | 38.2                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 69.0                                                                              | 33.3                                                                              |                                                                                   |                                                                                   | 61.9                                                                              | 33.4                                                                               | 4.0                                                                                 | 42.6                                                                                | 60.9                                                                                | 7.6                                                                                 | 38.2                                                                                |
| LOS                     |                                                                                   | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | E                                                                                 | C                                                                                  | A                                                                                   | D                                                                                   | E                                                                                   | A                                                                                   | D                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 37.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.6                                                                               |                                                                                     |                                                                                     | 34.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 23.7                                                                              | 23.7                                                                              | 46.3                                                                              |                                                                                   | 20.0                                                                              | 20.0                                                                              | 42.6                                                                               | 20.0                                                                                | 22.5                                                                                | 23.7                                                                                | 20.0                                                                                | 20.0                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 20.1                                                                              | 20.1                                                                              | 53.5                                                                              |                                                                                   | 16.7                                                                              | 16.7                                                                              | 50.1                                                                               | 17.6                                                                                | 21.9                                                                                | 22.2                                                                                | 16.7                                                                                | 17.6                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 17.6                                                                              | 17.6                                                                              | 59.6                                                                              |                                                                                   | 15.1                                                                              | 15.1                                                                              | 57.1                                                                               | 15.8                                                                                | 19.6                                                                                | 19.5                                                                                | 15.1                                                                                | 15.8                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.0                                                                              | 15.0                                                                              | 65.9                                                                              |                                                                                   | 13.4                                                                              | 13.4                                                                              | 64.3                                                                               | 13.8                                                                                | 17.3                                                                                | 16.9                                                                                | 13.4                                                                                | 13.8                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.3                                                                              | 11.3                                                                              | 74.9                                                                              |                                                                                   | 11.1                                                                              | 11.1                                                                              | 74.7                                                                               | 10.8                                                                                | 13.8                                                                                | 13.2                                                                                | 11.1                                                                                | 10.8                                                                                |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 139                                                                               | 410                                                                               |                                                                                   |                                                                                   | 110                                                                               | 383                                                                                | 8                                                                                   | 158                                                                                 | 145                                                                                 | 21                                                                                  | 114                                                                                 |
| Queue Length 95th (ft)  |                                                                                   | 207                                                                               | #640                                                                              |                                                                                   |                                                                                   | 150                                                                               | #592                                                                               | 42                                                                                  | 213                                                                                 | 217                                                                                 | 76                                                                                  | 160                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1800                                                                               |                                                                                     |                                                                                     | 300                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 301                                                                               | 1603                                                                              |                                                                                   |                                                                                   | 573                                                                               | 1638                                                                               | 1100                                                                                | 400                                                                                 | 492                                                                                 | 716                                                                                 | 434                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.56                                                                              | 0.73                                                                              |                                                                                   |                                                                                   | 0.46                                                                              | 0.67                                                                               | 0.13                                                                                | 0.60                                                                                | 0.37                                                                                | 0.35                                                                                | 0.41                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 32.0  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 1.5   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 15.7  | 39.2  |
| Actuated g/C Ratio      | 0.12  | 0.30  |
| v/c Ratio               | 0.66  | 0.30  |
| Control Delay (s/veh)   | 67.3  | 8.3   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 67.3  | 8.3   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 37.1  |       |
| Approach LOS            | D     |       |
| 90th %ile Green (s)     | 21.2  | 23.7  |
| 90th %ile Term Code     | Gap   | Gap   |
| 70th %ile Green (s)     | 17.9  | 20.1  |
| 70th %ile Term Code     | Gap   | Gap   |
| 50th %ile Green (s)     | 15.7  | 17.6  |
| 50th %ile Term Code     | Gap   | Gap   |
| 30th %ile Green (s)     | 13.4  | 15.0  |
| 30th %ile Term Code     | Gap   | Gap   |
| 10th %ile Green (s)     | 10.2  | 11.3  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 130   | 18    |
| Queue Length 95th (ft)  | 196   | 63    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 492   | 631   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.32  | 0.27  |
| Intersection Summary    |       |       |

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 36.4

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday PM Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)       | 212                                                                               | 10                                                                                | 170                                                                               | 7                                                                                 | 15                                                                                | 34                                                                                | 2                                                                                  | 390                                                                                 | 1772                                                                                | 23                                                                                  | 6                                                                                   | 59                                                                                  |
| Future Volume (vph)        | 212                                                                               | 10                                                                                | 170                                                                               | 7                                                                                 | 15                                                                                | 34                                                                                | 2                                                                                  | 390                                                                                 | 1772                                                                                | 23                                                                                  | 6                                                                                   | 59                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 2000                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 70                                                                                |                                                                                   | 70                                                                                | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                    | 190                                                                                 |                                                                                     | 0                                                                                   |                                                                                     | 270                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 80                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                    | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 160                                                                                 |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                               | 0.97                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.897                                                                             |                                                                                   |                                                                                    |                                                                                     | 0.998                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 1805                                                                              | 2000                                                                              | 1615                                                                              | 1805                                                                              | 1704                                                                              | 0                                                                                 | 0                                                                                  | 3502                                                                                | 5028                                                                                | 0                                                                                   | 0                                                                                   | 1805                                                                                |
| Flt Permitted              | 0.502                                                                             |                                                                                   |                                                                                   | 0.751                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)          | 954                                                                               | 2000                                                                              | 1615                                                                              | 1427                                                                              | 1704                                                                              | 0                                                                                 | 0                                                                                  | 3502                                                                                | 5028                                                                                | 0                                                                                   | 0                                                                                   | 1805                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 177                                                                               |                                                                                   | 35                                                                                |                                                                                   |                                                                                    |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                    |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   | 368                                                                               |                                                                                   |                                                                                   | 428                                                                               |                                                                                   |                                                                                    |                                                                                     | 508                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                    |                                                                                     | 8.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                 | 0%                                                                                  | 3%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)            | 221                                                                               | 10                                                                                | 177                                                                               | 7                                                                                 | 16                                                                                | 35                                                                                | 2                                                                                  | 406                                                                                 | 1846                                                                                | 24                                                                                  | 6                                                                                   | 61                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 221                                                                               | 10                                                                                | 177                                                                               | 7                                                                                 | 51                                                                                | 0                                                                                 | 0                                                                                  | 408                                                                                 | 1870                                                                                | 0                                                                                   | 0                                                                                   | 67                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                 | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | R NA                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                    |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                    |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 0.94                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                  | 15                                                                                  |                                                                                     | 9                                                                                   | 9                                                                                   | 15                                                                                  |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                    | 1                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                    | Left                                                                                | Thru                                                                                |                                                                                     |                                                                                     | Left                                                                                |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   |                                                                                    | 20                                                                                  | 100                                                                                 |                                                                                     |                                                                                     | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                    | 20                                                                                  | 6                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                    | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                    |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                    |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                |                                                                                   | Prot                                                                               | Prot                                                                                | NA                                                                                  |                                                                                     | Prot                                                                                | Prot                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑↑↑   |       |
| Traffic Volume (vph)       | 2072  | 162   |
| Future Volume (vph)        | 2072  | 162   |
| Ideal Flow (vphpl)         | 1900  | 1900  |
| Storage Length (ft)        |       | 0     |
| Storage Lanes              |       | 0     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 0.91  | 0.91  |
| Frt                        | 0.989 |       |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 5037  | 0     |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 5037  | 0     |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          | 10    |       |
| Link Speed (mph)           | 40    |       |
| Link Distance (ft)         | 1443  |       |
| Travel Time (s)            | 24.6  |       |
| Peak Hour Factor           | 0.96  | 0.96  |
| Heavy Vehicles (%)         | 2%    | 0%    |
| Adj. Flow (vph)            | 2158  | 169   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 2327  | 0     |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 24    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 1.00  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     |       |
| Detector Template          | Thru  |       |
| Leading Detector (ft)      | 100   |       |
| Trailing Detector (ft)     | 0     |       |
| Detector 1 Position(ft)    | 0     |       |
| Detector 1 Size(ft)        | 6     |       |
| Detector 1 Type            | Cl+Ex |       |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   |       |
| Detector 1 Queue (s)       | 0.0   |       |
| Detector 1 Delay (s)       | 0.0   |       |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    |       |
| Protected Phases           | 6     |       |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Weekday PM Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Permitted Phases        | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 24.0                                                                              | 24.0                                                                              | 9.5                                                                               | 24.0                                                                              |                                                                                   | 9.5                                                                                | 9.5                                                                                 | 24.0                                                                                |                                                                                     | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 17.0                                                                              | 30.0                                                                              | 30.0                                                                              | 11.0                                                                              | 24.0                                                                              |                                                                                   | 39.0                                                                               | 39.0                                                                                | 92.5                                                                                |                                                                                     | 16.5                                                                                | 16.5                                                                                |
| Total Split (%)         | 11.3%                                                                             | 20.0%                                                                             | 20.0%                                                                             | 7.3%                                                                              | 16.0%                                                                             |                                                                                   | 26.0%                                                                              | 26.0%                                                                               | 61.7%                                                                               |                                                                                     | 11.0%                                                                               | 11.0%                                                                               |
| Maximum Green (s)       | 13.5                                                                              | 24.0                                                                              | 24.0                                                                              | 7.5                                                                               | 18.0                                                                              |                                                                                   | 34.5                                                                               | 34.5                                                                                | 86.5                                                                                |                                                                                     | 12.0                                                                                | 12.0                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               |                                                                                   | 3.5                                                                                | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 2.0                                                                                 |                                                                                     | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 3.5                                                                               | 6.0                                                                               | 6.0                                                                               | 3.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                    | 4.5                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 4.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              |                                                                                   | None                                                                               | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 24.6                                                                              | 20.0                                                                              | 20.0                                                                              | 14.4                                                                              | 7.4                                                                               |                                                                                   |                                                                                    | 22.8                                                                                | 102.7                                                                               |                                                                                     |                                                                                     | 10.9                                                                                |
| Actuated g/C Ratio      | 0.16                                                                              | 0.13                                                                              | 0.13                                                                              | 0.10                                                                              | 0.05                                                                              |                                                                                   |                                                                                    | 0.15                                                                                | 0.68                                                                                |                                                                                     |                                                                                     | 0.07                                                                                |
| v/c Ratio               | 0.95                                                                              | 0.04                                                                              | 0.48                                                                              | 0.05                                                                              | 0.44                                                                              |                                                                                   |                                                                                    | 0.77                                                                                | 0.54                                                                                |                                                                                     |                                                                                     | 0.51                                                                                |
| Control Delay (s/veh)   | 106.4                                                                             | 56.4                                                                              | 12.4                                                                              | 50.3                                                                              | 40.7                                                                              |                                                                                   |                                                                                    | 70.9                                                                                | 14.2                                                                                |                                                                                     |                                                                                     | 79.9                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay (s/veh)     | 106.4                                                                             | 56.4                                                                              | 12.4                                                                              | 50.3                                                                              | 40.7                                                                              |                                                                                   |                                                                                    | 70.9                                                                                | 14.2                                                                                |                                                                                     |                                                                                     | 79.9                                                                                |
| LOS                     | F                                                                                 | E                                                                                 | B                                                                                 | D                                                                                 | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   | B                                                                                   |                                                                                     |                                                                                     | E                                                                                   |
| Approach Delay (s/veh)  |                                                                                   | 64.4                                                                              |                                                                                   |                                                                                   | 41.9                                                                              |                                                                                   |                                                                                    |                                                                                     | 24.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 13.5                                                                              | 17.2                                                                              | 17.2                                                                              | 7.1                                                                               | 10.8                                                                              |                                                                                   | 28.1                                                                               | 28.1                                                                                | 90.7                                                                                |                                                                                     | 15.0                                                                                | 15.0                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 13.5                                                                              | 25.5                                                                              | 25.5                                                                              | 0.0                                                                               | 8.5                                                                               |                                                                                   | 25.0                                                                               | 25.0                                                                                | 95.4                                                                                |                                                                                     | 12.6                                                                                | 12.6                                                                                |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 13.5                                                                              | 23.9                                                                              | 23.9                                                                              | 0.0                                                                               | 6.9                                                                               |                                                                                   | 22.8                                                                               | 22.8                                                                                | 98.7                                                                                |                                                                                     | 10.9                                                                                | 10.9                                                                                |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 13.5                                                                              | 22.5                                                                              | 22.5                                                                              | 0.0                                                                               | 5.5                                                                               |                                                                                   | 20.6                                                                               | 20.6                                                                                | 101.8                                                                               |                                                                                     | 9.2                                                                                 | 9.2                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 13.5                                                                              | 11.0                                                                              | 11.0                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                   | 17.4                                                                               | 17.4                                                                                | 127.0                                                                               |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| 10th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Skip                                                                                | Skip                                                                                |
| Queue Length 50th (ft)  | 206                                                                               | 8                                                                                 | 0                                                                                 | 6                                                                                 | 15                                                                                |                                                                                   |                                                                                    | 200                                                                                 | 342                                                                                 |                                                                                     |                                                                                     | 64                                                                                  |
| Queue Length 95th (ft)  | #337                                                                              | 29                                                                                | 74                                                                                | 20                                                                                | 61                                                                                |                                                                                   |                                                                                    | 250                                                                                 | 448                                                                                 |                                                                                     |                                                                                     | 115                                                                                 |
| Internal Link Dist (ft) |                                                                                   | 288                                                                               |                                                                                   |                                                                                   | 348                                                                               |                                                                                   |                                                                                    |                                                                                     | 428                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    | 70                                                                                |                                                                                   | 70                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 270                                                                                 |
| Base Capacity (vph)     | 233                                                                               | 324                                                                               | 410                                                                               | 169                                                                               | 235                                                                               |                                                                                   |                                                                                    | 805                                                                                 | 3443                                                                                |                                                                                     |                                                                                     | 153                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio       | 0.95                                                                              | 0.03                                                                              | 0.43                                                                              | 0.04                                                                              | 0.22                                                                              |                                                                                   |                                                                                    | 0.51                                                                                | 0.54                                                                                |                                                                                     |                                                                                     | 0.44                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR |
|-------------------------|-------|-----|
| Permitted Phases        |       |     |
| Detector Phase          | 6     |     |
| Switch Phase            |       |     |
| Minimum Initial (s)     | 5.0   |     |
| Minimum Split (s)       | 24.0  |     |
| Total Split (s)         | 70.0  |     |
| Total Split (%)         | 46.7% |     |
| Maximum Green (s)       | 64.0  |     |
| Yellow Time (s)         | 4.0   |     |
| All-Red Time (s)        | 2.0   |     |
| Lost Time Adjust (s)    | 0.0   |     |
| Total Lost Time (s)     | 6.0   |     |
| Lead/Lag                | Lag   |     |
| Lead-Lag Optimize?      | Yes   |     |
| Vehicle Extension (s)   | 3.0   |     |
| Recall Mode             | C-Max |     |
| Walk Time (s)           | 7.0   |     |
| Flash Don't Walk (s)    | 11.0  |     |
| Pedestrian Calls (#/hr) | 0     |     |
| Act Effct Green (s)     | 88.6  |     |
| Actuated g/C Ratio      | 0.59  |     |
| v/c Ratio               | 0.78  |     |
| Control Delay (s/veh)   | 27.2  |     |
| Queue Delay             | 0.0   |     |
| Total Delay (s/veh)     | 27.2  |     |
| LOS                     | C     |     |
| Approach Delay (s/veh)  | 28.7  |     |
| Approach LOS            | C     |     |
| 90th %ile Green (s)     | 77.6  |     |
| 90th %ile Term Code     | Coord |     |
| 70th %ile Green (s)     | 83.0  |     |
| 70th %ile Term Code     | Coord |     |
| 50th %ile Green (s)     | 86.8  |     |
| 50th %ile Term Code     | Coord |     |
| 30th %ile Green (s)     | 90.4  |     |
| 30th %ile Term Code     | Coord |     |
| 10th %ile Green (s)     | 105.1 |     |
| 10th %ile Term Code     | Coord |     |
| Queue Length 50th (ft)  | 626   |     |
| Queue Length 95th (ft)  | 798   |     |
| Internal Link Dist (ft) | 1363  |     |
| Turn Bay Length (ft)    |       |     |
| Base Capacity (vph)     | 2978  |     |
| Starvation Cap Reductn  | 0     |     |
| Spillback Cap Reductn   | 0     |     |
| Storage Cap Reductn     | 0     |     |
| Reduced v/c Ratio       | 0.78  |     |
| Intersection Summary    |       |     |

