TRAFFIC IMPACT STUDY

FOR

FOUNDERS OF ORLAND SUBDIVISION

ORLAND PARK, ILLINOIS

REVISED: AUGUST 30, 2024
OCTOBER 4, 2023

847.010

PREPARED FOR:

BRIDGE STREET PROPERTIES
P.O. BOX 5726
NAPERVILLE, IL 60567

PREPARED BY:

CEMCON, LTD.
2280 WHITE OAK CIRCLE
SUITE 100
AURORA, IL 60504-9675

630-862-2100

TRAFFIC IMPACT STUDY

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FOUNDERS OF ORLAND SUBDIVISION

ORLAND PARK, ILLINOIS

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FOR

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TRAFFIC IMPACT STUDY

FOR

FOUNDERS OF ORLAND SUBDIVISION

ORLAND PARK, ILLINOIS

PROJECT INFORMATION

CEMCON Ltd. has prepared a traffic evaluation for the proposed Founders of Orland townhouse development in Orland Park, IL. The site is located on the east side of Wolf Rd. (US 6). approximately .25 mi. south of 159th St. and has a total area of approximately 15.0 acres. The Concept Plan indicates that the development is accessed from Wolf Rd. via a new access drive and will contain 90 townhouses.

The report presents the existing roadway conditions, existing peak hour traffic volumes at the site access intersection and a description of the proposed development. A directional distribution of the proposed development generated traffic and vehicle trip generation for the proposed development were estimated. Future traffic conditions were developed to prepare traffic analyses for the morning and evening peak hours. Based on the projected traffic volumes and development generated traffic, analyses were conducted to determine the impact the development would have on the site intersection.

BACKGROUND INFORMATION

Site Location

The site is located on the east side of Wolf Rd. (US 6). approximately .25 miles south of 159th St. and has a total area of approximately 15.0 acres. The Concept Plan indicates that the development is accessed from Wolf Rd. via a new access drive and will contain 90 townhouses. Wolf Rd. (US 6) is under IDOT jurisdiction. Roadway conditions are described in the body of the Report. Existing traffic counts were conducted to determine the peak hour traffic conditions along the site frontage. The existing counts were increased, based on CMAP 2050 projections, to the year 2032 representing a 3-year buildout, plus 6 years. Traffic due to the development was generated using ITE trip generation rates (LUC 220) and assigned to the street system.

Roadway improvements include a southbound left turn lane and a northbound right turn lane on Wolf Rd. Capacity analyses were conducted for the study area intersection for both peak hours. The results of the analyses indicate that the study area intersection will operate at an acceptable level of service. The traffic from the Founders of Orland development can be accommodated by the existing area roadway system and the recommended off-site roadway improvements.

Roadway Network

Wolf Rd. (US 6) is a north-south minor arterial located on the west side of the site and is under IDOT jurisdiction. Currently, adjacent to the site, it is a two-lane roadway with a posted speed limit of 45 mph. South of the site it is widened to a 3-lane section and north of the site is widened to provide two through lanes in each direction with a center median.

Existing Traffic

Manual peak hour turning movement counts were conducted on Tuesday September 26, 2023 and Wednesday September 27, 2023 for the morning and evening peak periods. Existing traffic volumes are shown in Exhibit 2.

DEVELOPMENT CHARACTERISTICS

Proposed Site and Development Plan

The Conceptual Development Plan indicates that the total site area is approximately 15 acres with 90 townhouses. The Site Plan indicates that the development will be accessed via a single new access to Wolf Rd.

Directional Distribution

The directions from which development traffic will approach and depart the site were estimated based on the distribution of the existing traffic patterns on Wolf Rd. The estimated directional distribution of site generated traffic is shown in Exhibit 3.

Estimated Site Traffic Generation

The estimates of the traffic to be generated by the development are based on the proposed land use type and size. The volume of traffic generated by the development was estimated using ITE rates. Exhibit 4 tabulates the traffic generation calculations for the proposed development using the ITE rates for Multifamily Low Rise (LUC 220). See Appendix 4 for the ITE Trip Generation Sheets.

Year 2032 Baseline Traffic

The analysis of the site access drive will be based on future traffic conditions at buildout (3 years) plus 6 years, which is a 9-year time frame. The Chicago Metropolitan Agency for Planning (CMAP) was contacted to determine a growth rate for Wolf Rd., a copy of the CMAP letter can be seen in Appendix 3. Based on the ADT projections from CMAP, 2032 background traffic projections were estimated. The CMAP projections indicate that the increase in traffic on Wolf Rd. is approximately 1.2% per year.

