Phase II

Technical Qualification

Proposal to provide
Phase II Design Engineering Services
for

John Humphrey Drive at 143rd Street

Submitted to

Village of Orland Park

August 24, 2021

Submitted by

PATRICK

RFQ 21-045

August 24, 2021

Village of Orland Park – Clerk's Office
14700 Ravinia Avenue
Orland Park, IL 60462
Attn: S. Khurshid Hoda, CPP

Re: Phase II Design Engineering Services – John Humphrey Drive at 143rd Street

Dear Mr. Hoda:

The Village of Orland Park is advancing the John Humphrey Drive (JHD) at 143rd Street Improvement Project as part of their program of improvements along the 143rd Street Corridor. The Village has secured federal STP funds for Phase II engineering, which must be obligated by March 2022, or risk losing said funding. Therefore, it is critical that the selected consultant not only develop the final design but assist the Village secure the remaining funding. Over the last 10-years, Patrick staff has secured over $200M in federal, state, and local funding for our clients. Patrick has also been assisting the Village in identifying and applying for additional funding opportunities for construction. Since Patrick completed the Phase I Study for this project, we are the most suited and qualified to continue working with the Village to address the two most critical challenges for bringing this project to fruition: 1.) identifying and securing additional funding and 2.) containing and reducing overall project costs. Our proposal herein describes our refined solution and specific approaches to achieve both of these goals for the Village to realize project success.

Patrick is the RIGHT firm for the JHD at 143rd Street Phase II project based on the following:

- We have the **FIRM EXPERIENCE** necessary, by way of dozens of similar federally funded roadway projects. We have value-engineered these projects to be good stewards of our client's limited funding (our cost-savings recommendations are described in our Project Approach - Section 6) and we have successfully secured funding by way of many state and federal programs including STP, ITEP, and Invest in Cook, among others.
- Our **TECHNICAL APPROACH** will be aggressive and leave no stone unturned. Given our previous experience completing the Phase I, we understand the keys for a successful Phase II process, including effectively navigating the IDOT federal process, driving and/or accelerating the project schedule, expediting the ROW and permitting process, coordinating with property owners, and maintaining maximum flexibility to react quickly to changes that occur along the way, so that this project is "shovel-ready" when funding is available.
- The **STAFF CAPABILITIES** of our team will add value to your project. We will deploy our A-Team of engineers and other professionals, including Lead Bridge Engineer **Yinghong Cao, PhD, PE, SE**, and Senior Geotechnical Engineer **Chu Ho, ScD**, and a highly experienced quality and constructability review team. Our subconsultants differentiate us in providing full service to the Village. Christopher Burke Engineering will be our key partner for drainage, signals, and lighting, and Right of Way Acquisitions, Inc. will provide land acquisition services.
- The **SPECIALIZED EXPERTISE** that we bring will help you achieve your goals for this project, including:
  - ✓ The successful completion of hundreds of projects with the IDOT D1 Bureau of Local Roads & Streets.
  - ✓ Specific design experience with dry land bridges, including our recent IL 132 (Grand Avenue) project.
  - ✓ Continuing to work with the Southwest Conference of Mayors (SCM) to maintain project eligibility for the maximum amount of federal funds possible, minimizing the local share to complete your project.
- Our **WORKLOAD CAPACITY** at present is very high for Phase II work having recently completed several major projects, so we are well-suited to devote ample resources to deliver this project within the timeframes required.

Patrick is the RIGHT team to provide these Phase II Services for the Village of Orland Park. Should you have any questions or require additional information, please contact me at (630) 795-7468 or jcebulski@patrickco.com.

Sincerely,

PATRICK ENGINEERING INC.

Jarrod J. Cebulski

Jarrod Cebulski, PE
Director of Transportation

Company Experience

Both Patrick and CBBEL have decades of experience performing projects for IDOT and for Local Agencies. Our Project Manager, **Jarrod Cebulski, PE**, spent the first 13 years of his career working at IDOT in District One. This inside knowledge into the processes and procedures of this agency gives us the insight to know what IDOT looks for in our deliverables so we get them approved the first time. Both our firms have excellent contacts with the staff at the IDOT District One Bureau of Local Roads, Bureau of Land Acquisition, and the Central Office in Springfield who will help us expedite your project to a speedy completion. All of this collective knowledge will allow us to develop your project to maintain federal eligibility for the current STP-L funds and for additional federal funds to be secured from other sources and programs.

IDOT PREQUALIFICATIONS

Airports: **Design**	P		Hydraulic Reports: **Pump Stations**	P	CBBEL
Special Services: **Hazardous Waste | Simple + Advanced**	P		Location Design Studies: **New Construction/Major Reconstruction**	P	CBBEL
Structures: **Highway | Complex**	P		Location Design Studies: **Rehabilitation**	P	CBBEL
Structures: **Highway | Advanced Typical**	P	CBBEL	Location Design Studies: **Reconstruction/Major Rehabilitation**	P	CBBEL
Structures: **Highway | Typical**	P	CBBEL	Special Services: **Electrical Engineering**	P	CBBEL
Structures: **Highway | Simple**	P	CBBEL	Highways: **Roads and Streets**	P	CBBEL
Special Studies: **Traffic Studies**	P	CBBEL	Special Services: **Subsurface Utility Engineering**	P	
Transportation Studies: **Railway Engineering**	P		Highways: **Freeways**	P	CBBEL
Special Services: **Construction Inspection**	P	CBBEL	Special Services: **Sanitary**	P	CBBEL
Hydraulic Reports: **Waterways: Complex + Typical**	P	CBBEL	Special Studies: **Feasibility**	P	CBBEL
Special Studies: **Location Drainage**	P	CBBEL	Special Studies: **Safety**	P	CBBEL
Geotechnical Services: **Structure Geotechnical Reports (SGR)**	P		Special Services: **Surveying**	P	CBBEL
Geotechnical Services: **Subsurface Explorations**	P		Structures: **Railroad**	P	
Geotechnical Services: **General Geotechnical Services**	P		Environmental Reports: **Environmental Assessment**	P	CBBEL
Special Plans: **Lighting: Complex + Typical**		CBBEL	Environmental Reports: **Environmental Impact Statement**		CBBEL
Traffic signals	P	CBBEL	Special Plans: **Pumping Stations**		CBBEL
Special Services: **Mechanical**		CBBEL	Special Services: **Landscape Architecture**		CBBEL
Special Studies: **Signal Coordination & Timing (SCAT)**		CBBEL			

Agency Coordination | Multi-phase Services | Dry Land Bridge | Cost Estimating | Funding Assistance

Patrick Engineering Inc.

ILLINOIS ROUTE 132, DEEP LAKE ROAD TO MUNN ROAD

Illinois Department of Transportation | Lake County, Illinois

Patrick Engineering was retained by the Illinois Department of Transportation District One to prepare Phase II contract plans, specifications, permit applications, and estimates of time and cost for the $17 mil resurfacing, widening and reconstruction of Illinois Route 132 from Deep Lake Road to Munn Road, in the Villages of Lindenhurst and Lake Villa in Lake County. The scope of work for this 0.89 mile project included complete removal and reconstruction of a 938' long **dry land bridge** and the replacement of a reinforced concrete box at Hastings Creek. The roadway widening included left turn channelization and a median. The profile of IL 132 was raised approximately three feet to mitigate flooding within the project limits. Between Deep Lake Road and Munn Road, a shared-use path will be constructed on the north side of the road and sidewalk will be constructed on the south side. Due to poor soils in these locations the project will use light weight cellular fill (LWCF) to support the shared-use path and sidewalk. ADA curb ramps are proposed at all pedestrian routes within the project limits.

Schedule: 2018-2023

Key Personnel Involved: Jarrod Cebulski, Nick Schilling, Adam Newman, Yinghong Cao

Budget: $13 Million

Funding: Federal, State, and Local

Patrick and its sub-consultants prepared structure plans, roadway plans, supplemental surveys, geotechnical investigation, all applicable permits, and all other necessary work to complete Phase II contract plans.