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay (s/veh): 29.8

Intersection LOS: C

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: LaGrange Rd & 161st St



| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.5  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 1203 | 85   | 0    | 1519 | 0    | 85   |
| Future Vol, veh/h        | 1203 | 85   | 0    | 1519 | 0    | 85   |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 96   | 96   | 96   | 96   | 96   | 96   |
| Heavy Vehicles, %        | 2    | 0    | 0    | 3    | 0    | 1    |
| Mvmt Flow                | 1253 | 89   | 0    | 1582 | 0    | 89   |

| Major/Minor          | Major1 | Major2 | Minor1     |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0      | 0      | - - - 671  |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |
| Critical Hdwy        | -      | -      | - - - 6.92 |
| Critical Hdwy Stg 1  | -      | -      | - - -      |
| Critical Hdwy Stg 2  | -      | -      | - - -      |
| Follow-up Hdwy       | -      | -      | - - - 3.31 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 401  |
| Stage 1              | -      | -      | 0 - 0 -    |
| Stage 2              | -      | -      | 0 - 0 -    |
| Platoon blocked, %   | -      | -      | -          |
| Mov Cap-1 Maneuver   | -      | -      | - - - 401  |
| Mov Cap-2 Maneuver   | -      | -      | - - -      |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 16.49 |
| HCM LOS           |    |    | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 401   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.221 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 16.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 0.8   | -   | -   | -   |

| Intersection             |      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL  | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |      |  |  |  |  |  |
| Traffic Vol, veh/h       | 0    | 22                                                                                | 32                                                                                | 214                                                                               | 148                                                                               | 29                                                                                |
| Future Vol, veh/h        | 0    | 22                                                                                | 32                                                                                | 214                                                                               | 148                                                                               | 29                                                                                |
| Conflicting Peds, #/hr   | 0    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -    | Stop                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -    | 0                                                                                 | 110                                                                               | -                                                                                 | -                                                                                 | 0                                                                                 |
| Veh in Median Storage, # | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0    | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 84   | 84                                                                                | 84                                                                                | 84                                                                                | 84                                                                                | 84                                                                                |
| Heavy Vehicles, %        | 2    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |
| Mvmt Flow                | 0    | 26                                                                                | 38                                                                                | 255                                                                               | 176                                                                               | 35                                                                                |

| Major/Minor          | Minor2 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | -      | 176    | 211    |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |
| Critical Hdwy        | -      | 6.2    | 4.1    |
| Critical Hdwy Stg 1  | -      | -      | -      |
| Critical Hdwy Stg 2  | -      | -      | -      |
| Follow-up Hdwy       | -      | 3.3    | 2.2    |
| Pot Cap-1 Maneuver   | 0      | 872    | 1372   |
| Stage 1              | 0      | -      | -      |
| Stage 2              | 0      | -      | -      |
| Platoon blocked, %   |        |        |        |
| Mov Cap-1 Maneuver   | -      | 872    | 1372   |
| Mov Cap-2 Maneuver   | -      | -      | -      |
| Stage 1              | -      | -      | -      |
| Stage 2              | -      | -      | -      |

| Approach          | EB   | NB | SB |
|-------------------|------|----|----|
| HCM Ctrl Dly, s/v | 9.26 | 1  | 0  |
| HCM LOS           | A    |    |    |

| Minor Lane/Major Mvmt | NBL   | NBT | EBLn1 | SBT | SBR |
|-----------------------|-------|-----|-------|-----|-----|
| Capacity (veh/h)      | 1372  | -   | 872   | -   | -   |
| HCM Lane V/C Ratio    | 0.028 | -   | 0.03  | -   | -   |
| HCM Ctrl Dly (s/v)    | 7.7   | -   | 9.3   | -   | -   |
| HCM Lane LOS          | A     | -   | A     | -   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | 0.1   | -   | -   |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                 | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Lane Configurations        |                                                                                   |  |  |                                                                                   |                                                                                   |  |   |  |  |  |  |  |
| Traffic Volume (vph)       | 19                                                                                | 143                                                                               | 930                                                                               | 125                                                                               | 2                                                                                 | 349                                                                               | 900                                                                                 | 131                                                                                 | 270                                                                                 | 202                                                                                 | 296                                                                                 | 107                                                                                 |
| Future Volume (vph)        | 19                                                                                | 143                                                                               | 930                                                                               | 125                                                                               | 2                                                                                 | 349                                                                               | 900                                                                                 | 131                                                                                 | 270                                                                                 | 202                                                                                 | 296                                                                                 | 107                                                                                 |
| Ideal Flow (vphpl)         | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 2000                                                                                | 1900                                                                                | 1900                                                                                | 2000                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        |                                                                                   | 275                                                                               |                                                                                   | 0                                                                                 |                                                                                   | 400                                                                               |                                                                                     | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Storage Lanes              |                                                                                   | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                   | 2                                                                                 |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   | 1                                                                                   |
| Taper Length (ft)          |                                                                                   | 150                                                                               |                                                                                   |                                                                                   |                                                                                   | 290                                                                               |                                                                                     |                                                                                     | 65                                                                                  |                                                                                     |                                                                                     | 100                                                                                 |
| Lane Util. Factor          | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.982                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |
| Flt Protected              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 0                                                                                 | 1789                                                                              | 3484                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                                | 1599                                                                                | 1805                                                                                | 1980                                                                                | 1615                                                                                | 1752                                                                                |
| Flt Permitted              |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                     |                                                                                     | 0.329                                                                               |                                                                                     |                                                                                     | 0.624                                                                               |
| Satd. Flow (perm)          | 0                                                                                 | 1789                                                                              | 3484                                                                              | 0                                                                                 | 0                                                                                 | 3467                                                                              | 3725                                                                                | 1599                                                                                | 625                                                                                 | 1980                                                                                | 1615                                                                                | 1151                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 11                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 132                                                                                 |                                                                                     |                                                                                     | 289                                                                                 |                                                                                     |
| Link Speed (mph)           |                                                                                   |                                                                                   | 40                                                                                |                                                                                   |                                                                                   |                                                                                   | 40                                                                                  |                                                                                     |                                                                                     | 30                                                                                  |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   |                                                                                   | 880                                                                               |                                                                                   |                                                                                   |                                                                                   | 1880                                                                                |                                                                                     |                                                                                     | 375                                                                                 |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   |                                                                                   | 15.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.0                                                                                |                                                                                     |                                                                                     | 8.5                                                                                 |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                | 0.94                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 1%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 2%                                                                                  | 1%                                                                                  | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 3%                                                                                  |
| Adj. Flow (vph)            | 20                                                                                | 152                                                                               | 989                                                                               | 133                                                                               | 2                                                                                 | 371                                                                               | 957                                                                                 | 139                                                                                 | 287                                                                                 | 215                                                                                 | 315                                                                                 | 114                                                                                 |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 0                                                                                 | 172                                                                               | 1122                                                                              | 0                                                                                 | 0                                                                                 | 373                                                                               | 957                                                                                 | 139                                                                                 | 287                                                                                 | 215                                                                                 | 315                                                                                 | 114                                                                                 |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | R NA                                                                              | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                              | Left                                                                              | Left                                                                                | Right                                                                               | Left                                                                                | Left                                                                                | Right                                                                               | Left                                                                                |
| Median Width(ft)           |                                                                                   |                                                                                   | 24                                                                                |                                                                                   |                                                                                   |                                                                                   | 24                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                   |                                                                                   | 16                                                                                  |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                | 0.94                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                 | 15                                                                                |                                                                                     | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 15                                                                                  |
| Number of Detectors        |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 1                                                                                 | 2                                                                                   | 1                                                                                   | 1                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Detector Template          |                                                                                   | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                   | Left                                                                              | Thru                                                                                | Right                                                                               | Left                                                                                | Thru                                                                                | Right                                                                               | Left                                                                                |
| Leading Detector (ft)      |                                                                                   | 20                                                                                | 100                                                                               |                                                                                   |                                                                                   | 20                                                                                | 100                                                                                 | 20                                                                                  | 20                                                                                  | 100                                                                                 | 20                                                                                  | 20                                                                                  |
| Trailing Detector (ft)     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Position(ft)    |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Detector 1 Size(ft)        |                                                                                   | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                   | 20                                                                                | 6                                                                                   | 20                                                                                  | 20                                                                                  | 6                                                                                   | 20                                                                                  | 20                                                                                  |
| Detector 1 Type            |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Queue (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 1 Delay (s)       |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                   |                                                                                   | 94                                                                                  |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   |                                                                                   | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |
| Turn Type                  | Prot                                                                              | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | Prot                                                                              | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               | NA                                                                                  | pm+ov                                                                               | pm+pt                                                                               |
| Protected Phases           | 5!                                                                                | 5                                                                                 | 2                                                                                 |                                                                                   | 1!                                                                                | 1                                                                                 | 6                                                                                   | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1!                                                                                  | 3                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑     | ↑     |
| Traffic Volume (vph)       | 183   | 139   |
| Future Volume (vph)        | 183   | 139   |
| Ideal Flow (vphpl)         | 2000  | 1900  |
| Storage Length (ft)        |       | 165   |
| Storage Lanes              |       | 1     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 1.00  | 1.00  |
| Frt                        |       | 0.850 |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 2000  | 1599  |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 2000  | 1599  |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          |       | 110   |
| Link Speed (mph)           | 30    |       |
| Link Distance (ft)         | 571   |       |
| Travel Time (s)            | 13.0  |       |
| Peak Hour Factor           | 0.94  | 0.94  |
| Heavy Vehicles (%)         | 0%    | 1%    |
| Adj. Flow (vph)            | 195   | 148   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 195   | 148   |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 12    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 0.94  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     | 1     |
| Detector Template          | Thru  | Right |
| Leading Detector (ft)      | 100   | 20    |
| Trailing Detector (ft)     | 0     | 0     |
| Detector 1 Position(ft)    | 0     | 0     |
| Detector 1 Size(ft)        | 6     | 20    |
| Detector 1 Type            | Cl+Ex | Cl+Ex |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   | 0.0   |
| Detector 1 Queue (s)       | 0.0   | 0.0   |
| Detector 1 Delay (s)       | 0.0   | 0.0   |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    | pm+ov |
| Protected Phases           | 8     | 5!    |