Crash Analysis

Accident data was obtained from IDOT for the most recent available 5 years (2019 to 2023) for the 159th St./Wolf Rd. intersection. A review of the crash data indicated that there were no fatalities, and the majority of the crashes were rear ends which are inherent to signalized intersections. A summary of the crash data can be seen in Appendix 2.

PROJECTED TRAFFIC CONDITIONS

Site Traffic Assignment

The site traffic assignment is based on the estimated directional distribution in Exhibit 3 and the estimated site trip generations in Exhibit 4. Using this information, the proposed development traffic was assigned to the access drive and Wolf Rd. and is shown in Exhibit 5.

Total Traffic Assignment

The site generated traffic was added to the existing traffic volumes, factored for growth, to determine the 2032 total projected traffic volumes. These volumes can be seen in Exhibit 6.

EVALUATION

The following provides an evaluation for the weekday morning and evening peak hours. The analyses included conducting capacity analyses at the site access drive and Wolf Rd. to determine the level of service and identify if there is a need for any off-site roadway improvements.

Intersection Capacity Analyses

The traffic analyses were conducted using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM) 2010* and prepared using the latest version of the HCS7 software. The analyses were conducted for 2032 future traffic conditions.

Discussion and Recommendations

Summaries of the traffic analysis results showing the level of service and delay for the future traffic conditions at the Wolf Rd./Site Access intersection can be seen in Exhibit 7. Full capacity worksheets can be seen in the Appendix. A discussion for the intersection follows.

- Wolf Rd./Site Access

  The development will provide a separate southbound left turn lane and a separate northbound right turn lane on Wolf Rd. at the site access. The site access will provide two (2) outbound lanes striped as a left and right turn lanes with one inbound lane. This lane configuration was used in preparing the capacity analyses.

  The results of the capacity analyses indicate that in the morning peak hour westbound left turn will operate at a Level of Service (LOS) C, the northbound right turn a LOS B and the southbound left turn a LOS A. During the evening peak hour, the movements operate at the same LOS as in the morning peak period.

All movements operate at an acceptable LOS during both peak periods. The proposed improvements, a southbound left turn lane and northbound right turn lane on Wolf Rd. can accommodate the traffic generated by the Founders of Orland residential development.

SUMMARY

The existing counts were increased, based on CMAP 2050 projections, to the year 2032 representing a 3-year buildout plus 6 years. Traffic due to the development was generated using ITE trip generation rates and assigned to the street system. Roadway improvements include a southbound left turn lane and a northbound right turn lane on Wolf Rd. Capacity analyses were conducted for the study area intersection for both peak hours. The results of the analyses indicate that the study area intersection will operate at an acceptable level of service. The traffic from the Founders of Orland development can be accommodated by the existing area roadway system and the recommended off-site roadway improvements.