Similar Challenges and Solutions: This project included intersection improvements and the design of a dry land bridge replacement. Challenges included an evaluation of lesser cost alternatives for the dry land bridge. After a rigorous alternatives evaluation process, it was determined that the dry land bridge was the best option to control settlement in the poor soils environment, as other alternatives would result in a certain level of settlement and extensive future maintenance.

Reference: Matthew Rothenberg, Illinois Department of Transportation, 201 West Center Court, Schaumburg, IL 60196, 847-705-4230, Matthew.Rothenberg@Illinois.gov

ALGONQUIN ROAD, ILLINOIS ROUTE 47 TO RANDALL ROAD

McHenry County Division of Transportation | Lake in the Hills, Illinois

Patrick prepared contract plans, specifications, and estimates for the proposed reconstruction and widening of Algonquin Road from IL 47 to Randall Road. The project length was approximately 5 miles. The roadway was widened from two lanes to five lanes with a raised grass barrier median. The project involved a geotechnical analysis to address an extensive pocket of unsuitable soils in the vicinity of Exner Marsh. Public presentations and coordination was required with the local stakeholders, including the municipalities, local businesses, and two golf courses. Other items included in the scope of services included: topographic and ROW surveys; development of ROW documents; replacement of the structure over Woods Creek; traffic signal designs; and roadway lighting design. The existing single span concrete slab bridge on closed abutments over Woods Creek was completely replaced with a wider single span steel beam bridge on integral abutments. Services included roadway engineering, structural engineering, drainage, traffic engineering, environmental investigation, geotechnical investigation and engineering, topographic survey, public presentations and coordination

Schedule: 2002-2009

Key Personnel Involved: Scott Lutz, Jarrod Cebulski, Steve Lynch

Budget: $32,700,000

Funding: Federal and Local

Similar Challenges and Solutions: This project showcases Patrick's expertise in designing roadways in areas of poor organic soils. We utilized our geotechnical engineers to evaluate the various options to provide support for the new widened roadway. Ultimately, since the pocket of poor soils was not excessively deep, the optimal solution was to remove the poor soil material and replace it with light weight cellular fill.

Reference: Joseph Korpalski, McHenry County Division of Transportation, 16111 Nelson Road, Woodstock, IL 60098, 815-334-4962, jrkorpalski@co.mchenry.il.us

OLYMPIC BOULEVARD/HOUBOLT ROAD

City of Joliet | Joliet, Illinois

Patrick is providing Phase II Engineering Services for the preparation of contract plans, specifications, and estimates for the improvement of Olympic Boulevard and Houbolt Road. The project will provide access to the new $162M Rock Run Crossings super-regional mixed-use development The project will also extend Olympic Boulevard west on a new alignment to access the proposed development via a new bridge over Rock Run Creek and high-quality wetlands. To mitigate wetland impacts Patrick proposes to "launch" the bridge. Because the bridge is assembled at "ground-level," this innovative construction technique reduces both the construction timeframe and cost, as compared to traditional construction. Additionally, Olympic Boulevard will be widened to three lanes and Houbolt Road will be reconstructed and expanded with additional through and turn lanes at intersections. A shared-use path will be constructed along Olympic Boulevard and Houbolt Road. The project includes utility coordination, permit applications, and land acquisition services.

Schedule: 2021-Ongoing

Key Personnel Involved: Jarrod Cebulski, Yinghong Cao, Nick Schilling

Budget: $20 Million

Funding: Federal and Local

Similar Challenges and Solutions: To provide for maximum flexibility for the City, Patrick is developing the contract plans to either be let as one comprehensive project, split up into three separate projects, or any combination of two plus one, based on funding

availability. These include 1.) the new bridge, 2.) improvements along Olympic Boulevard, and 3.) reconstruction of Houbolt Road. Patrick utilized and In-progress Design Verification review (IDVR) process to streamline the plan review process.

Reference: Greg Ruddy, City of Joliet, 150 West Jefferson St, Joliet, IL 60432, (815) 724-4210, gruddy@joliet.gov

79TH STREET, MADISON STREET TO COUNTY LINE ROAD
Village of Burr Ridge | Burr Ridge, Illinois

Patrick provided a Phase I study, Phase II contract plan preparation, and Phase III construction engineering for the resurfacing, intersection improvements, guardrail replacement, ADA ramp improvements, and ditch grading improvements on 79th Street, a major collector road in the Village of Burr Ridge. These improvements utilized 75% STP federal funding, therefore the project was coordinated with the IDOT Bureau of Local Roads & Streets. By using a Performance-Based Practical Design (PBPD) approach, Patrick was able to right-size the improvements to lower project costs and improve value, without sacrificing safety or operational performance.

Similar Challenges and Solutions: Patrick developed plans and contract specifications in the required IDOT format and performed all required utility coordination in the area. A permit was secured form the Cook County Department of Transportation and Highways in order to replace County owned equipment within the project's limits. The final engineer's construction estimate for the project was within $34K of the winning bid and below the Village's programmed budget for the project.

Reference: David Preissig, Village of Burr Ridge, 451 Commerce Street, Burr Ridge, IL 60527, dpreissig@burr-ridge.gov, 630.654.8181 x 6000

Schedule: 2016-2017

Key Personnel Involved: Jarrod Cebulski, Nick Schilling, Steve Lynch

Budget: $452,000

Funding: LAFO

ILLINOIS ROUTE 53 OVER SPRINGBROOK CREEK
Illinois Department of Transportation | Itasca, Illinois

Patrick led the development of contract plans, specifications, and estimates for the replacement of the bridge carrying Illinois Route 53 over Springbrook Creek in Itasca. The project included the structural design for the new single-span structure over Springbrook Creek, the raising of IL 53 for approximately 1,500 feet in the vicinity of the bridge, an intersection improvement, and the installation of a new retaining wall. This project was in advance of a larger project to widen IL Route 53 in this area from two lanes to five (two in each direction with a center left turn lane), therefore, the full five-lane pavement design was provided throughout the limits of this project. Work included resolving environmental issues relating to wetlands and special waste, coordination of utility conflicts, a public meeting, preparation of permit applications, and providing a Stormwater Pollution Prevention Plan (SWPPP).

Similar Challenges and Solutions: Patrick's geotechnical investigation identified the presence of poor soils; therefore, our team of geotechnical experts designed a wick drain system to induce advance settlement for the approximately 4' of fill that was placed over the soil beneath the existing pavement and the virgin soil adjacent to the roadway. Our geotechnical analysis evaluated the rates of differential settlement to design the appropriate pre-loading strategy for the contractor to use to provide a stable base for the new concrete pavement.

Schedule: 2016-2017

Key Personnel Involved: Jarrod Cebulski, Steve Lynch

Budget: $3.6 Million

Funding: Federal, State, and Local

MAIN STREET, MAPLE AVENUE TO HINMAN AVENUE
City of Evanston | Evanston, Illinois

Patrick Engineering prepared a Phase I Study and Phase II contract plans for the improvement of Main Street from Maple Avenue to Hinman Avenue, a distance of approximately 0.4 miles. The corridor traverses a downtown central business district and an historic district within the City of Evanston. The scope of the improvement includes upgrading the roadway and utility infrastructure, intersection improvements, improving the pedestrian and bicyclist environment, addressing ADA compliance requirements, and streetscaping. Structural support for vaulted sidewalks that exist within the corridor was also provided. The project was processed for federal eligibility and included **coordination** with the **IDOT Bureau of Local Roads** and the FHWA. A stakeholder involvement program that used the principles of Context Sensitive Solutions (CSS) was undertaken that included two Public Meetings and smaller group Advisory Committee Meetings to achieve consensus on the scope of the proposed project. Patrick is also coordinating the land acquisition of 17 temporary easements that are needed for the proposed improvement. **Patrick is also assisting the City in applying for various federal funding programs to help bring the project to fruition.**

Key Personnel Involved:
Jarrod Cebulski, Nick Schilling, Adam Newman, Yinghong Cao, Steve Kroll

Budget: $13 Million

Funding: ITEP, MWRD, Invest in Cook, and Local

Similar Challenges and Solutions: Patrick worked with the City to evaluate cost savings opportunities to develop an improvement that was within the City's budget. This included revising the project from reconstruction to resurfacing based on the results of a pavement and geotechnical study. We also assisted the City in securing Invest in Cook funding, MWRD funding for permeable pavers in the parking lanes, and IDOT Illinois Transportation Enhancement Program (ITEP) funding in the amount of $2 mil.