Costco Wholesale, Orland Park, IL  
2: Ravinia Ave & 159th St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBU                                                                               | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                                | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6                                                                                   | 4                                                                                   |                                                                                     | 4                                                                                   | 8                                                                                   |
| Detector Phase          | 5                                                                                 | 5                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 | 6                                                                                  | 3                                                                                   | 7                                                                                   | 4                                                                                   | 1                                                                                   | 3                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 9.5                                                                               | 24.5                                                                              |                                                                                   | 9.5                                                                               | 9.5                                                                               | 24.5                                                                               | 9.5                                                                                 | 9.5                                                                                 | 24.5                                                                                | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 26.0                                                                              | 26.0                                                                              | 40.0                                                                              |                                                                                   | 26.0                                                                              | 26.0                                                                              | 40.0                                                                               | 26.0                                                                                | 26.0                                                                                | 38.0                                                                                | 26.0                                                                                | 26.0                                                                                |
| Total Split (%)         | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                             |                                                                                   | 20.0%                                                                             | 20.0%                                                                             | 30.8%                                                                              | 20.0%                                                                               | 20.0%                                                                               | 29.2%                                                                               | 20.0%                                                                               | 20.0%                                                                               |
| Maximum Green (s)       | 21.5                                                                              | 21.5                                                                              | 34.0                                                                              |                                                                                   | 21.5                                                                              | 21.5                                                                              | 34.0                                                                               | 22.5                                                                                | 22.5                                                                                | 32.0                                                                                | 21.5                                                                                | 22.5                                                                                |
| Yellow Time (s)         | 3.5                                                                               | 3.5                                                                               | 4.5                                                                               |                                                                                   | 3.5                                                                               | 3.5                                                                               | 4.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 4.5                                                                                 | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 1.0                                                                               | 1.0                                                                               | 1.5                                                                               |                                                                                   | 1.0                                                                               | 1.0                                                                               | 1.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 1.5                                                                                 | 1.0                                                                                 | 0.0                                                                                 |
| Lost Time Adjust (s)    |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     |                                                                                   | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 4.5                                                                               | 6.0                                                                                | 3.5                                                                                 | 3.5                                                                                 | 6.0                                                                                 | 4.5                                                                                 | 3.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lead                                                                              | Lag                                                                                | Lead                                                                                | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | C-Max                                                                             |                                                                                   | None                                                                              | None                                                                              | C-Max                                                                              | None                                                                                | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                                |                                                                                     |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 11.0                                                                               |                                                                                     |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   | 0                                                                                  |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    |                                                                                   | 17.7                                                                              | 51.2                                                                              |                                                                                   |                                                                                   | 19.5                                                                              | 53.0                                                                               | 70.5                                                                                | 45.3                                                                                | 27.9                                                                                | 53.3                                                                                | 32.5                                                                                |
| Actuated g/C Ratio      |                                                                                   | 0.14                                                                              | 0.39                                                                              |                                                                                   |                                                                                   | 0.15                                                                              | 0.41                                                                               | 0.54                                                                                | 0.35                                                                                | 0.21                                                                                | 0.41                                                                                | 0.25                                                                                |
| v/c Ratio               |                                                                                   | 0.71                                                                              | 0.81                                                                              |                                                                                   |                                                                                   | 0.72                                                                              | 0.63                                                                               | 0.15                                                                                | 0.71                                                                                | 0.51                                                                                | 0.38                                                                                | 0.34                                                                                |
| Control Delay (s/veh)   |                                                                                   | 69.1                                                                              | 42.1                                                                              |                                                                                   |                                                                                   | 60.5                                                                              | 35.2                                                                               | 4.0                                                                                 | 41.8                                                                                | 48.8                                                                                | 4.5                                                                                 | 31.4                                                                                |
| Queue Delay             |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay (s/veh)     |                                                                                   | 69.1                                                                              | 42.1                                                                              |                                                                                   |                                                                                   | 60.5                                                                              | 35.2                                                                               | 4.0                                                                                 | 41.8                                                                                | 48.8                                                                                | 4.5                                                                                 | 31.4                                                                                |
| LOS                     |                                                                                   | E                                                                                 | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 | D                                                                                  | A                                                                                   | D                                                                                   | D                                                                                   | A                                                                                   | C                                                                                   |
| Approach Delay (s/veh)  |                                                                                   |                                                                                   | 45.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 38.6                                                                               |                                                                                     |                                                                                     | 29.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 23.8                                                                              | 23.8                                                                              | 38.4                                                                              |                                                                                   | 24.6                                                                              | 24.6                                                                              | 39.2                                                                               | 14.8                                                                                | 22.5                                                                                | 32.2                                                                                | 24.6                                                                                | 14.8                                                                                |
| 90th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 20.2                                                                              | 20.2                                                                              | 44.6                                                                              |                                                                                   | 21.9                                                                              | 21.9                                                                              | 46.3                                                                               | 12.9                                                                                | 22.5                                                                                | 30.6                                                                                | 21.9                                                                                | 12.9                                                                                |
| 70th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 17.7                                                                              | 17.7                                                                              | 49.8                                                                              |                                                                                   | 19.2                                                                              | 19.2                                                                              | 51.3                                                                               | 11.6                                                                                | 22.5                                                                                | 29.4                                                                                | 19.2                                                                                | 11.6                                                                                |
| 50th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Max                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 15.2                                                                              | 15.2                                                                              | 56.4                                                                              |                                                                                   | 17.2                                                                              | 17.2                                                                              | 58.4                                                                               | 10.2                                                                                | 20.4                                                                                | 26.2                                                                                | 17.2                                                                                | 10.2                                                                                |
| 30th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 11.4                                                                              | 11.4                                                                              | 66.8                                                                              |                                                                                   | 14.4                                                                              | 14.4                                                                              | 69.8                                                                               | 7.9                                                                                 | 16.4                                                                                | 20.9                                                                                | 14.4                                                                                | 7.9                                                                                 |
| 10th %ile Term Code     | Gap                                                                               | Gap                                                                               | Coord                                                                             |                                                                                   | Gap                                                                               | Gap                                                                               | Coord                                                                              | Gap                                                                                 | Gap                                                                                 | Hold                                                                                | Gap                                                                                 | Gap                                                                                 |
| Queue Length 50th (ft)  |                                                                                   | 141                                                                               | 444                                                                               |                                                                                   |                                                                                   | 156                                                                               | 342                                                                                | 3                                                                                   | 182                                                                                 | 159                                                                                 | 13                                                                                  | 65                                                                                  |
| Queue Length 95th (ft)  |                                                                                   | 209                                                                               | #693                                                                              |                                                                                   |                                                                                   | 201                                                                               | 485                                                                                | 40                                                                                  | 246                                                                                 | 233                                                                                 | 62                                                                                  | 102                                                                                 |
| Internal Link Dist (ft) |                                                                                   |                                                                                   | 800                                                                               |                                                                                   |                                                                                   |                                                                                   | 1800                                                                               |                                                                                     |                                                                                     | 295                                                                                 |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    |                                                                                   | 275                                                                               |                                                                                   |                                                                                   |                                                                                   | 400                                                                               |                                                                                    | 200                                                                                 | 115                                                                                 |                                                                                     | 135                                                                                 | 160                                                                                 |
| Base Capacity (vph)     |                                                                                   | 301                                                                               | 1378                                                                              |                                                                                   |                                                                                   | 592                                                                               | 1518                                                                               | 1051                                                                                | 422                                                                                 | 488                                                                                 | 860                                                                                 | 484                                                                                 |
| Starvation Cap Reductn  |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn     |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio       |                                                                                   | 0.57                                                                              | 0.81                                                                              |                                                                                   |                                                                                   | 0.63                                                                              | 0.63                                                                               | 0.13                                                                                | 0.68                                                                                | 0.44                                                                                | 0.37                                                                                | 0.24                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Permitted Phases        |       | 8     |
| Detector Phase          | 8     | 5     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 5.0   | 5.0   |
| Minimum Split (s)       | 24.5  | 9.5   |
| Total Split (s)         | 38.0  | 26.0  |
| Total Split (%)         | 29.2% | 20.0% |
| Maximum Green (s)       | 31.5  | 21.5  |
| Yellow Time (s)         | 4.5   | 3.5   |
| All-Red Time (s)        | 2.0   | 1.0   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.5   | 4.5   |
| Lead/Lag                | Lag   | Lead  |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | None  | None  |
| Walk Time (s)           | 7.0   |       |
| Flash Don't Walk (s)    | 11.0  |       |
| Pedestrian Calls (#/hr) | 0     |       |
| Act Effct Green (s)     | 18.0  | 42.1  |
| Actuated g/C Ratio      | 0.14  | 0.32  |
| v/c Ratio               | 0.71  | 0.25  |
| Control Delay (s/veh)   | 66.9  | 9.3   |
| Queue Delay             | 0.0   | 0.0   |
| Total Delay (s/veh)     | 66.9  | 9.3   |
| LOS                     | E     | A     |
| Approach Delay (s/veh)  | 39.4  |       |
| Approach LOS            | D     |       |
| 90th %ile Green (s)     | 24.0  | 23.8  |
| 90th %ile Term Code     | Gap   | Gap   |
| 70th %ile Green (s)     | 20.5  | 20.2  |
| 70th %ile Term Code     | Gap   | Gap   |
| 50th %ile Green (s)     | 18.0  | 17.7  |
| 50th %ile Term Code     | Gap   | Gap   |
| 30th %ile Green (s)     | 15.5  | 15.2  |
| 30th %ile Term Code     | Gap   | Gap   |
| 10th %ile Green (s)     | 11.9  | 11.4  |
| 10th %ile Term Code     | Gap   | Gap   |
| Queue Length 50th (ft)  | 159   | 22    |
| Queue Length 95th (ft)  | 230   | 62    |
| Internal Link Dist (ft) | 491   |       |
| Turn Bay Length (ft)    |       | 165   |
| Base Capacity (vph)     | 484   | 641   |
| Starvation Cap Reductn  | 0     | 0     |
| Spillback Cap Reductn   | 0     | 0     |
| Storage Cap Reductn     | 0     | 0     |
| Reduced v/c Ratio       | 0.40  | 0.23  |
| Intersection Summary    |       |       |

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 39.1

Intersection LOS: D

Intersection Capacity Utilization 81.3%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 2: Ravinia Ave & 159th St



Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                            |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group                 | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations        |  |  |  |  |  |                                                                                   |                                                                                     |  |  |  |                                                                                     |  |
| Traffic Volume (vph)       | 220                                                                               | 5                                                                                 | 184                                                                               | 8                                                                                 | 10                                                                                | 24                                                                                | 7                                                                                   | 425                                                                                 | 1826                                                                                | 17                                                                                  | 13                                                                                  | 39                                                                                  |
| Future Volume (vph)        | 220                                                                               | 5                                                                                 | 184                                                                               | 8                                                                                 | 10                                                                                | 24                                                                                | 7                                                                                   | 425                                                                                 | 1826                                                                                | 17                                                                                  | 13                                                                                  | 39                                                                                  |
| Ideal Flow (vphpl)         | 1900                                                                              | 2000                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Storage Length (ft)        | 70                                                                                |                                                                                   | 70                                                                                | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                     | 190                                                                                 |                                                                                     | 0                                                                                   |                                                                                     | 270                                                                                 |
| Storage Lanes              | 1                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                 |                                                                                   | 0                                                                                 |                                                                                     | 2                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (ft)          | 80                                                                                |                                                                                   |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                     | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 160                                                                                 |
| Lane Util. Factor          | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.91                                                                                | 0.97                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 1.00                                                                                |
| Frt                        |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   | 0.894                                                                             |                                                                                   |                                                                                     |                                                                                     | 0.999                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected              | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)          | 1805                                                                              | 2000                                                                              | 1615                                                                              | 1805                                                                              | 1699                                                                              | 0                                                                                 | 0                                                                                   | 3502                                                                                | 5128                                                                                | 0                                                                                   | 0                                                                                   | 1778                                                                                |
| Flt Permitted              | 0.471                                                                             |                                                                                   |                                                                                   | 0.800                                                                             |                                                                                   |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)          | 895                                                                               | 2000                                                                              | 1615                                                                              | 1520                                                                              | 1699                                                                              | 0                                                                                 | 0                                                                                   | 3502                                                                                | 5128                                                                                | 0                                                                                   | 0                                                                                   | 1778                                                                                |
| Right Turn on Red          |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)          |                                                                                   |                                                                                   | 188                                                                               |                                                                                   | 24                                                                                |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (mph)           |                                                                                   | 30                                                                                |                                                                                   |                                                                                   | 30                                                                                |                                                                                   |                                                                                     |                                                                                     | 40                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (ft)         |                                                                                   | 368                                                                               |                                                                                   |                                                                                   | 428                                                                               |                                                                                   |                                                                                     |                                                                                     | 508                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)            |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   | 9.7                                                                               |                                                                                   |                                                                                     |                                                                                     | 8.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor           | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Heavy Vehicles (%)         | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 6%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)            | 224                                                                               | 5                                                                                 | 188                                                                               | 8                                                                                 | 10                                                                                | 24                                                                                | 7                                                                                   | 434                                                                                 | 1863                                                                                | 17                                                                                  | 13                                                                                  | 40                                                                                  |
| Shared Lane Traffic (%)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)      | 224                                                                               | 5                                                                                 | 188                                                                               | 8                                                                                 | 34                                                                                | 0                                                                                 | 0                                                                                   | 441                                                                                 | 1880                                                                                | 0                                                                                   | 0                                                                                   | 53                                                                                  |
| Enter Blocked Intersection | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  | No                                                                                  |
| Lane Alignment             | Left                                                                              | Left                                                                              | Right                                                                             | Left                                                                              | Left                                                                              | Right                                                                             | R NA                                                                                | Left                                                                                | Left                                                                                | Right                                                                               | R NA                                                                                | Left                                                                                |
| Median Width(ft)           |                                                                                   | 12                                                                                |                                                                                   |                                                                                   | 12                                                                                |                                                                                   |                                                                                     |                                                                                     | 24                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Offset(ft)            |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Crosswalk Width(ft)        |                                                                                   | 16                                                                                |                                                                                   |                                                                                   | 16                                                                                |                                                                                   |                                                                                     |                                                                                     | 16                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Two way Left Turn Lane     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Headway Factor             | 1.00                                                                              | 0.94                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Turning Speed (mph)        | 15                                                                                |                                                                                   | 9                                                                                 | 15                                                                                |                                                                                   | 9                                                                                 | 9                                                                                   | 15                                                                                  |                                                                                     | 9                                                                                   | 9                                                                                   | 15                                                                                  |
| Number of Detectors        | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 1                                                                                   |
| Detector Template          | Left                                                                              | Thru                                                                              | Right                                                                             | Left                                                                              | Thru                                                                              |                                                                                   |                                                                                     | Left                                                                                | Thru                                                                                |                                                                                     |                                                                                     | Left                                                                                |
| Leading Detector (ft)      | 20                                                                                | 100                                                                               | 20                                                                                | 20                                                                                | 100                                                                               |                                                                                   |                                                                                     | 20                                                                                  | 100                                                                                 |                                                                                     |                                                                                     | 20                                                                                  |
| Trailing Detector (ft)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Position(ft)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Detector 1 Size(ft)        | 20                                                                                | 6                                                                                 | 20                                                                                | 20                                                                                | 6                                                                                 |                                                                                   |                                                                                     | 20                                                                                  | 6                                                                                   |                                                                                     |                                                                                     | 20                                                                                  |
| Detector 1 Type            | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             | Cl+Ex                                                                             |                                                                                   |                                                                                     | Cl+Ex                                                                               | Cl+Ex                                                                               |                                                                                     |                                                                                     | Cl+Ex                                                                               |
| Detector 1 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 1 Extend (s)      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Queue (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 1 Delay (s)       | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Detector 2 Position(ft)    |                                                                                   | 94                                                                                |                                                                                   |                                                                                   | 94                                                                                |                                                                                   |                                                                                     |                                                                                     | 94                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Size(ft)        |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Type            |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                   | Cl+Ex                                                                             |                                                                                   |                                                                                     |                                                                                     | Cl+Ex                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Channel         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector 2 Extend (s)      |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Type                  | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                |                                                                                   | Prot                                                                                | Prot                                                                                | NA                                                                                  |                                                                                     | Prot                                                                                | Prot                                                                                |
| Protected Phases           | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |



| Lane Group                 | SBT   | SBR   |
|----------------------------|-------|-------|
| Lane Configurations        | ↑↑↑   |       |
| Traffic Volume (vph)       | 1755  | 122   |
| Future Volume (vph)        | 1755  | 122   |
| Ideal Flow (vphpl)         | 1900  | 1900  |
| Storage Length (ft)        |       | 0     |
| Storage Lanes              |       | 0     |
| Taper Length (ft)          |       |       |
| Lane Util. Factor          | 0.91  | 0.91  |
| Frt                        | 0.990 |       |
| Flt Protected              |       |       |
| Satd. Flow (prot)          | 5088  | 0     |
| Flt Permitted              |       |       |
| Satd. Flow (perm)          | 5088  | 0     |
| Right Turn on Red          |       | Yes   |
| Satd. Flow (RTOR)          | 9     |       |
| Link Speed (mph)           | 40    |       |
| Link Distance (ft)         | 1443  |       |
| Travel Time (s)            | 24.6  |       |
| Peak Hour Factor           | 0.98  | 0.98  |
| Heavy Vehicles (%)         | 1%    | 0%    |
| Adj. Flow (vph)            | 1791  | 124   |
| Shared Lane Traffic (%)    |       |       |
| Lane Group Flow (vph)      | 1915  | 0     |
| Enter Blocked Intersection | No    | No    |
| Lane Alignment             | Left  | Right |
| Median Width(ft)           | 24    |       |
| Link Offset(ft)            | 0     |       |
| Crosswalk Width(ft)        | 16    |       |
| Two way Left Turn Lane     |       |       |
| Headway Factor             | 1.00  | 1.00  |
| Turning Speed (mph)        |       | 9     |
| Number of Detectors        | 2     |       |
| Detector Template          | Thru  |       |
| Leading Detector (ft)      | 100   |       |
| Trailing Detector (ft)     | 0     |       |
| Detector 1 Position(ft)    | 0     |       |
| Detector 1 Size(ft)        | 6     |       |
| Detector 1 Type            | Cl+Ex |       |
| Detector 1 Channel         |       |       |
| Detector 1 Extend (s)      | 0.0   |       |
| Detector 1 Queue (s)       | 0.0   |       |
| Detector 1 Delay (s)       | 0.0   |       |
| Detector 2 Position(ft)    | 94    |       |
| Detector 2 Size(ft)        | 6     |       |
| Detector 2 Type            | Cl+Ex |       |
| Detector 2 Channel         |       |       |
| Detector 2 Extend (s)      | 0.0   |       |
| Turn Type                  | NA    |       |
| Protected Phases           | 6     |       |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Saturday Midday Peak

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Permitted Phases        | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 9.5                                                                               | 24.0                                                                              | 24.0                                                                              | 9.5                                                                               | 24.0                                                                              |                                                                                   | 9.5                                                                                | 9.5                                                                                 | 24.0                                                                                |                                                                                     | 9.5                                                                                 | 9.5                                                                                 |
| Total Split (s)         | 17.0                                                                              | 27.8                                                                              | 27.8                                                                              | 14.0                                                                              | 24.8                                                                              |                                                                                   | 38.2                                                                               | 38.2                                                                                | 74.3                                                                                |                                                                                     | 13.9                                                                                | 13.9                                                                                |
| Total Split (%)         | 13.1%                                                                             | 21.4%                                                                             | 21.4%                                                                             | 10.8%                                                                             | 19.1%                                                                             |                                                                                   | 29.4%                                                                              | 29.4%                                                                               | 57.2%                                                                               |                                                                                     | 10.7%                                                                               | 10.7%                                                                               |
| Maximum Green (s)       | 13.5                                                                              | 21.8                                                                              | 21.8                                                                              | 10.5                                                                              | 18.8                                                                              |                                                                                   | 33.7                                                                               | 33.7                                                                                | 68.3                                                                                |                                                                                     | 9.4                                                                                 | 9.4                                                                                 |
| Yellow Time (s)         | 3.5                                                                               | 4.0                                                                               | 4.0                                                                               | 3.5                                                                               | 4.0                                                                               |                                                                                   | 3.5                                                                                | 3.5                                                                                 | 4.0                                                                                 |                                                                                     | 3.5                                                                                 | 3.5                                                                                 |
| All-Red Time (s)        | 0.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                   | 1.0                                                                                | 1.0                                                                                 | 2.0                                                                                 |                                                                                     | 1.0                                                                                 | 1.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 3.5                                                                               | 6.0                                                                               | 6.0                                                                               | 3.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                    | 4.5                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 4.5                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                               | Lead                                                                                | Lag                                                                                 |                                                                                     | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                | Yes                                                                                 | Yes                                                                                 |                                                                                     | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              |                                                                                   | None                                                                               | None                                                                                | C-Max                                                                               |                                                                                     | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                    |                                                                                     | 7.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Flash Don't Walk (s)    |                                                                                   | 11.0                                                                              | 11.0                                                                              |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 21.7                                                                              | 17.1                                                                              | 17.1                                                                              | 12.1                                                                              | 6.8                                                                               |                                                                                   |                                                                                    | 21.7                                                                                | 87.2                                                                                |                                                                                     |                                                                                     | 9.2                                                                                 |
| Actuated g/C Ratio      | 0.17                                                                              | 0.13                                                                              | 0.13                                                                              | 0.09                                                                              | 0.05                                                                              |                                                                                   |                                                                                    | 0.17                                                                                | 0.67                                                                                |                                                                                     |                                                                                     | 0.07                                                                                |
| v/c Ratio               | 0.92                                                                              | 0.02                                                                              | 0.50                                                                              | 0.05                                                                              | 0.31                                                                              |                                                                                   |                                                                                    | 0.76                                                                                | 0.55                                                                                |                                                                                     |                                                                                     | 0.42                                                                                |
| Control Delay (s/veh)   | 91.4                                                                              | 47.6                                                                              | 11.8                                                                              | 41.8                                                                              | 35.4                                                                              |                                                                                   |                                                                                    | 60.1                                                                                | 13.7                                                                                |                                                                                     |                                                                                     | 67.2                                                                                |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay (s/veh)     | 91.4                                                                              | 47.6                                                                              | 11.8                                                                              | 41.8                                                                              | 35.4                                                                              |                                                                                   |                                                                                    | 60.1                                                                                | 13.7                                                                                |                                                                                     |                                                                                     | 67.2                                                                                |
| LOS                     | F                                                                                 | D                                                                                 | B                                                                                 | D                                                                                 | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   | B                                                                                   |                                                                                     |                                                                                     | E                                                                                   |
| Approach Delay (s/veh)  |                                                                                   | 55.0                                                                              |                                                                                   |                                                                                   | 36.6                                                                              |                                                                                   |                                                                                    |                                                                                     | 22.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS            |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| 90th %ile Green (s)     | 13.5                                                                              | 15.7                                                                              | 15.7                                                                              | 7.0                                                                               | 9.2                                                                               |                                                                                   | 26.9                                                                               | 26.9                                                                                | 74.6                                                                                |                                                                                     | 12.7                                                                                | 12.7                                                                                |
| 90th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Gap                                                                               | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 70th %ile Green (s)     | 13.5                                                                              | 24.4                                                                              | 24.4                                                                              | 0.0                                                                               | 7.4                                                                               |                                                                                   | 23.8                                                                               | 23.8                                                                                | 78.4                                                                                |                                                                                     | 10.7                                                                                | 10.7                                                                                |
| 70th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 50th %ile Green (s)     | 13.5                                                                              | 23.2                                                                              | 23.2                                                                              | 0.0                                                                               | 6.2                                                                               |                                                                                   | 21.7                                                                               | 21.7                                                                                | 81.1                                                                                |                                                                                     | 9.2                                                                                 | 9.2                                                                                 |
| 50th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Gap                                                                               |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 30th %ile Green (s)     | 13.5                                                                              | 11.0                                                                              | 11.0                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                   | 19.6                                                                               | 19.6                                                                                | 94.7                                                                                |                                                                                     | 7.8                                                                                 | 7.8                                                                                 |
| 30th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Gap                                                                                 | Gap                                                                                 |
| 10th %ile Green (s)     | 13.5                                                                              | 11.0                                                                              | 11.0                                                                              | 0.0                                                                               | 0.0                                                                               |                                                                                   | 16.4                                                                               | 16.4                                                                                | 107.0                                                                               |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |
| 10th %ile Term Code     | Max                                                                               | Hold                                                                              | Hold                                                                              | Skip                                                                              | Skip                                                                              |                                                                                   | Gap                                                                                | Gap                                                                                 | Coord                                                                               |                                                                                     | Skip                                                                                | Skip                                                                                |
| Queue Length 50th (ft)  | 175                                                                               | 4                                                                                 | 0                                                                                 | 6                                                                                 | 8                                                                                 |                                                                                   |                                                                                    | 184                                                                                 | 323                                                                                 |                                                                                     |                                                                                     | 44                                                                                  |
| Queue Length 95th (ft)  | #284                                                                              | 17                                                                                | 71                                                                                | 20                                                                                | 43                                                                                |                                                                                   |                                                                                    | 232                                                                                 | 421                                                                                 |                                                                                     |                                                                                     | 85                                                                                  |
| Internal Link Dist (ft) |                                                                                   | 288                                                                               |                                                                                   |                                                                                   | 348                                                                               |                                                                                   |                                                                                    |                                                                                     | 428                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (ft)    | 70                                                                                |                                                                                   | 70                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 190                                                                                 |                                                                                     |                                                                                     |                                                                                     | 270                                                                                 |
| Base Capacity (vph)     | 243                                                                               | 347                                                                               | 436                                                                               | 216                                                                               | 266                                                                               |                                                                                   |                                                                                    | 907                                                                                 | 3438                                                                                |                                                                                     |                                                                                     | 141                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio       | 0.92                                                                              | 0.01                                                                              | 0.43                                                                              | 0.04                                                                              | 0.13                                                                              |                                                                                   |                                                                                    | 0.49                                                                                | 0.55                                                                                |                                                                                     |                                                                                     | 0.38                                                                                |
| Intersection Summary    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Lane Group              | SBT   | SBR |
|-------------------------|-------|-----|
| Permitted Phases        |       |     |
| Detector Phase          | 6     |     |
| Switch Phase            |       |     |
| Minimum Initial (s)     | 5.0   |     |
| Minimum Split (s)       | 24.0  |     |
| Total Split (s)         | 50.0  |     |
| Total Split (%)         | 38.5% |     |
| Maximum Green (s)       | 44.0  |     |
| Yellow Time (s)         | 4.0   |     |
| All-Red Time (s)        | 2.0   |     |
| Lost Time Adjust (s)    | 0.0   |     |
| Total Lost Time (s)     | 6.0   |     |
| Lead/Lag                | Lag   |     |
| Lead-Lag Optimize?      | Yes   |     |
| Vehicle Extension (s)   | 3.0   |     |
| Recall Mode             | C-Max |     |
| Walk Time (s)           | 7.0   |     |
| Flash Don't Walk (s)    | 11.0  |     |
| Pedestrian Calls (#/hr) | 0     |     |
| Act Effct Green (s)     | 72.7  |     |
| Actuated g/C Ratio      | 0.56  |     |
| v/c Ratio               | 0.67  |     |
| Control Delay (s/veh)   | 23.4  |     |
| Queue Delay             | 0.0   |     |
| Total Delay (s/veh)     | 23.4  |     |
| LOS                     | C     |     |
| Approach Delay (s/veh)  | 24.6  |     |
| Approach LOS            | C     |     |
| 90th %ile Green (s)     | 60.4  |     |
| 90th %ile Term Code     | Coord |     |
| 70th %ile Green (s)     | 65.3  |     |
| 70th %ile Term Code     | Coord |     |
| 50th %ile Green (s)     | 68.6  |     |
| 50th %ile Term Code     | Coord |     |
| 30th %ile Green (s)     | 82.9  |     |
| 30th %ile Term Code     | Coord |     |
| 10th %ile Green (s)     | 86.1  |     |
| 10th %ile Term Code     | Coord |     |
| Queue Length 50th (ft)  | 430   |     |
| Queue Length 95th (ft)  | 560   |     |
| Internal Link Dist (ft) | 1363  |     |
| Turn Bay Length (ft)    |       |     |
| Base Capacity (vph)     | 2847  |     |
| Starvation Cap Reductn  | 0     |     |
| Spillback Cap Reductn   | 0     |     |
| Storage Cap Reductn     | 0     |     |
| Reduced v/c Ratio       | 0.67  |     |
| Intersection Summary    |       |     |