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EXHIBIT 1

SITE LOCATION MAP

FOUNDERS OF ORLAND SUBDIVISION

T36N, R12E, SEC. 20

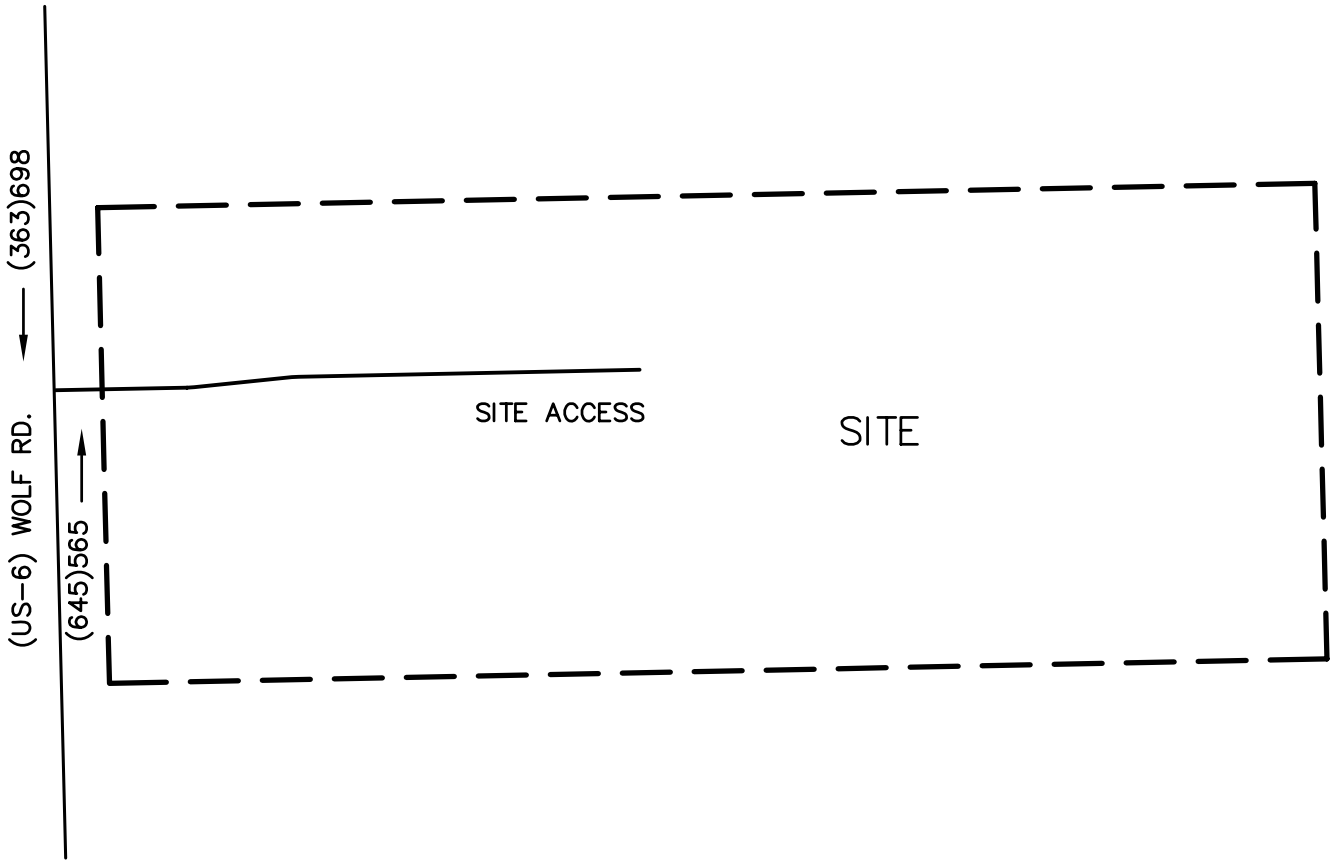
MOKENA QUADRANGLE, COOK COUNTY

CEMCON, Ltd.	PREPARED FOR **BRIDGE STREET PROPERTIES** **P.O. BOX 5726** **NAPERVILLE, IL 60567**	DRAWN BY:	CMZ	9-8-22
		CHECKED BY:		
		APPROVED:		
		SCALE: N.T.S.		

EXHIBIT 2

EXISTING TRAFFIC VOLUMES

EXIBIT 2
EXISTING TRAFFIC VOLUMES



LEGEND

XX - AM PEAK HOUR

(XX) - PM PEAK HOUR

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DISC NO.: 847010 FILE NAME: TRAFFIC STUDY
DRAWN BY: AJG FLD. BK. / PG. NO.:
COMPLETION DATE: 10-03-23 JOB NO.: 847.010
XREF : PROJECT MANAGER : MAM