Reference: Rajeev Dahal, City of Evanston, 2100 Ridge Avenue, Evanston, IL 60201, 847.448.8159, rdahal@cityofevanston.org

WASHINGTON STREET, HAINESVILLE ROAD TO LAKE STREET
Lake County Division of Transportation | Lake County, Illinois

Patrick was retained by the Lake County Division of Transportation to perform a Phase I Study and Phase II Contract Plan Preparation for the improvement of Washington Street from Hainesville Road to Lake Street in the Villages of Grayslake, Hainesville, and Round Lake Park. The scope of work included the reconstruction and widening of Washington Street from a two-lane to a five-lane cross-section, along with an intersection improvement at Hainesville Road. The project was developed to be federally-eligible and was coordinated with the IDOT Bureau of Local Roads and Streets. The project included stakeholder coordination with agencies and the public. Patrick performed a full range of Phase II services, including utility coordination, permit applications, preparation of plats and legals, and coordinated land acquisition negotiation services.

Schedule: 2011-2018

Key Personnel Involved:
Jarrod Cebulski, Nick Schilling, Adam Newman, Eric Boelter

Budget: $30 Million

Funding: Federal, State, and Local

Similar Challenges and Solutions: Patrick worked with the County to develop a comprehensive funding package that allowed the project to proceed to construction. This resulted in the project being split into two contracts. A western contract was locally funded and included the intersection improvement. The eastern contract included a range of federal and state funding sources and included a new bridge. The lettings of the two projects were closely coordinated and the result was a seamless project to the public and communities.

Reference: Kevin Carrier, Lake County Division of Transportation, 600 West Winchester Road, Libertyville, IL 60048, 847.377.7448, kcarrier@lakecountyil.gov

Christopher B Burke Engineering

ILLINOIS ROUTE 53 AT MADISON STREET

Village of Lombard | Lombard, Illinois

CBBEL provided Phase I and Phase II Engineering for the proposed improvements at the T-intersection to improve access to the Village from the west. Improvements included: installation of traffic signals; widening to provide left and right turn lanes; lowering the roadway elevation on Madison Street approaching the intersection to improve sight distance; installing curb and gutters, storm sewers, and sidewalks on Madison Street between IL Route 53 and Finley Road; and providing bicycle accommodations with 8-foot paved shoulders on both sides of IL Route 53 within the project limits. The Phase I Study Design Approval was April 15, 2013. CBBEL completed Phase II Engineering including Contract Plans, Permits, and Land Acquisition in 2016. Construction was completed and the project opened for service in 2016. **Services Included:** Evaluated three watermain extension design alternatives and prepared preliminary cost estimates as part of the Phase I Study. Prepared topographic survey information within the project limits. Identified environmental impacts and appropriate mitigation strategies. Designed roadway geometrics including horizontal and vertical geometry, existing/proposed cross sections, and an assessment of additional right-of-way needs. Traffic maintenance/staging plans. Prepared an Intersection Design Study. Prepared a Location Drainage Study and Project Development Report. Prepared a Plat of Highways for the project's right-of-way takings and construction easements.

Schedule: 2011-2016

Key Personnel Involved:
Miroslaw Antas

Budget: $3.6 Million

Funding: Local/Federal

88TH/CORK AVENUE INTERCHANGE AT I-294

Village of Justice | Justice, Illinois

CBBEL was selected to complete Phase I and Phase II engineering services for a proposed new interchange connecting I-294 (Tri-State Tollway) to arterial roadways (88th/Cork Avenue, 79th Street, Archer Road) within the Village of Justice in support of economic development opportunities for the Village and other nearby communities. CBBEL prepared the Project Development Report and the bid documents (plans, specifications and estimates) for the construction of a new partial diamond interchange at the 88th/Cork Ave. crossing of I-294. Both Phases of engineering required close coordination with IDOT, Illinois Tollway, and Cook County since the involved roadways are State, Tollway and County jurisdiction. Working with these agencies and other stakeholders, Phase I considered three interchange alternatives, with various combinations of I-294 exit and entrance ramps. The Phase I Study developed separate 2040 traffic projections for each alternative and considered the Illinois Tollway's designs for reconstructing I-294 through the Village of Justice. The Phase I design team completed all required engineering and environmental studies, narrowed down the alternatives through agency coordination and public involvement, and presented the Preferred Alternate at a Public Meeting in December 2017. Phase I Design Approval was granted by IDOT and the FHWA in June, 2018. Phase II design began in early 2019 and reached Pre-Final PS&E level by September, 2020. The project includes $1.8 million of right-of-way acquisition and reconstruction of 1.5 miles of 88th/Cork Ave., 79th Street, Archer Rd. and Oak Grove Ave. at an estimated construction cost of $26.8 million. Portions of the work, including bridge substructure widening, most of the two new ramps, and a new sanitary sewer crossing of the Tollway, were shifted to the Tollway's I-294 Reconstruction contract and are already being built. The remainder of the Interchange improvements are scheduled to be let by Cook County in late Summer, 2022.

Schedule: 2015-Ongoing

Key Personnel Involved:
Miroslaw Antas, Peter Knysz

Budget: $3.7 Million

Funding: Federal, Cook County, IL Tollway

Reference: Matthew Zarebczan, Village of Justice, 7800 Archer Road, Justice, IL 60458, 708-458-2130, mzarebczan@villageofjustice.org

95TH STREET AT MUSEUM DRIVE IMPROVEMENTS
Village of Oak Lawn | Oak Lawn, Illinois

CBBEL designed a new signalized intersection of the Museum Drive extension at 95th Street, which included creating a cul-de-sac of the existing 50th Court and re-striping 95th Street due to the addition of a bi-directional left turn lane into and out of Museum Drive. The project involved extensive coordination with the ICC and Metra due to interconnection of the new signal with the nearby 95th Street/Norfolk Southern Railroad crossing. Additional improvements included complete lighting upgrades for Museum Drive, construction of a noise wall to protect the neighboring properties from unnecessary traffic sound, and widening of eastbound 95th Street for a new right turn lane into Museum Drive. Phase I Design Approval was received on October 10, 2018.

Schedule: 2016-2019

Key Personnel Involved: Anthony DeRicco, Miroslaw Antas

Budget: $5.7 Million

Funding: Federal/Local

Phase I Services Included: Collecting, examining, reviewing, and evaluating data to be utilized in the Phase I Study. Preparation of topographic survey information within the project limits. Identification of environmental impacts, including potential contaminated soils and appropriate mitigation strategies. Preparation of preliminary roadway geometry including horizontal and vertical geometry, existing/proposed cross sections, and an assessment of additional right-of-way/easement needs for the project. Traffic maintenance/staging evaluation. Preparation of an Intersection Design Study. Stakeholder Coordination Meeting with IDOT, ICC, Metra and the Village of Oak Lawn. Preparation of a Location Drainage Study and Phase I Project Report.