Costco Wholesale, Orland Park, IL  
5: LaGrange Rd & 161st St

2050 Future w/Ravinia Extension Traffic Volumes  
Timing Plan: Saturday MIDDAY Peak

|                                                                                                             |                                                             |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Area Type:                                                                                                  | Other                                                       |
| Cycle Length:                                                                                               | 130                                                         |
| Actuated Cycle Length:                                                                                      | 130                                                         |
| Offset:                                                                                                     | 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green |
| Natural Cycle:                                                                                              | 90                                                          |
| Control Type:                                                                                               | Actuated-Coordinated                                        |
| Maximum v/c Ratio:                                                                                          | 0.92                                                        |
| Intersection Signal Delay (s/veh):                                                                          | 26.3                                                        |
| Intersection LOS:                                                                                           | C                                                           |
| Intersection Capacity Utilization                                                                           | 81.6%                                                       |
| ICU Level of Service                                                                                        | D                                                           |
| Analysis Period (min)                                                                                       | 15                                                          |
| # 95th percentile volume exceeds capacity, queue may be longer.<br>Queue shown is maximum after two cycles. |                                                             |

Splits and Phases: 5: LaGrange Rd & 161st St

|                                                                                      |                                                                                          |                                                                                   |                                                                                        |                                                                                        |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  |  Ø3 |  Ø4 |
| 13.9 s                                                                               | 74.3 s                                                                                   |                                                                                   | 14 s                                                                                   | 27.8 s                                                                                 |
|  Ø5 |  Ø6 (R) |                                                                                   |  Ø7 |  Ø8 |
| 38.2 s                                                                               | 50 s                                                                                     |                                                                                   | 17 s                                                                                   | 24.8 s                                                                                 |

| Intersection             |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh         | 0.8  |      |      |      |      |      |
| Movement                 | EBT  | EBR  | WBL  | WBT  | NBL  | NBR  |
| Lane Configurations      | ↑↑   |      |      | ↑↑   |      | ↑    |
| Traffic Vol, veh/h       | 1067 | 106  | 0    | 1344 | 0    | 120  |
| Future Vol, veh/h        | 1067 | 106  | 0    | 1344 | 0    | 120  |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Stop | Stop |
| RT Channelized           | -    | None | -    | None | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | 0    |
| Veh in Median Storage, # | 0    | -    | -    | 0    | 0    | -    |
| Grade, %                 | 0    | -    | -    | 0    | 0    | -    |
| Peak Hour Factor         | 91   | 91   | 91   | 91   | 91   | 91   |
| Heavy Vehicles, %        | 2    | 1    | 0    | 2    | 0    | 1    |
| Mvmt Flow                | 1173 | 116  | 0    | 1477 | 0    | 132  |

| Major/Minor          | Major1 | Major2 | Minor1     |
|----------------------|--------|--------|------------|
| Conflicting Flow All | 0      | 0      | - - - 645  |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |
| Critical Hdwy        | -      | -      | - - - 6.92 |
| Critical Hdwy Stg 1  | -      | -      | - - -      |
| Critical Hdwy Stg 2  | -      | -      | - - -      |
| Follow-up Hdwy       | -      | -      | - - - 3.31 |
| Pot Cap-1 Maneuver   | -      | -      | 0 - 0 418  |
| Stage 1              | -      | -      | 0 - 0      |
| Stage 2              | -      | -      | 0 - 0      |
| Platoon blocked, %   | -      | -      | -          |
| Mov Cap-1 Maneuver   | -      | -      | - - - 418  |
| Mov Cap-2 Maneuver   | -      | -      | - - -      |
| Stage 1              | -      | -      | - - -      |
| Stage 2              | -      | -      | - - -      |

| Approach          | EB | WB | NB    |
|-------------------|----|----|-------|
| HCM Ctrl Dly, s/v | 0  | 0  | 17.55 |
| HCM LOS           |    |    | C     |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h)      | 418   | -   | -   | -   |
| HCM Lane V/C Ratio    | 0.316 | -   | -   | -   |
| HCM Ctrl Dly (s/v)    | 17.5  | -   | -   | -   |
| HCM Lane LOS          | C     | -   | -   | -   |
| HCM 95th %tile Q(veh) | 1.3   | -   | -   | -   |

| Intersection             |        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|--------------------------|--------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Int Delay, s/veh         | 1.2    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Movement                 | EBL    | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations      |        |  |  |  |  |  |
| Traffic Vol, veh/h       | 0      | 27                                                                                | 45                                                                                | 235                                                                               | 140                                                                               | 40                                                                                |
| Future Vol, veh/h        | 0      | 27                                                                                | 45                                                                                | 235                                                                               | 140                                                                               | 40                                                                                |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Sign Control             | Stop   | Stop                                                                              | Free                                                                              | Free                                                                              | Free                                                                              | Free                                                                              |
| RT Channelized           | -      | Stop                                                                              | -                                                                                 | None                                                                              | -                                                                                 | None                                                                              |
| Storage Length           | -      | 0                                                                                 | 110                                                                               | -                                                                                 | -                                                                                 | 0                                                                                 |
| Veh in Median Storage, # | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Grade, %                 | 0      | -                                                                                 | -                                                                                 | 0                                                                                 | 0                                                                                 | -                                                                                 |
| Peak Hour Factor         | 80     | 80                                                                                | 80                                                                                | 80                                                                                | 80                                                                                | 80                                                                                |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Mvmt Flow                | 0      | 34                                                                                | 56                                                                                | 294                                                                               | 175                                                                               | 50                                                                                |
| Major/Minor              | Minor2 | Major1                                                                            |                                                                                   | Major2                                                                            |                                                                                   |                                                                                   |
| Conflicting Flow All     | -      | 175                                                                               | 225                                                                               | 0                                                                                 | -                                                                                 | 0                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy            | -      | 6.2                                                                               | 4.1                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Follow-up Hdwy           | -      | 3.3                                                                               | 2.2                                                                               | -                                                                                 | -                                                                                 | -                                                                                 |
| Pot Cap-1 Maneuver       | 0      | 874                                                                               | 1356                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | 0      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Platoon blocked, %       |        |                                                                                   |                                                                                   | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-1 Maneuver       | -      | 874                                                                               | 1356                                                                              | -                                                                                 | -                                                                                 | -                                                                                 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 1                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Stage 2                  | -      | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 |
| Approach                 | EB     | NB                                                                                |                                                                                   | SB                                                                                |                                                                                   |                                                                                   |
| HCM Ctrl Dly, s/v        | 9.29   | 1.25                                                                              |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   |
| HCM LOS                  | A      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | EBLn1                                                                             | SBT                                                                               | SBR                                                                               |                                                                                   |
| Capacity (veh/h)         | 1356   | -                                                                                 | 874                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane V/C Ratio       | 0.041  | -                                                                                 | 0.039                                                                             | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Ctrl Dly (s/v)       | 7.8    | -                                                                                 | 9.3                                                                               | -                                                                                 | -                                                                                 |                                                                                   |
| HCM Lane LOS             | A      | -                                                                                 | A                                                                                 | -                                                                                 | -                                                                                 |                                                                                   |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | 0.1                                                                               | -                                                                                 | -                                                                                 |                                                                                   |