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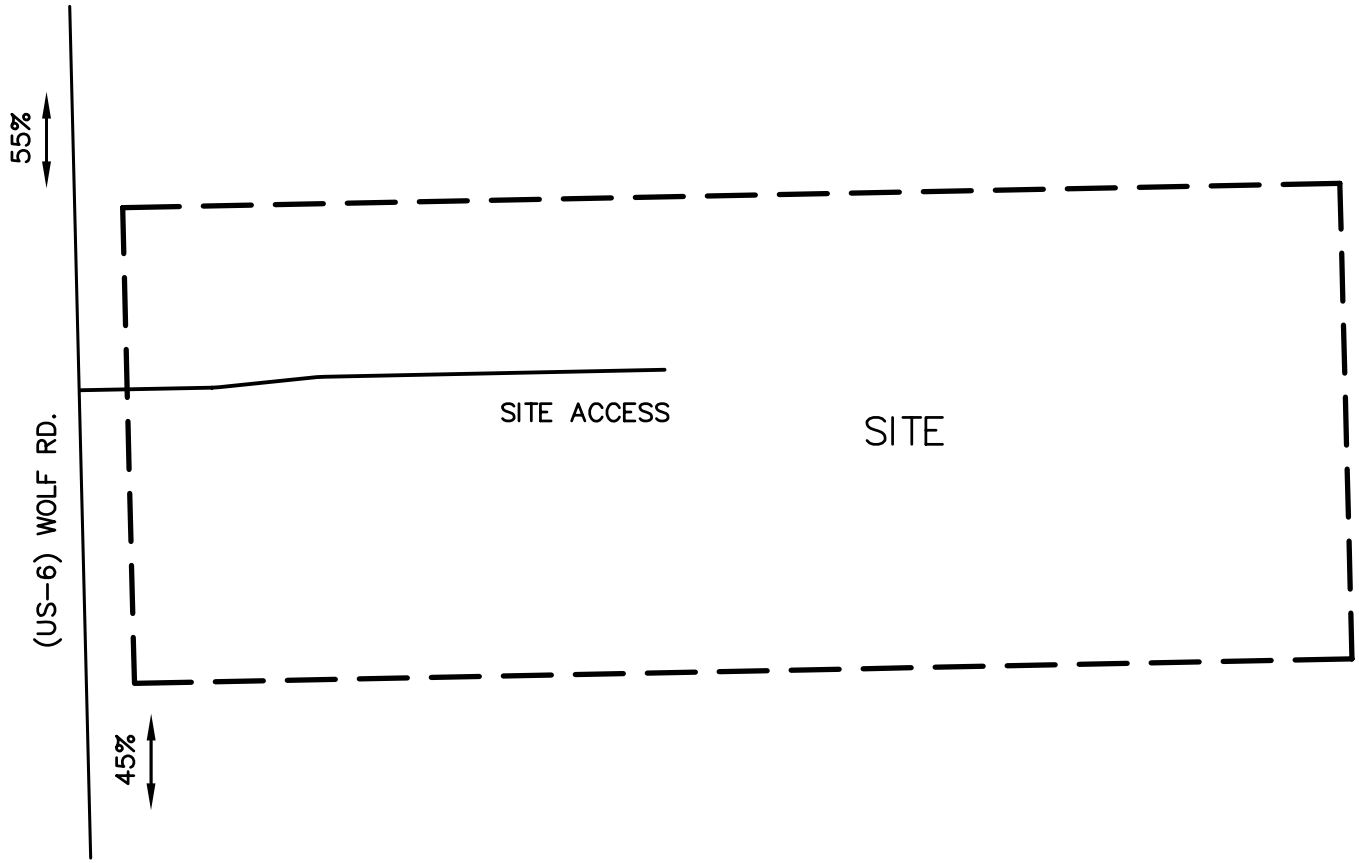
EXHIBIT 3