Phase II Services Included: Full topographic survey containing all topographic features, utilities, rims, and inverts, approximate ROW and property lines. Extensive coordination with the ICC and Metra for new traffic signal tie-in to Metra's concurrent railroad timing improvements. Proposed ROW and easement plats and legals and close coordination with Santacruz Land Acquisitions. Production of engineering documents for IDOT letting. Development of traffic signal plans for the intersection of 95th Street and Museum Drive in accordance with the Intersection Design Study. Ornamental lighting design for the new Museum Drive in accordance with IDOT and Village lighting standards. Extensive utility coordination for various facility removal and/or relocation due to the proposed improvements.

Reference: Jeff Sebek, Village of Oak Lawn, 9446 S Raymond Ave, Oak Lawn, IL 60453, 708-499-7717

151ST STREET / WEST AVENUE ROUNDABOUT
Village of Orland Park | Orland Park, Illinois

This project featured construction of a Modern Roundabout at the intersection of 151st Street and West Avenue to replace the existing 4-way stop controlled intersection. The purpose of this improvement was to improve traffic flow, reduce the number and severity of accidents, and lower traffic noise and pollution. Another goal was to reduce construction and operational costs, since without a roundabout this intersection eventually would have to be equipped with a traffic signal. The single-lane roundabout operates under yield-on-entry traffic control and was designed to accommodate pedestrians better and with greater safety than the 4-way stop intersection it replaced. This project was combined with the Phase II plans that were completed earlier for the complete pavement reconstruction and widening of 151st Street from West Avenue to Ravinia Avenue. The project included a 3-lane section from West Avenue to El Cameno Real Drive, transitioning to a 5-lane section through the Ravinia Avenue intersection. The project tied into the LaGrange Road improvements constructed by IDOT and replaced the temporary traffic signals at the 151st Street /Ravinia Avenue intersection with a new traffic signal installation. The improvements also included new watermain, storm sewer, sidewalks and roadway lighting. The construction cost of the roundabout as a stand-alone contract would have been $2,080,000. Combining it with the earlier 151st Street plans yielded construction efficiencies that resulted in a total project cost of $5,800,000.

Schedule: 2015-2017

Budget: $5.8 Million

Funding: STP/Federal

Reference: S. Khurshid Hoda, Village of Orland Park, 14700 S. Ravinia Avenue, Orland Park, Illinois, 60462-3167, 708-403-6128, khoda@orlandpark.org

Right of Way Acquisitions, Inc.

I-290/I-88 INTERCHANGE NEGOTIATIONS AND RELOCATION ADVISORY SERVICES
Illinois Tollway | Various Locations, Illinois

Acquisition/Negotiation Responsibilities include preparing offers, conveyance and related documents to be presented to parcel owners; explaining the need for the proposed highway improvement, plats, plans and appraisals of parcels to be acquired; payment procedures and responsibility of each party; reviewing title commitments to ensure clear title; and satisfying Agency goals and sellers concerns in an effort to avoid condemnation. Relocation Responsibilities include conducting property owner and tenant interviews, participating in the completion of relocation plans; performing replacement housing searches and calculations; provide relocation advisory services; prepare relocation claims and maintain relocation project files to ensure regulatory compliance. **Schedule:** 2018-2020 **Reference:** Derek Stancik, PE, PLS, 630.743.3320

IDOT WORK ORDER # 43.20 NG
Illinois Department of Transportation| Bartlett, Illinois

Acquisition/Negotiation Responsibilities include preparing offers, conveyance and related documents to be presented to parcel owners; explaining the need for the proposed highway improvement, plats, plans and appraisals of parcels to be acquired; payment procedures and responsibility of each party; reviewing title commitments to ensure clear title; and satisfying Agency goals and sellers concerns in an effort to avoid condemnation. **Schedule:** 2020 **Reference:** Mark Somers, 847.705.4290

"T" Engineering Service, Ltd.

ELGIN-O'HARE EXPRESSWAY WESTERN ACCESS

Illinois Tollway | Illinois

This project includes: 1) extending Illinois Route 390 to O'Hare and constructing or improving interchanges at Rohlwing Road (Illinois Route 53), I-290, Park Boulevard, Arlington Heights Road/Prospect Avenue, Wood Dale Road and Illinois Route 83; 2) constructing a new road connecting I-90 and I-294 west of O'Hare and interchanges at I-294, Green Street, Franklin Avenue, Irving Park Road, Illinois Route 390, Higgins Road (Illinois Route 72) and I-90; and 3) providing direct access to O'Hare property from York Road via a new ramp crossing over York Road and the Union Pacific Railroad and Canadian Pacific Railway. Appraisals were prepared on properties located in Franklin Park, Elmhurst, Elk Grove Village, Schiller Park, Berkeley, Northlake, and Bensenville. Property types were mostly small and large-scale industrial buildings, but also included single-family residences, auto repair facilities, an adult entertainment complex, public street right-of-ways, parks, billboards, retail showrooms, a recycling plant, an asphalt plant, and office buildings. **Size:** 50+ parcels **Schedule:** 2010-2016 **Reference:** Mr. Michael Harris, 847.705.4285

MILE LONG BRIDGE

Illinois Tollway | Hodgkins, Illinois

This project involves the building of a new bridge along a stretch of I-294 between 75th Street and La Grange Road. The existing bridge is 61 years old, and a new bridge is to be constructed to the east of the existing bridge. Appraisal assignments were generally industrial in nature and included a liquid transfer facility, a food processing plant, a truck yard, warehouses, public right-of-way, billboards, and a railroad. **Size:** 12 parcels **Schedule:** 2017-2019 **Reference:** Ms. Rachel Simner, 331.238.4985

IL ROUTE 83 AT ATKINSON ROAD

Illinois Department of Transportation | Grayslake, Illinois

This project involves realigning Route 83 to meet the new Atkinson Road extension and relocating the Route 83 / Route 137 intersection. Appraisal assignments included a boat sales building, a material storage facility, a car dealership, a gas station, multiple auto repair, fast food restaurant, two small strip centers, a large shopping center, a home supply retail store, and a bus depot. **Size:** 12 parcels **Schedule:** 2019 **Reference:** Mr. Michael Harris, 847.705.4285

ILLINOIS 7 (159TH STREET)

Illinois Department of Transportation | Homer Glen, Illinois

The proposed improvement involved widening of IL Route 7 (aka 159th Street) between I-355 and Will-Cook Road. The Project involved valuation analysis of commercial, industrial, and residential properties sought by the Department of Transportation. The properties appraised included retail buildings, auto repair, light industrial, and other uses. There were major damages on many of the properties including loss of parking, and cost to cure. **Size:** 40 +/- parcels **Schedule:** 2012-2013 **Reference:** Mr. Michael Harris, 847.705.4285

US 45 (LA GRANGE ROAD)

Illinois Department of Transportation | Orland Park & Tinley Park, Illinois

The proposed improvement involved widening US 45 (La Grange Road) from 131st to 179th Street through Orland Park and Tinley Park from a four-lane to six-lane arterial route. The Project involved valuation analysis of generally commercial properties (with some scattered single-family residences) sought by the Department of Transportation. The properties appraised included big box retail, strip centers, auto repair, a funeral home, motel, hotel, animal hospital, medical offices, banks, and large-scale shopping centers. There were major damages on many of the properties including loss of parking, and cost to cure. **Size:** 85 +/- parcels **Schedule:** 2010-2016 **Reference:** Mr. Michael Harris, 847.705.4285

Operating History

Patrick is a national engineering + design, construction, management services, and technology firm. Since 1979, we have been providing services to local, state, and federal government agencies; private and public utilities; and FORTUNE 500 companies. Patrick currently has **345 employees** and has worked in all 50 states. We have proven ourselves as a trusted partner and clients turn to us for the entire process of project delivery - from planning through construction to operation and maintenance. Patrick accomplishes this with a full suite of engineering disciplines, experienced construction managers, program management and project controls experts, and GIS and asset management technology specialists.