# MOVEMENT SUMMARY

 **Site: [4] Costco Wholesale, Orland Park, IL #647 (2050 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
AM Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |                  |      |                  |      |           |             |                  |                   |              |            |                |                            |             |
|------------------------------|------|-----------|------------------|------|------------------|------|-----------|-------------|------------------|-------------------|--------------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows     |      | Arrival Flows    |      | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total<br>veh/h | HV % | [ Total<br>veh/h | HV % |           |             |                  | [ Veh.<br>veh     | Dist ]<br>ft |            |                |                            |             |
| South: Ravinia Ave           |      |           |                  |      |                  |      |           |             |                  |                   |              |            |                |                            |             |
| 3                            | L2   | All MCs   | 1                | 0.0  | 1                | 0.0  | 0.148     | 4.0         | LOS A            | 0.7               | 17.7         | 0.23       | 0.09           | 0.23                       | 16.7        |
| 8                            | T1   | All MCs   | 182              | 0.0  | 182              | 0.0  | 0.148     | 4.0         | LOS A            | 0.7               | 17.7         | 0.23       | 0.09           | 0.23                       | 25.7        |
| 18                           | R2   | All MCs   | 4                | 0.0  | 4                | 0.0  | 0.148     | 4.0         | LOS A            | 0.7               | 17.7         | 0.23       | 0.09           | 0.23                       | 21.4        |
| Approach                     |      |           | 187              | 0.0  | 187              | 0.0  | 0.148     | 4.0         | LOS A            | 0.7               | 17.7         | 0.23       | 0.09           | 0.23                       | 25.5        |
| East: North Costco Dwy       |      |           |                  |      |                  |      |           |             |                  |                   |              |            |                |                            |             |
| 1                            | L2   | All MCs   | 9                | 0.0  | 9                | 0.0  | 0.073     | 3.7         | LOS A            | 0.3               | 7.8          | 0.33       | 0.19           | 0.33                       | 20.0        |
| 6                            | T1   | All MCs   | 1                | 0.0  | 1                | 0.0  | 0.073     | 3.7         | LOS A            | 0.3               | 7.8          | 0.33       | 0.19           | 0.33                       | 15.3        |
| 16                           | R2   | All MCs   | 71               | 3.0  | 71               | 3.0  | 0.073     | 3.9         | LOS A            | 0.3               | 7.8          | 0.33       | 0.19           | 0.33                       | 23.5        |
| Approach                     |      |           | 80               | 2.6  | 80               | 2.6  | 0.073     | 3.9         | LOS A            | 0.3               | 7.8          | 0.33       | 0.19           | 0.33                       | 23.1        |
| North: Ravinia Ave           |      |           |                  |      |                  |      |           |             |                  |                   |              |            |                |                            |             |
| 7                            | L2   | All MCs   | 75               | 3.0  | 75               | 3.0  | 0.142     | 3.6         | LOS A            | 0.7               | 17.3         | 0.07       | 0.01           | 0.07                       | 21.8        |
| 4                            | T1   | All MCs   | 109              | 3.0  | 109              | 3.0  | 0.142     | 3.6         | LOS A            | 0.7               | 17.3         | 0.07       | 0.01           | 0.07                       | 23.9        |
| 14                           | R2   | All MCs   | 5                | 0.0  | 5                | 0.0  | 0.142     | 3.4         | LOS A            | 0.7               | 17.3         | 0.07       | 0.01           | 0.07                       | 22.0        |
| Approach                     |      |           | 189              | 2.9  | 189              | 2.9  | 0.142     | 3.6         | LOS A            | 0.7               | 17.3         | 0.07       | 0.01           | 0.07                       | 23.0        |
| West: North Costco Dwy       |      |           |                  |      |                  |      |           |             |                  |                   |              |            |                |                            |             |
| 5                            | L2   | All MCs   | 5                | 3.0  | 5                | 3.0  | 0.007     | 3.4         | LOS A            | 0.0               | 0.7          | 0.32       | 0.15           | 0.32                       | 21.8        |
| 2                            | T1   | All MCs   | 1                | 3.0  | 1                | 3.0  | 0.007     | 3.4         | LOS A            | 0.0               | 0.7          | 0.32       | 0.15           | 0.32                       | 18.3        |
| 12                           | R2   | All MCs   | 1                | 0.0  | 1                | 0.0  | 0.007     | 3.2         | LOS A            | 0.0               | 0.7          | 0.32       | 0.15           | 0.32                       | 19.5        |
| Approach                     |      |           | 8                | 2.6  | 8                | 2.6  | 0.007     | 3.3         | LOS A            | 0.0               | 0.7          | 0.32       | 0.15           | 0.32                       | 21.1        |
| All Vehicles                 |      |           | 464              | 1.7  | 464              | 1.7  | 0.148     | 3.8         | LOS A            | 0.7               | 17.7         | 0.18       | 0.08           | 0.18                       | 24.0        |

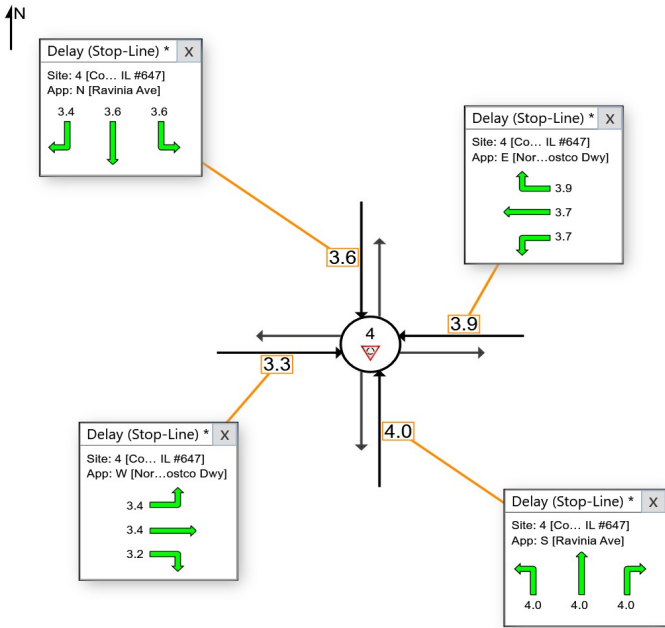
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
AM Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



Colour code based on Level of Service

|       |       |       |       |       |       |    |
|-------|-------|-------|-------|-------|-------|----|
| LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA |
|-------|-------|-------|-------|-------|-------|----|

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

# MOVEMENT SUMMARY

 **Site: [5] Costco Wholesale, Orland Park, IL #647 (2050 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
PM Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
|------------------------------|------|-----------|------------------|-----------|------------------|-----------|-----------|-------------|------------------|-------------------|--------------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows     |           | Arrival Flows    |           | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total<br>veh/h | HV ]<br>% | [ Total<br>veh/h | HV ]<br>% |           |             |                  | [ Veh.<br>veh     | Dist ]<br>ft |            |                |                            |             |
| South: Ravinia Ave           |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 3                            | L2   | All MCs   | 3                | 0.0       | 3                | 0.0       | 0.273     | 6.8         | LOS A            | 1.3               | 32.0         | 0.57       | 0.43           | 0.57                       | 14.7        |
| 8                            | T1   | All MCs   | 221              | 3.0       | 221              | 3.0       | 0.273     | 7.2         | LOS A            | 1.3               | 32.0         | 0.57       | 0.43           | 0.57                       | 22.6        |
| 18                           | R2   | All MCs   | 9                | 0.0       | 9                | 0.0       | 0.273     | 6.8         | LOS A            | 1.3               | 32.0         | 0.57       | 0.43           | 0.57                       | 18.4        |
| Approach                     |      |           | 233              | 2.8       | 233              | 2.8       | 0.273     | 7.1         | LOS A            | 1.3               | 32.0         | 0.57       | 0.43           | 0.57                       | 22.3        |
| East: North Costco Dwy       |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 1                            | L2   | All MCs   | 12               | 0.0       | 12               | 0.0       | 0.361     | 8.3         | LOS A            | 1.7               | 44.3         | 0.63       | 0.50           | 0.63                       | 16.2        |
| 6                            | T1   | All MCs   | 38               | 0.0       | 38               | 0.0       | 0.361     | 8.3         | LOS A            | 1.7               | 44.3         | 0.63       | 0.50           | 0.63                       | 12.3        |
| 16                           | R2   | All MCs   | 242              | 3.0       | 242              | 3.0       | 0.361     | 8.8         | LOS A            | 1.7               | 44.3         | 0.63       | 0.50           | 0.63                       | 19.6        |
| Approach                     |      |           | 292              | 2.5       | 292              | 2.5       | 0.361     | 8.7         | LOS A            | 1.7               | 44.3         | 0.63       | 0.50           | 0.63                       | 18.6        |
| North: Ravinia Ave           |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 7                            | L2   | All MCs   | 141              | 3.0       | 141              | 3.0       | 0.270     | 5.1         | LOS A            | 1.5               | 37.5         | 0.21       | 0.07           | 0.21                       | 20.6        |
| 4                            | T1   | All MCs   | 170              | 3.0       | 170              | 3.0       | 0.270     | 5.1         | LOS A            | 1.5               | 37.5         | 0.21       | 0.07           | 0.21                       | 22.5        |
| 14                           | R2   | All MCs   | 33               | 0.0       | 33               | 0.0       | 0.270     | 4.9         | LOS A            | 1.5               | 37.5         | 0.21       | 0.07           | 0.21                       | 20.7        |
| Approach                     |      |           | 343              | 2.7       | 343              | 2.7       | 0.270     | 5.0         | LOS A            | 1.5               | 37.5         | 0.21       | 0.07           | 0.21                       | 21.6        |
| West: North Costco Dwy       |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 5                            | L2   | All MCs   | 250              | 3.0       | 250              | 3.0       | 0.308     | 7.0         | LOS A            | 1.5               | 38.9         | 0.53       | 0.37           | 0.53                       | 18.8        |
| 2                            | T1   | All MCs   | 32               | 3.0       | 32               | 3.0       | 0.308     | 7.0         | LOS A            | 1.5               | 38.9         | 0.53       | 0.37           | 0.53                       | 15.3        |
| 12                           | R2   | All MCs   | 11               | 0.0       | 11               | 0.0       | 0.308     | 6.7         | LOS A            | 1.5               | 38.9         | 0.53       | 0.37           | 0.53                       | 16.6        |
| Approach                     |      |           | 292              | 2.9       | 292              | 2.9       | 0.308     | 7.0         | LOS A            | 1.5               | 38.9         | 0.53       | 0.37           | 0.53                       | 18.5        |
| All Vehicles                 |      |           | 1161             | 2.7       | 1161             | 2.7       | 0.361     | 6.9         | LOS A            | 1.7               | 44.3         | 0.47       | 0.33           | 0.47                       | 20.2        |

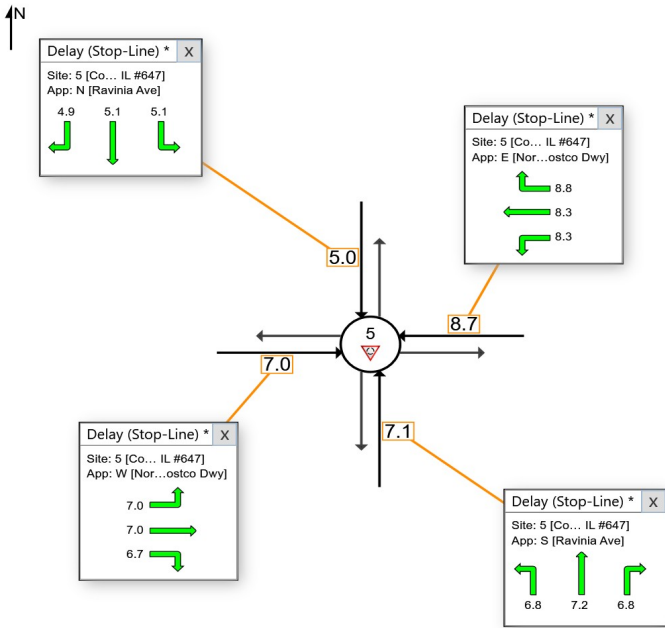
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Sieglach M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
PM Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



Colour code based on Level of Service

|       |       |       |       |       |       |    |
|-------|-------|-------|-------|-------|-------|----|
| LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA |
|-------|-------|-------|-------|-------|-------|----|

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).