ESTIMATED DIRECTIONAL DISTRIBUTION OF SITE GENERATED TRAFFIC

EXIBIT 3
DIRECTIONAL DISTRIBUTION



LEGEND

XX - PERCENT DISTRIBUTION

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EXHIBIT 4

TRIP GENERATION

EXHIBIT 4

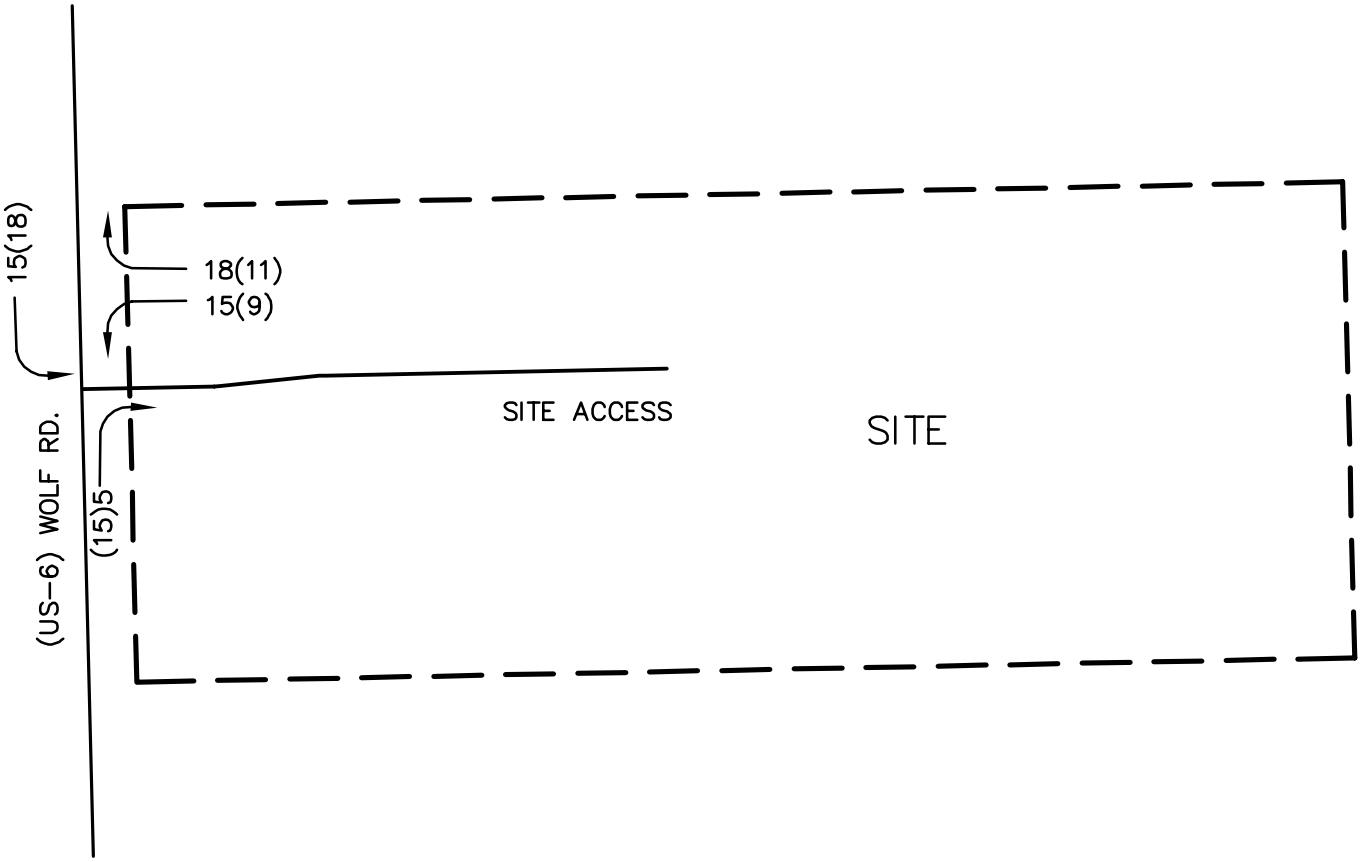
TRIP GENERATION

	AM			PM		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Multi Family (Low Rise) 90 DU's	10	33	43	33	20	53

EXHIBIT 5

SITE TRAFFIC ASSIGNMENT

EXIBIT 5
SITE TRAFFIC ASSIGNMENT



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LEGEND

XX - AM PEAK HOUR

(XX) - PM PEAK HOUR

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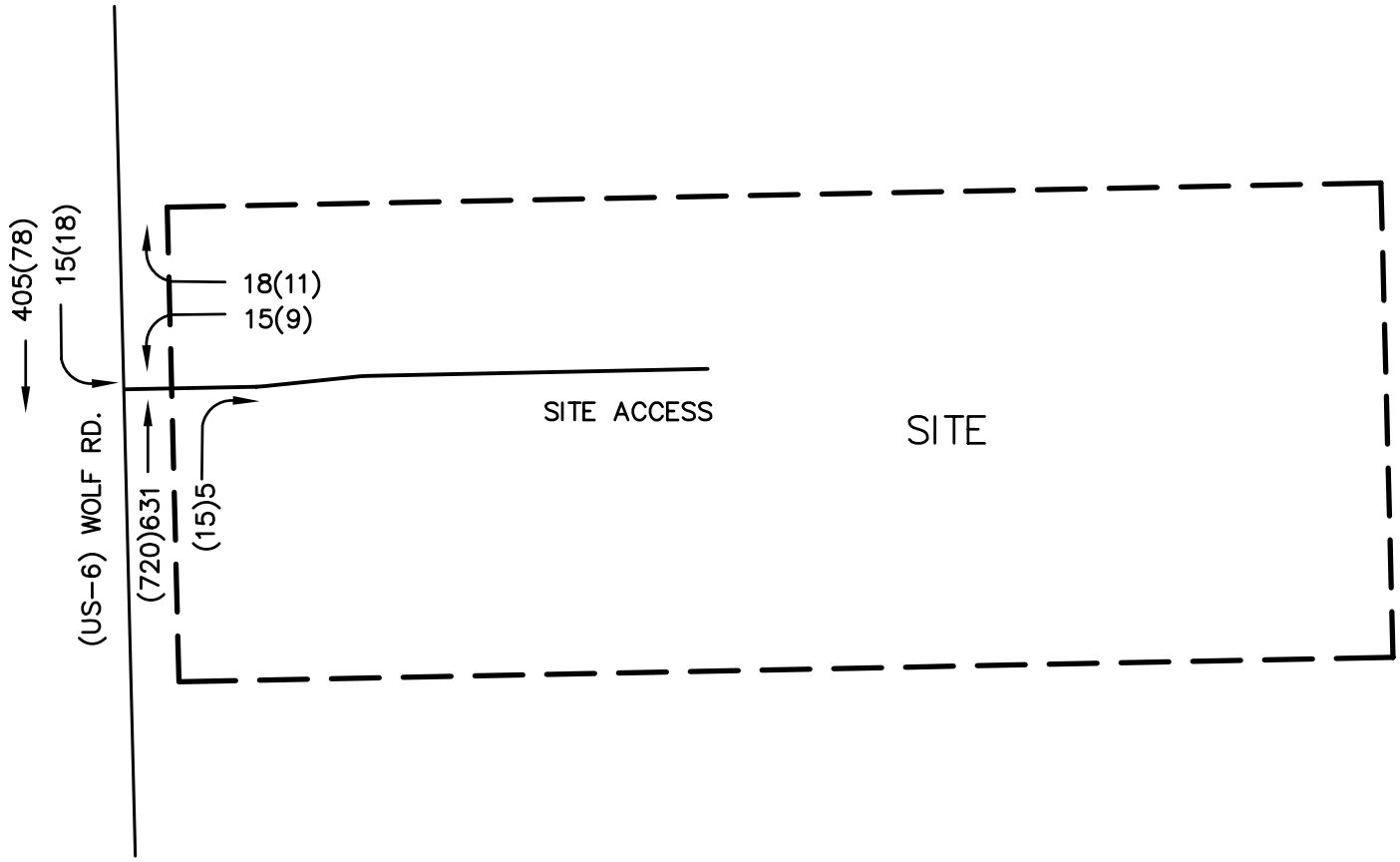
EXHIBIT 6