We serve clients in the transportation, utility + renewable, industrial infrastructure, and federal + institutional markets. We take pride knowing the projects we work on have a positive effect on the community, society, and the environment.

LOCAL VALUE

Patrick understands the meaning of the word "partnership." It means proven expertise, a positive outlook and a proactive approach. It means asking relevant questions and communicating in a timely manner to understand short-term needs and long-term objectives. It means recognizing the vision and validating the contributions of everyone on the team. Good partners understand the importance of collaboration and appreciate the responsibility of leadership. They keep working to get the job done, regardless of what it takes. At Patrick, we've embraced a partnering philosophy for more than 30 years. To facilitate this partnering relationship, Patrick locates its offices close to the offices of our clients so that we can clearly communicate and achieve faster solutions.

Choosing Patrick means working with local professionals who understand the regulations, communities and conditions of the states in which they perform work. Patrick's team of engineers have successfully partnered with an extensive list of local and regional clients on projects around the United States. Patrick has worked in all 50 states and is familiar with the tools and resources needed to add value to each project. Our commitment to our clients goes beyond each individual project and extends into the long lasting relationships we strive to maintain through our quality of work and a commitment to our client's specific needs. Our clients recognize this commitment, and that is why over 80% of Patrick's work comes from repeat business.

NATIONAL EXPERTISE

In addition to being a local partner, clients can benefit from Patrick's national experience and expertise. Patrick is a nationwide firm with more than 300 professionals located in multiple offices across the United States. The Engineering News Record (ENR) has included Patrick in its ENR Top 500 since 1993. We work with clients all across the U.S. and we understand national industry standards and practices.

Patrick generated revenue in excess of $78.1 million in 2020. The financial statements have been audited for over thirty years by the same CPA firm. We have assets in excess of $26.2 million. Other factors are as follows:

The Company has **not filed bankruptcy and is not delinquent** in making payments to any vendor or suppliers.

The **principal shareholders have not filed bankruptcy**.

No contract awarded to the Company has been **delayed or cancelled due to non-performance.**

No liens have been filed against the Company or the principal shareholders of the Company.

We are in solid financial condition and can complete this contract if awarded to us.

Hard copies of audited financials were delivered to the Village on August 20th.

Staff Qualifications

The team outlined in the organizational chart below is highly qualified for the work envisioned under the RFQ for the Village. Our Team includes transportation engineering professionals with extensive expertise in roadway engineering, drainage, structural, surveying, geotechnical, environmental, permitting, utility coordination, public involvement, landscape architecture and additional support specialties. Our team will collaborate collectively to provide feasible and economical solutions for the Project. The Team brings to this project the experience and expertise to successfully complete this project, along with a comprehensive understanding of the Village's needs.

Our proposed team will be led by **Project Manager, Jarrod Cebulski, PE** who has extensive experience in in all phases from preliminary engineering, through final design, to construction oversight and will be the main point of contact for the Village. Jarrod is also highly skilled in project funding, by way of his relationships with IDOT and the local councils of government, funding application preparation expertise, and experience in assembling comprehensive funding packages for projects from a myriad of federal, state, and other sources. **Project Engineer, Mike Dumas, PE** has extensive experience with state, county, and municipal clients with a primary focus on Phase II Contract Plan Preparation projects and specializing in Value Engineering.

This project team will provide the Village with the clear and effective engineering services needed to successfully complete the John Humphrey Drive at 143rd Street Intersection Improvement and Dry Land Bridge Project. The following is an organizational chart depicting our proposed key project staff for the Phase II Engineering Services.

TEAM VALUE

We know the project better than anyone!

Constant/Continuous Communication
We know the stakeholders. We already have established relationships with the stakeholders from Phase I and will continue the successful coordination seamlessly into Phase II.

Schedule/Delivery Certainty
We have already assisted the Village with securing federal funding and continue to support you in active project management to maintain those funds. We will seek and apply for new sources of funding to help close the gap between the Village's available funding and the project cost.

Project Cost Reduction
We have value-engineered the project as a free service to the Village and we have identified seven viable cost reduction strategies that we will investigate further during Phase II to help the you make the most of your limited dollars to bring this project to completion!

Jarrod Cebulski, PE | Project Manager

Mr. Cebulski is a Project Director who specializes in Phase I and II and has experience working at IDOT on federally-funded highway improvement projects. Jarrod led the Phase I development of this project so he will ensure continuity into the Phase II PS&E development to ensure consistency.

✓ *Experience in securing funding grants* ✓ *30 years of experience with similar projects*

Mike Dumas, PE | Project Engineer

Mr. Dumas has managed and coordinated transportation projects and worked on program management teams for large capital improvement programs for over 33 years. He was instrumental in reducing costs and securing three different funding sources for our Evanston Main Street project.

✓ *Specializes in Phase II Design* ✓ *Experienced in Value Engineering*

Steve Lynch, PE | Plan Development Engineer

Mr. Lynch has worked with Patrick for numerous municipalities, public agencies, contractors, and other consulting engineering firms. This diverse experience has allowed him to gain knowledge on a broad spectrum of potential challenges and the ability to resolve a wide range of project issues.

✓ *Extensive experience in the transportation industry* ✓ *Highly experience in Phase II PS&E development*

Nick Schiling, PE | Roadway QA

Nick's unique combination of a big-picture perspective and strict attention to detail allow him the ability to anticipate challenges and to provide comprehensive yet concise plan sets that result in competitive bids and very smooth construction processes.

✓ *Managed numerous federal Phase II projects* ✓ *Experience with dry land bridge projects*

Chris Erwin, PE, SE | Structural QA

Mr. Erwin has experience with the design and management of a wide variety of unique and complex strucural projects involving structural assessment, analysis, field investigations, design, permitting, and cost estimating.

✓ *Background in geotech and foundations* ✓ *Experienced with all funding types*

Yinghong Cao, PhD, PE, SE | Lead Structural Engineer

Dr. Cao is a highly experienced structural engineer having spent time in research, design, and construction for major complex structures across the country and internationally. He has published several technical papers and presented at numerous conferences.

✓ *In-depth understanding of complex structural systems* ✓ *Recent similiar dry land bridge experience*

Praaveenyan Vangara, EIT | Structures

Mr. Vangara (Praavi) has specific experience working on developing Phase I and II federally-funded bridge projects via the IDOT process. He is skilled in the use of a wide range of structural software tools and has completed projects for numerous local counties and municipalities.

✓ *Experienced with bridge rehab and replacements* ✓ *Skilled in geotechnical foundation design*

Eric Boelter | Plan Prep

Mr. Boelter has extensive experience in the Phase II design process and the compilation of complete sets of PS&E packages. He is knowledgable of the federal requirements needed to navigate the IDOT process to maintain funding eligibility.

✓ *Experienced in developing efficient cost-saving designs* ✓ *Excels in multi-disciplinary coordination*

Adam Newman, PE | Maintenance of Traffic

Mr. Newman has prepared MOT Concept Plans and Final Designs for a wide range of projects from local collector toutes to major interstates. He has experience with the development of plans for staged construction as well as full closures and detours.

✓ *Experienced in all aspects of MOT design and coordination* ✓ *Highly detail-oriented*

PATRICK

Subconsultants

Patrick has retained the following two firms as subconsultants for this project. In addition, **"T" Engineering Services** will perform real estate appraisals under the direction of Right of Way Acquisitions, Inc.

Christopher B Burke Engineering (CBBEL)

Lighting
Signals
Permitting
Drainage
Erosion Control

Patrick routinely teams with CBBEL and our respective staffs have a close working relationship. CBELL worked on Phase I of this project with Patrick and their responsibilities on Phase II will be extensions of their roles during Phase I to ensure a high level of continuity.