# MOVEMENT SUMMARY

 **Site: [6] Costco Wholesale, Orland Park, IL #647 (2050 FwP)**  
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
Sat MD Peak Hour  
Site Category: (None)  
Roundabout  
**Site Scenario: 1 | Local Volumes**

| Vehicle Movement Performance |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
|------------------------------|------|-----------|------------------|-----------|------------------|-----------|-----------|-------------|------------------|-------------------|--------------|------------|----------------|----------------------------|-------------|
| Mov ID                       | Turn | Mov Class | Demand Flows     |           | Arrival Flows    |           | Deg. Satn | Aver. Delay | Level of Service | 95% Back Of Queue |              | Prop. Qued | Eff. Stop Rate | Number of Cycles to Depart | Aver. Speed |
|                              |      |           | [ Total<br>veh/h | HV ]<br>% | [ Total<br>veh/h | HV ]<br>% |           |             |                  | [ Veh.<br>veh     | Dist ]<br>ft |            |                |                            |             |
| South: Ravinia Ave           |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 3                            | L2   | All MCs   | 4                | 0.0       | 4                | 0.0       | 0.332     | 8.2         | LOS A            | 1.5               | 39.0         | 0.64       | 0.52           | 0.64                       | 13.9        |
| 8                            | T1   | All MCs   | 238              | 3.0       | 238              | 3.0       | 0.332     | 8.6         | LOS A            | 1.5               | 39.0         | 0.64       | 0.52           | 0.64                       | 21.4        |
| 18                           | R2   | All MCs   | 13               | 0.0       | 13               | 0.0       | 0.332     | 8.2         | LOS A            | 1.5               | 39.0         | 0.64       | 0.52           | 0.64                       | 17.3        |
| Approach                     |      |           | 255              | 2.8       | 255              | 2.8       | 0.332     | 8.6         | LOS A            | 1.5               | 39.0         | 0.64       | 0.52           | 0.64                       | 21.1        |
| East: North Costco Dwy       |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 1                            | L2   | All MCs   | 15               | 0.0       | 15               | 0.0       | 0.484     | 11.1        | LOS B            | 3.2               | 80.4         | 0.72       | 0.69           | 0.97                       | 14.5        |
| 6                            | T1   | All MCs   | 50               | 0.0       | 50               | 0.0       | 0.484     | 11.1        | LOS B            | 3.2               | 80.4         | 0.72       | 0.69           | 0.97                       | 11.0        |
| 16                           | R2   | All MCs   | 300              | 3.0       | 300              | 3.0       | 0.484     | 11.6        | LOS B            | 3.2               | 80.4         | 0.72       | 0.69           | 0.97                       | 17.7        |
| Approach                     |      |           | 365              | 2.5       | 365              | 2.5       | 0.484     | 11.5        | LOS B            | 3.2               | 80.4         | 0.72       | 0.69           | 0.97                       | 16.8        |
| North: Ravinia Ave           |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 7                            | L2   | All MCs   | 182              | 3.0       | 182              | 3.0       | 0.316     | 5.6         | LOS A            | 1.8               | 46.3         | 0.25       | 0.10           | 0.25                       | 20.0        |
| 4                            | T1   | All MCs   | 168              | 3.0       | 168              | 3.0       | 0.316     | 5.6         | LOS A            | 1.8               | 46.3         | 0.25       | 0.10           | 0.25                       | 21.9        |
| 14                           | R2   | All MCs   | 46               | 0.0       | 46               | 0.0       | 0.316     | 5.4         | LOS A            | 1.8               | 46.3         | 0.25       | 0.10           | 0.25                       | 20.1        |
| Approach                     |      |           | 396              | 2.7       | 396              | 2.7       | 0.316     | 5.6         | LOS A            | 1.8               | 46.3         | 0.25       | 0.10           | 0.25                       | 20.9        |
| West: North Costco Dwy       |      |           |                  |           |                  |           |           |             |                  |                   |              |            |                |                            |             |
| 5                            | L2   | All MCs   | 297              | 3.0       | 297              | 3.0       | 0.383     | 8.3         | LOS A            | 2.0               | 50.6         | 0.60       | 0.43           | 0.60                       | 18.1        |
| 2                            | T1   | All MCs   | 38               | 3.0       | 38               | 3.0       | 0.383     | 8.3         | LOS A            | 2.0               | 50.6         | 0.60       | 0.43           | 0.60                       | 14.5        |
| 12                           | R2   | All MCs   | 12               | 0.0       | 12               | 0.0       | 0.383     | 7.9         | LOS A            | 2.0               | 50.6         | 0.60       | 0.43           | 0.60                       | 15.8        |
| Approach                     |      |           | 347              | 2.9       | 347              | 2.9       | 0.383     | 8.3         | LOS A            | 2.0               | 50.6         | 0.60       | 0.43           | 0.60                       | 17.7        |
| All Vehicles                 |      |           | 1363             | 2.7       | 1363             | 2.7       | 0.484     | 8.4         | LOS A            | 3.2               | 80.4         | 0.54       | 0.42           | 0.60                       | 19.0        |

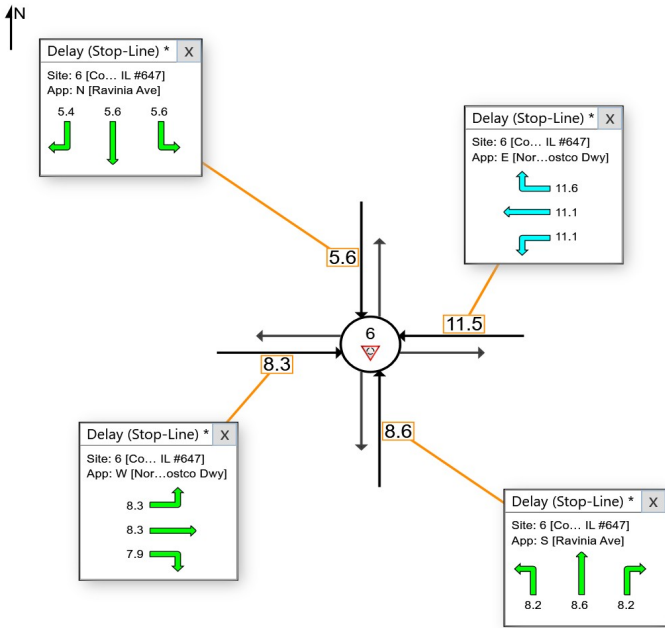
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
Roundabout LOS Method: Same as Sign Control.  
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).  
Roundabout Capacity Model: US HCM 6.  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.  
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.  
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

2050 Future w/Ravinia Extension Traffic Volumes  
North Costco Dwy & Ravinia Ave  
Sat MD Peak Hour  
Site Category: (None)  
Roundabout  
Site Scenario: 1 | Local Volumes

Use the button below to open or close all popup boxes. Click value labels to open selected ones.  
Click and drag popup boxes to move to preferred positions.

Close All Popups

All Movement Classes (\*)



Colour code based on Level of Service

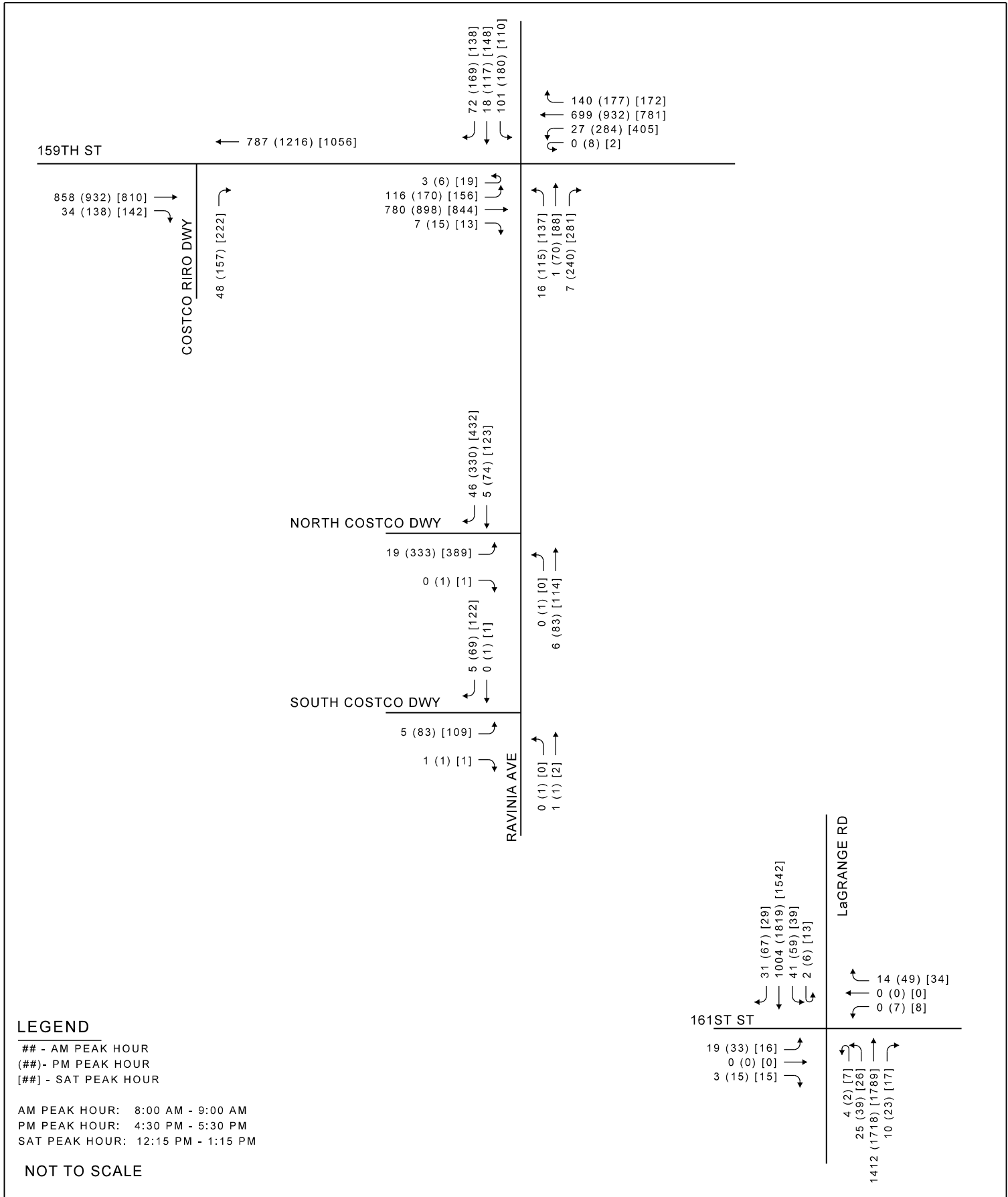
|       |       |       |       |       |       |    |
|-------|-------|-------|-------|-------|-------|----|
| LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | NA |
|-------|-------|-------|-------|-------|-------|----|

NA: The movement only runs in short lanes and these are not included in determining Queue Storage Ratio, or the movement has zero volume for the selected Movement Class.  
Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).  
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).  
Roundabout Level of Service Method: Same as Sign Control  
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).  
Approach values are flow-weighted average values for vehicle movements (pedestrian delays not included).



## **APPENDIX H**

### **DEVELOPMENT OF 2050 TRAFFIC VOLUMES**



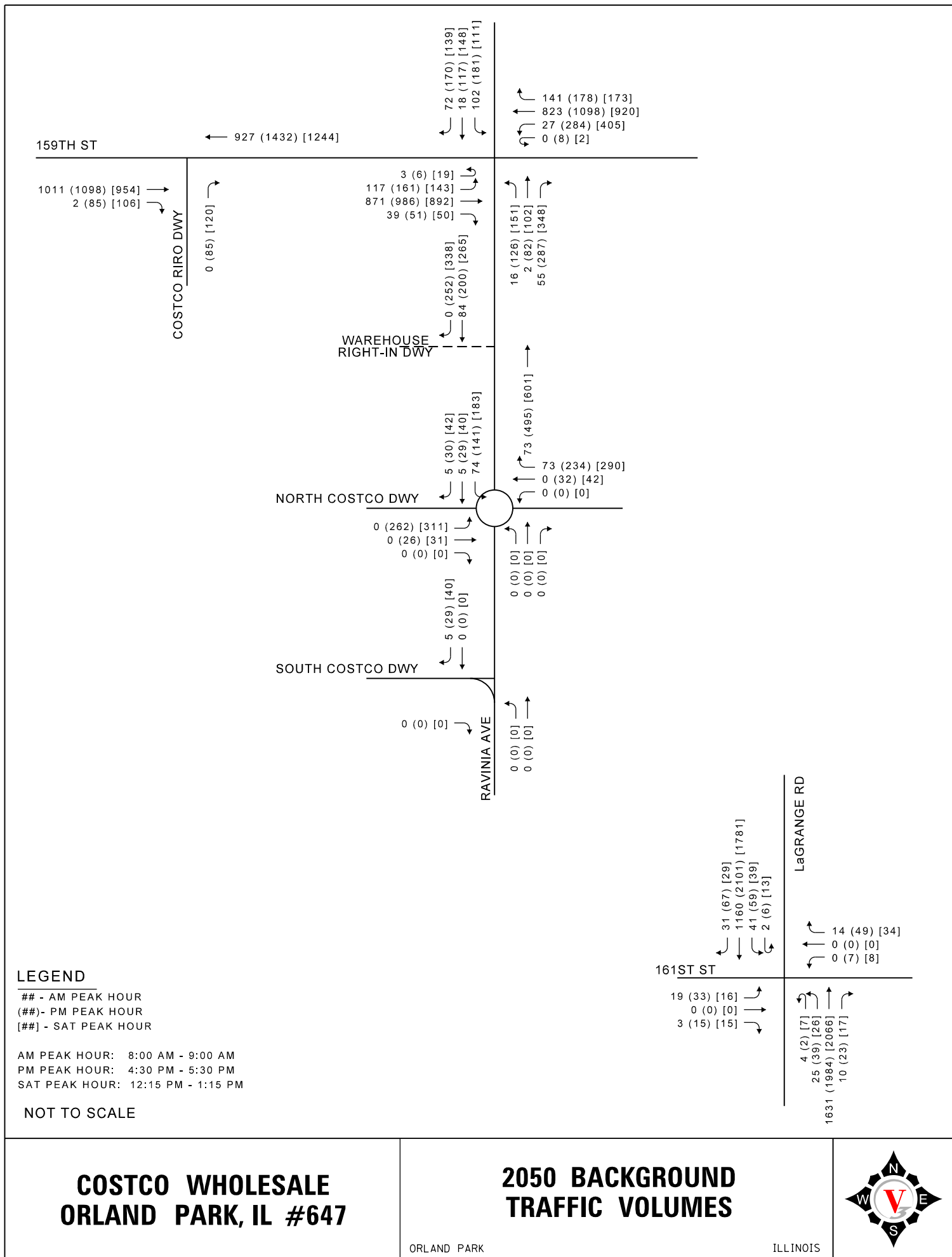
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