TOTAL TRAFFIC ASSIGNMENT

EXIBIT 6
TOTAL TRAFFIC ASSIGNMENT



LEGEND

XX - AM PEAK HOUR

(XX) - PM PEAK HOUR

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EXHIBIT 7

INTERSECTION LEVEL OF SERVICE

2032 TOTAL TRAFFIC

EXHIBIT 7
Intersection Level of Service
2032 Total Traffic

Intersection	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Delay	Weekday Evening Peak Hour LOS	Weekday Evening Peak Hour Delay
Wolf Road @ Site Access (unsignalized)				
• Westbound Left	C	22.6	C	17.5
• Northbound Right	B	13.4	B	14.5
• Southbound Left	A	9.0	A	9.5

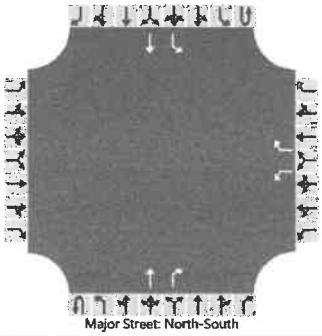
APPENDIX 1

HIGHWAY CAPACITY ANALYSIS

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SWG	Intersection	Site Access on Wolf Road (US6)
Agency/Co.		Jurisdiction	IDOT/Orland Park
Date Performed	9/28/2023	East/West Street	Site Access
Analysis Year		North/South Street	Wolf Road (US 6)
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Total Traffic Volumes		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						9		11			720	12		18	78	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

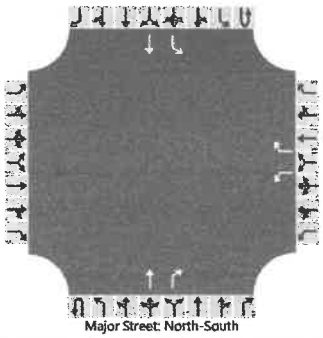
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						10		12						20		
Capacity, c (veh/h)						298		392						822		
v/c Ratio						0.03		0.03						0.02		
95% Queue Length, Q_{95} (veh)						0.1		0.1						0.1		
Control Delay (s/veh)						17.5		14.5						9.5		
Level of Service (LOS)						C		B						A		
Approach Delay (s/veh)						15.8								1.8		
Approach LOS						C								A		

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SWG	Intersection	Site Access on Wolf Road (US6)
Agency/Co.		Jurisdiction	IDOT/Orland Park
Date Performed	9/28/2023	East/West Street	Site Access
Analysis Year		North/South Street	Wolf Road (US 6)
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Total Traffic Volumes		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	1	1	0	1	1	0
Configuration						L		R			T	R		L	T	
Volume (veh/h)						15		18			631	5		5	405	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No				No						
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						16		20						5		
Capacity, c (veh/h)						221		446						899		
v/c Ratio						0.07		0.04						0.01		
95% Queue Length, Q_{95} (veh)						0.2		0.1						0.0		
Control Delay (s/veh)						22.6		13.4						9.0		
Level of Service (LOS)						C		B						A		
Approach Delay (s/veh)						17.6								0.1		
Approach LOS						C								A		

APPENDIX 2

CRASH SUMMARY

Crash Summary

159th St. @ Wolf Rd.