CBBEL is a full-service consulting engineering and surveying firm that comprehensively meets the needs of our clients, whether in the public or private sector. Founded in 1986 by CEO Christopher B. Burke, our Illinois-based staff of 208 consists of experienced and responsive professionals who provide engineering, surveying and environmental services on a personal level. Committed to delivering consistently accurate, timely and cost-effective solutions to a wide range of engineering and environmental challenges, our team's expansive list of specializations provides professionalism and a depth of expertise that promote project success.

Since its founding in 1986, the size of our company has grown. We are proud to have served as lead engineer on a variety of major municipal and county undertakings, including the design, permitting and construction of numerous major transportation and local municipal roadway projects, multi-use paths, on-street and off-street bike lanes, roundabouts, bridges, flood control reservoirs, pump stations, embankments, storm sewers, large open channels, water mains and water systems. Our office prepares a significant number of high-quality stormwater management studies and permit applications, having obtained more than 2,000 US Army Corps of Engineers Section 404 permits, more than 500 Illinois Department of Natural Resources-Office of Water Resources floodway construction permits and 450 Federal Emergency Management Agency Letters of Map Amendment and Letters of Map Revision.

Whether you require consulting for an individual project or the full-service resources from one of our departments, you can rely on CBBEL to take the time to thoroughly understand your needs and partner with you to create innovative, cost-effective solutions. We have unique knowledge and experience with various funding programs available to our local agency clients, providing an added service not easily found in the engineering industry: from grant writing and design procedures to record keeping and funding reporting, CBBEL is your full-service firm.

Right of Way Acquisitions, Inc.

ROW Negotiations
Appraisal and Review Appraisal Coordination

ROWA is a professional negotiations firm approved by IDOT, who brings local experience to this area for the successful completion of securing the needed ROW for this project.

Right of Way Acquisitions, Inc. (ROWA) is located in Chicago, IL, specializing in land acquisition consulting services for public agencies. Primary services include negotiations and relocation work as well as negotiation management support. ROWA is committed to excellence and takes pride in providing good faith negotiations to affected property owners under the Uniform Relocation Assistance & Real Property Acquisitions Policies Act of 1970. ROWA's mission is to provide clients with acquisition and relocation services and ensure compliance with applicable regulations and procedures and eliminate delays that would jeopardize schedules or increase project costs.

ROWA is owned by Digna Gomez. Ms. Gomez is an IDOT Approved Negotiator and Relocation Agent and a member of the International Right of Way Association (IRWA). Ms. Gomez is currently certified with the IRWA Right of Way Relocation Assistance Certification and is also an Illinois Real Estate Broker. She has been working as an Acquisition Agent for IDOT as well as the Illinois Tollway on assignments throughout the State of Illinois since 2005. In addition to providing right-of-way services, Ms. Gomez has also provided Negotiation Management support at IDOT's Bureau of Land Acquisition office in District 1 for the past 11 years. In this role, Ms. Gomez is responsible for overseeing title approval files that are submitted by District 1 Negotiators to the Department for title approval. Duties include submitting files to the Offices of Chief Counsel and the Attorney General, handling title and conveyance document issues raised by IDOT review attorneys, assuring files are processed for recording, title policies and payments to the property owners, maintaining channels of communications with Negotiators, Title Company and Attorneys in an effort to obtain title approval. Ms. Gomez has also assisted IDOT's Special Assistant Chief Counsel in reviewing settled parcel files to assure regulatory compliance.

Assessment of Project Challenges

Identified Challenge 1 | Challenges with the removal and replacement of existing Dryland Bridge and settlement from poor soils within the project limits. What are other feasible and economical options that may work for the bridge?

Proposed Solution

The existing dry land bridge beneath the south half (eastbound lanes) of 143rd Street is in good condition. It does not need to be replaced and only needs minor work to keep it in a state of good repair. In order to address differential settlement of the roadway, the dry land bridge will be expanded to the north to underpin the westbound lanes and the area of roadway widening to the north. Our team evaluated less expensive options such as aggregate columns, geofabric, and geofoam, however, these options do not provide sufficient support to prevent future settlement. The land bridge will not be extended beneath the sidewalk to the north and less expensive polystyrene fill will be used in this area. We have identified several economical design recommendations that can substantially reduce the cost of the dry land bridge, they include:

1. the use of pre-cast materials to shorten construction time,
2. increasing the spacing and thus utilizing fewer drilled shafts, which can be done by way of the use of larger bells at the bottom to provide the same level of bearing capacity, and
3. using pre-fabricated concrete box beams in lieu of the 2'-6" cast-in-place concrete pier caps.

These options can substantially reduce the overall cost of the land bridge and are discussed in greater detail in the Project Approach (Section 6).

Identified Challenge 2 | Design and coordination challenges with three different deliverables for intersection improvements and bridge removal and replacement.

Proposed Solution

The preparation of Phase II contract plans for three different deliverables is a key aspect of the success of this project. Given funding constraints, we must provide the maximum flexibility for the Village to be able to respond and secure any available funding source that we can, including those with "shovel-ready" requirements. Patrick will develop three sets of contract plans, specifications, and estimates, one for the bridge, one for the intersection, and one for both, to meet this requirement. One challenge with this approach is to control the level of effort (and hence, cost) put into this at stages where there is little benefit. Patrick is using this same strategy on our current Olympic Boulevard project for the City of Joliet. We are developing the project to be let as one, or as three separate component projects, based on the availability of ROW and permits. Our solution is an approach whereby at the early stages we only develop what is needed from an engineering standpoint to allow for meaningful reviews. As such, rather than a full preliminary plan set with details, specs, and quantities, we are developing an In-progress Design Verification Review (IDVR) set that allows our client to review the key aspects of the plans without expending the additional effort of a complete set of PS&E, to streamline and create efficiency in the process. Overlapping temporary work/materials, maintenance of traffic (MOT) phases, control, etc. will be reviewed and addressed at the Pre-Final Stage. We will use this same time and money-saving approach for your project. For your project, we recommend letting the bridge separately from the intersection to maximize the amount of outside funding that can be obtained. This is explained further in the Project Approach (Section 6).

Identified Challenge 3 | Challenges with availability of funds for bridge replacement and how they can assist the Village in securing funding.

Proposed Solution

The Village has a robust capital improvement program, with many projects competing for the same funding sources. Patrick helped the Village to secure $640,000 of federal STP-L funds from the Southwest Conference of Mayors (SCM) in FY21 for Phase II Engineering. $7,760,000, is also included in the STP-L Contingency Program for Construction and Construction Engineering. Patrick will work closely with the SCM to convert those funds from the contingency program to the active program, so they are available in time for construction. This will include submitting a new application for this program during the next call for projects in January 2022. Additionally, Patrick will also submit the project for the STP-Shared Fund. While this project is not eligible for STP-Bridge funds due to its designation as a dry land bridge as opposed to a standard bridge, another funding source we would recommend to help close the funding gap is the Invest in Cook Program. Patrick has had success in the past securing construction funds for our clients through this program. We will also be assisted by our subconsultant, CBBEL, who (in the first half of 2021) has helped secure over $13.5M in grant funds for their local agency clients.

VALUE ADD: Patrick has a history of partnering with, and if requested, will engage Seneca, LLC, to provide grade writing services. Seneca is located in Washington D.C. and specializes in the areas where public and private sectors meet, such as government funded financed projects. **Seneca has successfully help transportation projects nationwide receive over $2B in federal funds, including $20M for the City of Joliet for the Olympic Boulevard/Rock Run River Project**.

Potential Challenge 1 | There are several utility conflicts with the proposed pavement widening for the intersection improvement that could cause potential construction delays.