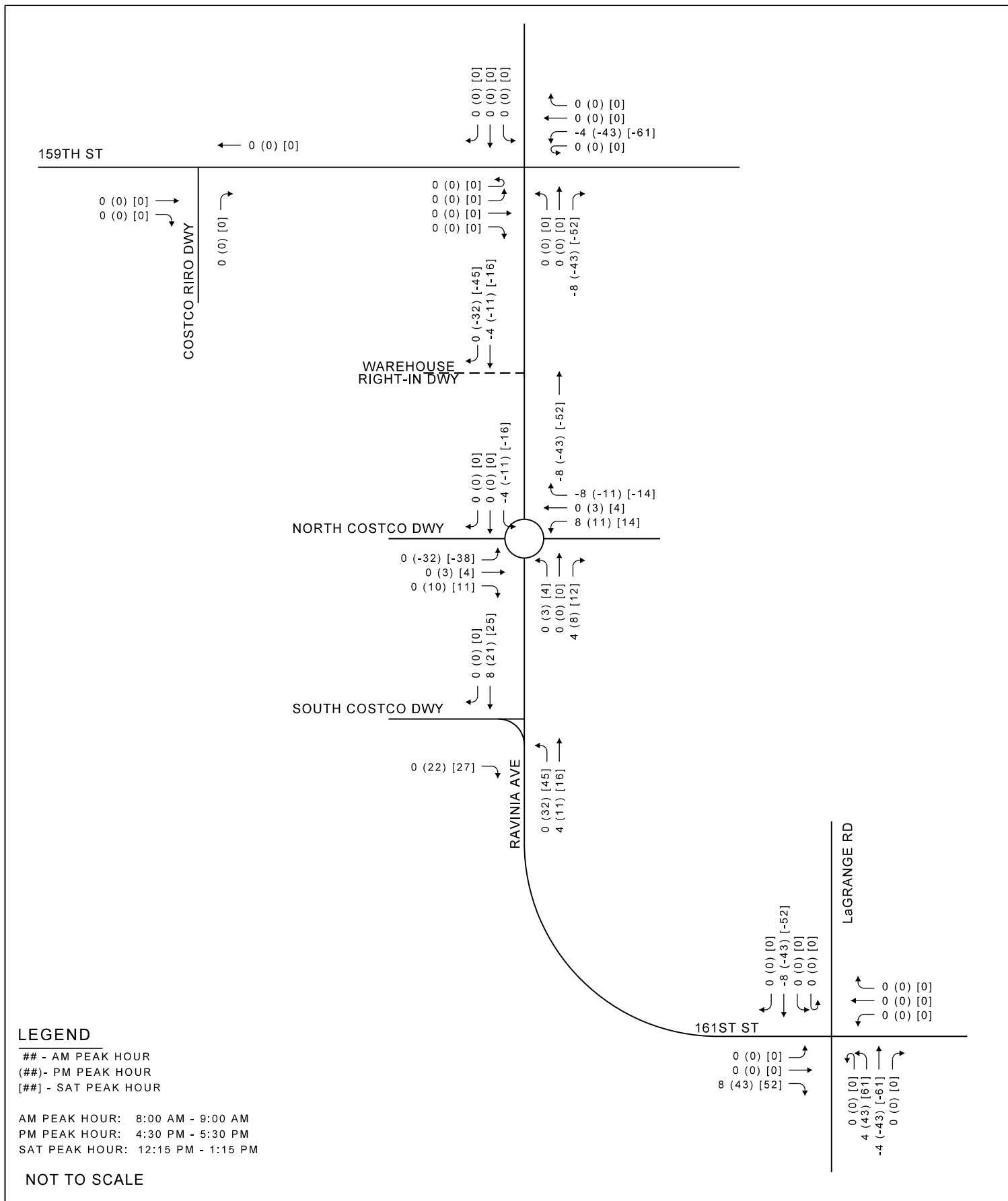
**FIGURE 5  
EXISTING TRAFFIC VOLUMES**

ORLAND PARK

ILLINOIS







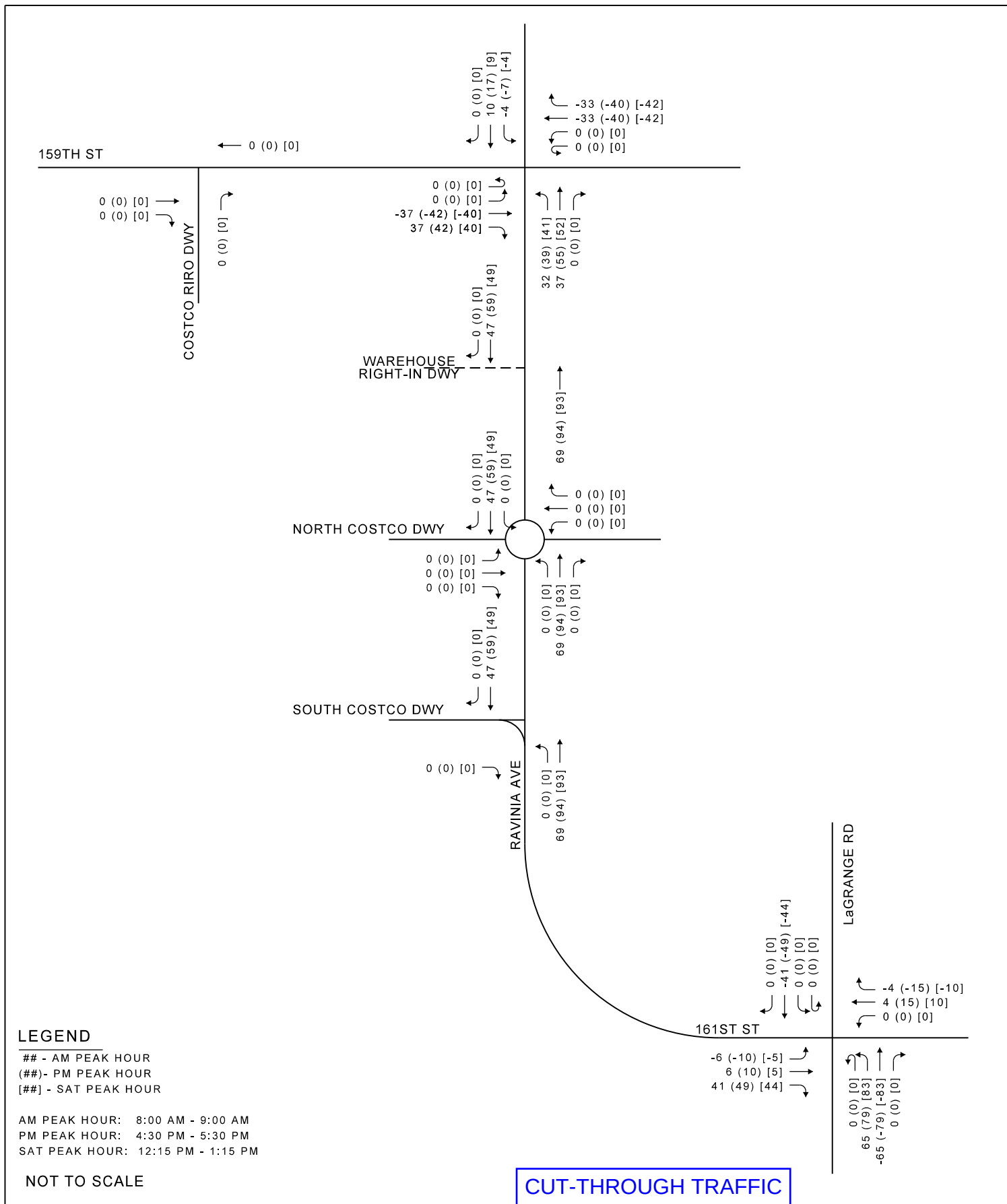
**COSTCO WHOLESALE  
 ORLAND PARK, IL #647**

**COSTCO TRAFFIC VOLUMES  
 WITH RAVINIA EXTENSION**

ORLAND PARK

ILLINOIS





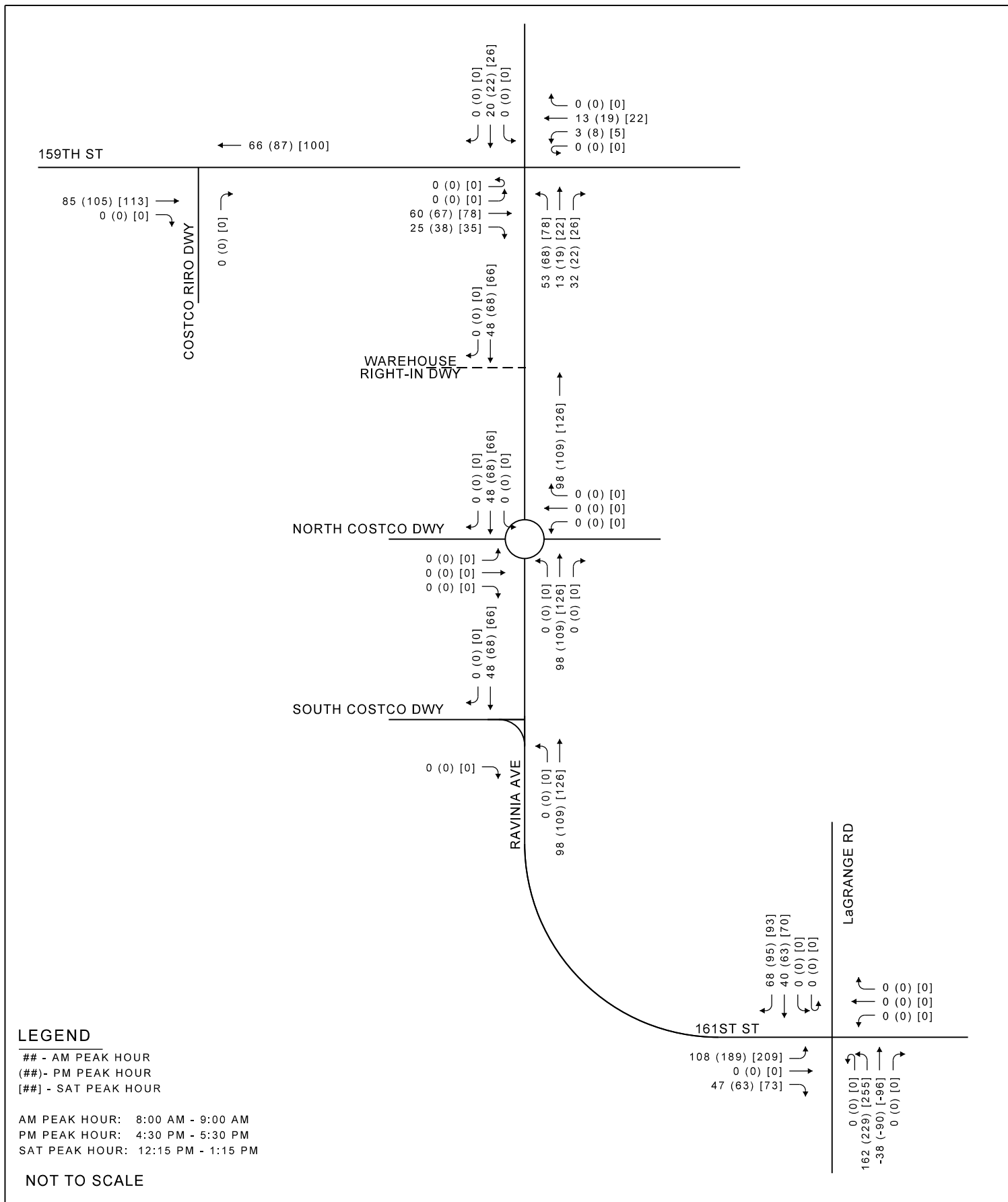
**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**2050 REROUTED  
TRAFFIC VOLUMES  
WITH RAVINIA EXTENSION**

ORLAND PARK

ILLINOIS





**COSTCO WHOLESALE  
ORLAND PARK, IL #647**

**ADJACENT DEVELOPMENT  
TRAFFIC VOLUMES  
WITH RAVINIA EXTENSION**

ORLAND PARK

ILLINOIS