Type of Accident Frequency							
Year	Angle	Object	Rear End	Sideswipe	Turning	Other	Total
2019	0	1	7	0	2	0	10
2020	1	0	3	0	3	0	7
2021	0	0	4	1	3	0	8
2022	2	0	4	0	2	0	8
2023	0	0	6	1	0	0	7
Total	3	1	24	2	10	0	40
Avg./Year	<1.0	<1.0	4.8	<1.0	2.0	<1.0	8.0

APPENDIX 3

CMAP LETTER

Chicago Metropolitan Agency for Planning

433 West Van Buren Street, Suite 450
Chicago, IL 60607
cmap.illinois.gov | 312-454-0400

September 26, 2023

Stephen B. Corcoran, PE, PTOE
Director of Traffic Engineering
Eriksson Engineering Associates, LTD.
145 Commerce Drive
Suite A
Grayslake, IL 60030

Subject: Wolf Rd S of 159th St
IDOT

Dear Mr. Corcoran:

In response to a request made on your behalf and dated September 26, 2023, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Wolf Rd South of 159th St	14,500 (2021)	20,000

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2023 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

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

cc: Rios (IDOT)
S:\AdminGroups\ResearchAnalysis\2023_TrafficForecasts\OrlandPark\ck-138-23\ck-138-23.docx

TRAFFIC FORECAST RECORD

Record Number: ck-138-23
Type of Report: Projection
Year Sought: 2050
Analyst: JAR
Organization Requestion Forecast: Eriksson Engineering Associates, LTD
Contact: Stephen B. Corcoran, PE, PTOE
Email or Phone: scorcoran@eeaa-ltd.com
Sponsor: IDOT
Date request was received: 9/26/2023
Date that response was emailed: 9/26/2023
Facility Location: Wolf Rd S of 159th St
Municipality: Orland Park

APPENDIX 4

ITE TRIP GENERATION RATES

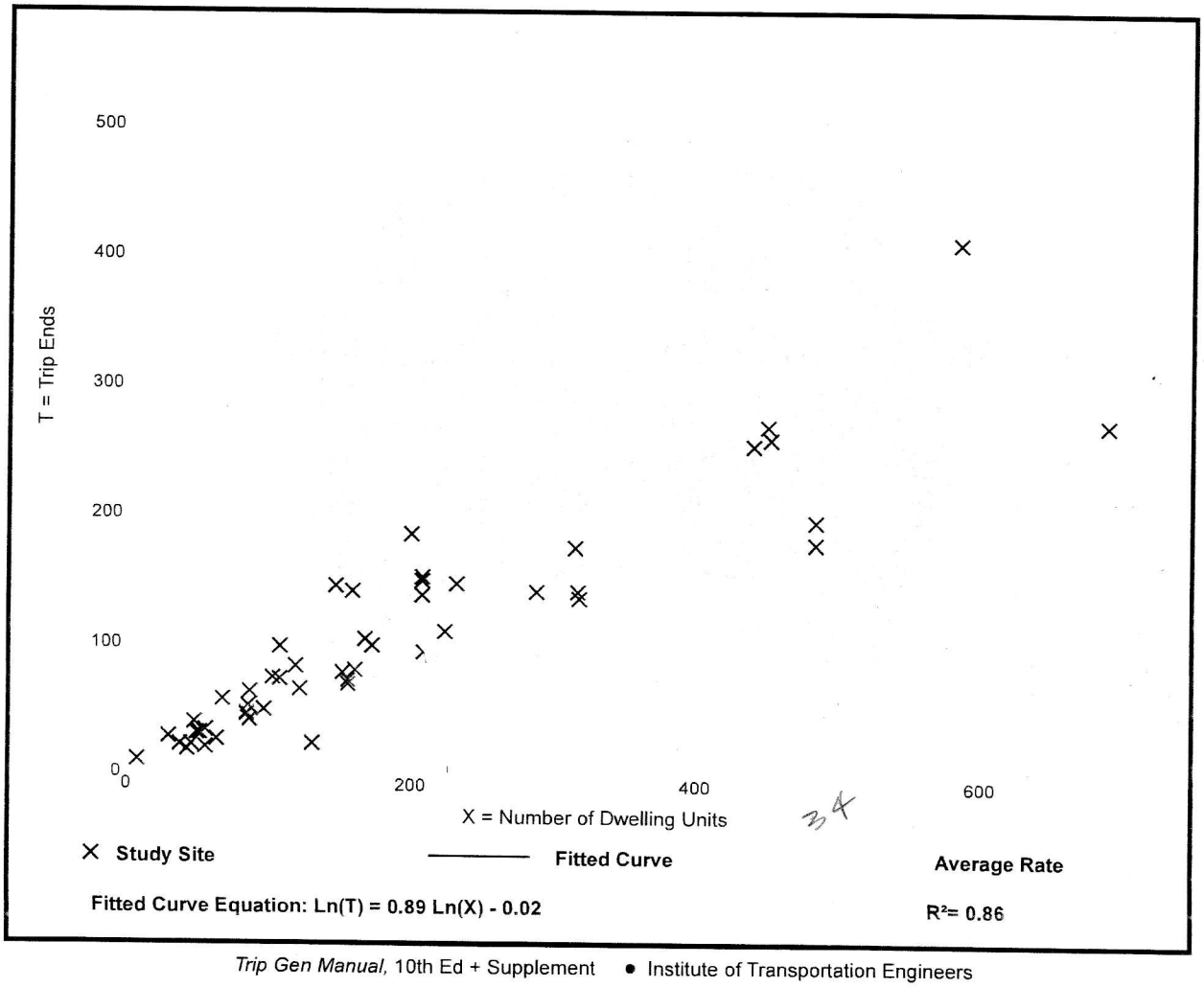
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