Proposed Solution

Patrick understands the importance of continuous and aggressive utility coordination, which is required during the Phase II to achieve a successful Phase III. During Phase I, we identified Comcast, ComEd, AT&T, Nicor Gas, water main, and sanitary utilizes present in the project area. During the early stages of design, we will seek to avoid utility impacts, without compromising the intent and integrity of the project. Should some conflicts be unavoidable (for the private utilities) we will send utility companies our plans at the preliminary, pre-final, and final stages of completion. We will follow-up with each individual utility to ensure receipt by the appropriate individual for quick action. We will ensure the Village's expectations of the utility companies are clearly relayed so that there is no confusion regarding verification of existing facilities and initiating the preparation of their relocation plans and permit applications. Finally, we will schedule, facilitate, and attend all utility coordination meetings. We will come prepared with a list of all anticipated utility conflicts and clear, large-scale exhibits that are color-coded for each type of utility to make sure the meetings are productive and expectations clear. We will obtain the actual CAD files of their relocations and compare them with our project to ensure their new locations will not conflict with our project or the proposed locations of other utilities; ultimately, reducing the risk of costly utility related delays.

Potential Challenge 2 | Including environmental protection and aesthetics into the project while minimizing costs.

Proposed Solution

We know a desire of the Village is to improve the visual appeal of this area as part of this project, including the natural wetland area in the southeast quadrant of the intersection. We investigated features during the Phase I, including: an elevated boardwalk (in this area); wetland protection; as well as passive recreational/educational elements. Since we have already developed some of these items to a certain level of design, we would be able to pick them up easily and efficiently and further evaluate them for inclusion in the Phase II. Passive recreational/educational features could be incorporated at a minimal cost. We would work with Orland Park Open Lands to develop aesthetic features that can be included to enhance this area. Standard sidewalk was not proposed in the southeast quadrant because of the fill required in the wetlands. An elevated boardwalk was considered but was not included in the Phase I due to its added cost. We would seek funds in the next round of the ITEP program in 2022 for this added project feature and incorporate it back into the project if we are successful in securing this funding.

Potential Challenge 3 | Securing the needed permits and land acquisition in time for the construction letting.

Proposed Solution

There are three primary permits needed for this project for construction. They are an MWRD permit, a USACE 404 permit, and an NPDES permit. While all permits are somewhat dependent upon the responsiveness of the permitting agency, the critical path for permits will likely be the USACE 404 permit. While we already have a jurisdictional determination from the USACE for the wetlands (dated 9/19/16), because of the date of the original wetland delineations, they will likely need to be re-delineated, as they are over 5 years old. Our plan will be to initiate the new delineations immediately at the onset of Phase II (as long as it is within the valid period of April 15-October 15) so that we can engage the USACE as quickly as possible to update their records and be ready for our permit submittal. In this way, we will be able to secure all permits in time for the construction letting. There are a total of 12 parcels of proposed ROW/temp easements needed for the project. Initial coordination with each affected property owner was performed during Phase I. At the onset of Phase II, we will expedite the plats & legals and the appraisal process, so that we can present offers and negotiate with the property owners as soon as possible, to ensure that all needed parcels are secured in time for the ROW Clear date stipulated by IDOT for the target letting for the project. Patrick engineers will be ready to support the Village and professional negotiator during the process to address any issue or concern any property owner may have. Our focus will be on these time critical items throughout Phase II so that they will not cause delays in meeting the Village's timeframes for the project.

Related Bridge Design and Cost Estimating Experience

EXPERIENCE IN THE FEDERAL AID PROCESS

Patrick has extensive experience with expediting infrastructure projects through the federal aid process. It is essentially what our Transportation Highway Group does. We know what is required for the Phase II process each step of the way to retain federal eligibility by undertaking close coordination with the IDOT Bureau of Local Roads & Streets and the CMAP Councils of Mayors.

Our Team is overseen by our Project Manager, **Jarrod Cebulski, PE**. Jarrod previously worked at IDOT for 13.5 years. There he learned the federal process from the inside-out. During his tenure with Patrick, he has leveraged his knowledge, by steering dozens of Local Agency highway/bridge improvement projects (in District 1) through the IDOT federal process, including such projects as Woodward Avenue (Village of Woodridge), Narragansett Avenue (Cook County), and 75th Street over E. Branch of DuPage River (DuPage County), to name a few. Jarrod has a mastery of the Federal Project Development process that is second-to-none in the industry. Given his experience and numerous key industry (i.e., IDOT and FHWA) contacts he's able to expedite schedules, minimize risks, and proactively communicate to get answers quickly and efficiently.

PROVEN SUCCESS

MBTA Red Line/Orange Line Program

This project features our cost estimating expertise. Patrick has an internal Program Management Group within our Management Services Division. This group includes several highly experienced cost estimators. These experts develop costs using a **bottoms-up approach**, which means they look at **actual production rates, material costs, risk, project schedule/duration**, etc.; as opposed to the top-down approach used by engineers in our industry, which relies on pay items, quantities, and unit prices. This provides a real-world check of our Engineers Estimates of Construction Cost for our local agency highway and bridge projects and results in our estimates being much closer to the final bid prices than many of our peers. Below is an example of the level of accuracy this team achieved on the actual bid prices for the Red Line/Orange Line (RL/OL) group of projects. We can apply this experience to your project to help reduce risk and increase funding certainty.

Patrick Estimates for RL/OL prior to PS&E and Reconciliation	
Orange Line Test Track	$5,468,007
Wellington Yard Expansion Tracks 33-38	$20,435,943
Wellinton Yard Rebuild	$99,563,000
Wellington Maintenance Facility	$79,754,762
Red Line Test Track	$27,192,152
Cabot Yard Rebuild and Maint. Facility	$201,370,000
TOTAL AGGREGATED COST	**$433,783,864**
TOTAL of WINNING BIDS	**$434,235,777**
Patrick Estimate Comparison (-0.1%)	**-$451,913**

Patrick's unique differentiator is our internal construction group

This group allows Patrick to bring a perspective and understanding of construction and construction estimating that other design firms do not possess.

We use HCSS Heavy Bid software which is formatted specifically for infrastructure projects and is made for self-performing contractors. It integrates with most accounting software and with scheduling software such as Primavera.

Patrick is able to establish several different databases of information including equipment costs, labor rates, and material costs.

We develop and maintain these databases using our experience to establish rates and updating to current indices specific to the timing and location of projects.

The software also allows customization of the estimate to address items such as access issues, limits of operation, key risks, logistics of the project, and the project schedule.

Illinois Route 132, Deep Lake Road to Munn Road
Illinois Department of Transportation | Lake County, Illinois
This is our most recent dry land bridge design project. The Phase II contract plans were developed for the complete replacement of a 938' long dry land bridge supporting IL 132 (Grand Avenue) over an area of extremely poor organic soils. The project involved an **alternatives analysis for the dry land bridge to compare lesser cost options and their anticipated performance,** whereby it was ultimately decided by IDOT to select the dry land bridge option due to its factor of safety in controlling future settlement and reducing long-term maintenance costs. We then prepared final structural design plans for the new bridge. This project is currently in construction.

Schedule | 2018-2023

Budget | $13 Million

Reference | Matthew Rothenberg, 847-705-4230, Matthew.Rothenberg@Illinois.gov

Funding | Federal and State

Key Personnel Involved | Jarrod Cebulski, Nick Schilling, Adam Newman, Yinghong Cao

BRIDGE 291.33 SANTA BARBARA REPLACEMENT PROJECT
Union Pacific Railroad | Narlon, California
Patrick was retained by Union Pacific to provide an **Independent Cost Estimate (ICE)** and Schedule for the Construction Manager/General Contractor (CM/GC) delivery of the in-kind Bridge Replacement Project in Narlon, CA. The project included replacing existing bridge superstructure spans and structural steel tower foundations; installation and removal of temporary work platforms (trestle bridges); installation and removal of temporary falsework and shoring of the existing bridge spans; staging areas, material handling and laydown areas and crane pads; and relocation of existing utilities in conflict with new construction. Demolition and construction of work to be staged during nine 24-hour shutdown periods. Patrick's task is to develop the ICE at the 30, 60%, 90% and final design stages and developing an independent schedule of the work as part of negotiating a final bid price with the CM/GC.