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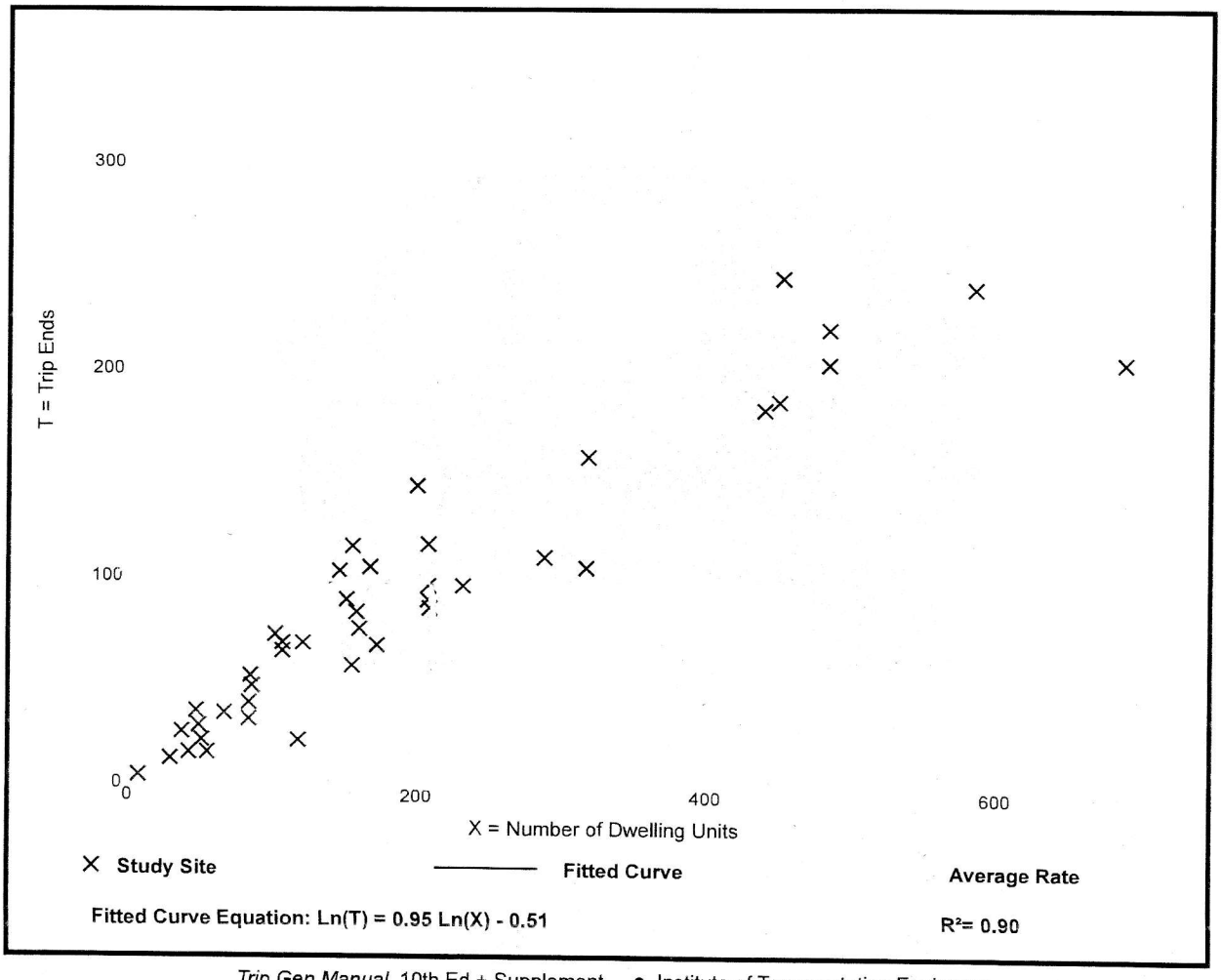
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



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