Schedule | 2019-2020

Budget | $18 Million

Reference | Micheal Freeman
402.544.5153, michaelpfreeman@up.com

Funding | Federal and Private

Key Personnel Involved | Robert DiGirolamo

75TH STREET OVER THE EAST BRANCH OF THE DUPAGE RIVER

DuPage County Division of Transportation | DuPage County, Illinois

Patrick prepared a Phase I Study and Phase II contract plans for the major rehabilitation of the bridge carrying 75th Street over the East Branch of the DuPage River (SN 022-3040). The new superstructure consisted of a three span 27" PPC deck beam with a 5-inch concrete overlay. The upper portion of each backwall and seat area at both abutments was removed and reconstructed. The upper portion of both piers was also removed and reconstructed. Roadway improvements included raising the vertical profile, resurfacing ½-mile of roadway, reconstructing the center median, and providing new guardrail adjacent to the bridge. **The deck beams used in this project are similar to those we propose to use for the 143rd Street dry land bridge as a major cost-savings recommendation.**

Schedule | 2009-2011

Budget | $1.6 Million

Reference | Christopher Snyder
(630) 407-620,
christopher.snyder@dupageco.org

Funding | Federal and Local

Key Personnel Involved | Jarrod Cebulski

CANAL STREET

Chicago Departmet of Transprtation| Chicago, Illinois

This is the Phase-II final design engineering services of the reconstruction of the Canal Street Viaduct from Harrison Street to Taylor Street. The structure is a two-way slab structure with a deck width of 100 ft extending from ROW to ROW. The construction will be staged to minimize disruption to the adjacnet properties access. The total length of the viaduct is approximately 1,600 ft. Patrick worked with CDOT to revise the Phase I TS&L to move the south abutment and reduce the overall viaduct length.

Schedule | 2020-2022

Budget | $2.5M

Reference | Moira Kent
Moira.Kent@cityofchicago.org

Funding | Federal and Local

Key Personnel Involved | Steve Lynch,
Yinghong Cao

Illinois Route 53 over Springbrook Creek Illinois Department of Transportation | Itasca, Illinois

This project included Phase II PS&E for the replacement of the bridge carrying Illinois Route 53 over Springbrook Creek in Itasca. The project included the structural design for the new single-span structure over Springbrook Creek in conjunction with an adjacent intersection improvement. This project was an advanced breakout project of a larger project to widen IL Route 53 in this area from two lanes to five. It required detailed MOT staging plans to sequence the bridge construction with the intersection. Geotechnical studies were also required for a substantial amount of fill to be placed on a previously unburdened soil mass.

Schedule | 2016-2017

Budget | $3.6M

Reference | John Baczek
(847) 705-4104
John. baczek@illinois.gov

Funding | Federal and State

Key Personnel Involved | Jarrod Cebulski, Steve Lynch

Project Understanding and Approach

UNDERSTANDING OF THE PROJECT

The Village of Orland Park is eager to proceed with the Phase II engineering services for the John Humphrey Drive (JHD) and 143rd Street Intersection Project. Patrick has helped the Village secure federal STP-L funds in Fiscal Year 2021 from the Southwest Conference of Mayors (SCM) and these funds need to be obligated by March 2022 or they will sunset and be in jeopardy. Patrick secured Phase I Design Approval on December 23, 2020, so this project is ready to proceed into Phase II.

John Humphrey Drive at 143rd Street Issues Map

This intersection is a critical link for local and regional transportation connecting residential areas with shopping, restaurants, and recreational destinations, and regional employment centers. This project will address the following:

Capacity Issues

- The existing lane configuration is not equipped to handle current and future traffic volumes, particularly the westbound to southbound movement
- Existing traffic conditions are operating at Level of Service (LOS) D and F

Infrastructure Issues

- Differential settlement at the existing land bridge along the east leg of 143rd Street causing pavement distresses and deterioration, safety concerns, and ongoing maintenance issues
- Pedestrian access and safety needs to be improved

The improvement of this intersection will also set the stage for the future improvement of JHD from 143rd Street south to Mall Drive, which would include widening to provide a center median for left turns to improve safety. Based on our in-depth knowledge of the corridor and the stakeholders and our successful completion of the Phase I, **Patrick will adeptly navigate the federal Phase II process to make this project a reality for the Village.**

SPECIFIC APPROACH

Patrick's specific approach to your project will accomplish several key criteria:

- ✓ We will maintain federal eligibility to be able to retain and utilize the funds we have already secured, and we will **seek additional funding sources**, such as STP-L, STP-Shared Fund, ITEP, and Invest in Cook, to minimize Village contributions and make your project a reality
- ✓ We will minimize impacts to adjacent properties, saving the Village both time and money, including commercial establishments and the natural area in the southeast quadrant, the Humphrey Drive Wetlands managed by Open Lands of Orland Park
- ✓ We will develop the details for the dry land bridge repair and expansion and transitions to avoid future differential settlement along 143rd Street and eliminate ongoing maintenance issues for the Village
- ✓ We will work closely with the property owners to coordinate future development plans, including the Metro East Townhome development in the northeast quadrant
- ✓ We will develop a plan to maintain traffic during construction to the extent possible to minimize closures and driver inconvenience and maximize access and visibility to the businesses

Value Engineering

We understand how important this project is to the Village, as well as the funding constraints related to this type of project, particularly in terms of the lack of available funding sources for dry land bridges. Therefore, one way to close this funding gap is to reduce the construction cost of the project. Subsequent to the completion of Phase I the Patrick Team (at no cost to the Village) undertook a Value Engineering (VE) exercise to identify areas to reduce project costs. Below is a list of recommendations we believe can reduce project costs, and are further described in the following pages of our Project Approach:

- Recommendation #1 – Refine scope to widening and resurfacing instead of full reconstruction
- Recommendation #2 – Do not extend the dry land bridge beneath the sidewalk
- Recommendation #3 – Redesign the drilled shafts to reduce the total number
- Recommendation #4 – Eliminate some sections of enclosed storm sewer by way of ditches
- Recommendation #5 – Avoid relocations to Village-owned utilities
- Recommendation #6 - Use of combination traffic signal and lighting poles
- Recommendation #7 – Reduce ROW and temporary easements

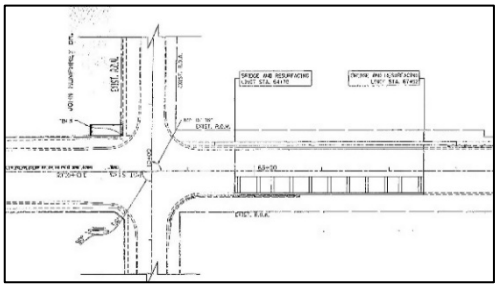
Cost Savings
Recommendation #1

Roadway Scope Refinement

During Phase I, an intersection reconstruction scope of work was evaluated for the intersection improvement of additional auxiliary turn lanes. While complete reconstruction is a more substantial improvement providing better long-term durability, given the Village's limited funds and large number of competing capital improvement projects, a more economical scope of widening and resurfacing was investigated. Both scopes are viable, so as a conservative approach, the higher reconstruction cost was used in the submittal of various funding applications and to leverage funding for the maximize benefit of the Village. As such, revising the project to a full widening and resurfacing scope of work for the intersection project can be carried forward as the recommended scope of improvement for the project to achieve a substantially savings in construction cost.

Structural

A major component of this project is the existing dry land bridge (SN 016-D010) supporting the EB lanes of 143rd Street over an area of poor highly compressible soils. The bridge was constructed in 2003. The existing structure is an eight-span, 211' long, 16" thick reinforced concrete slab. The substructure is comprised of bent caps supported by five 24" diameter drilled shafts to a 40' depth. The slab has a 3-¼" thick asphalt surface. The structure carries two 12' wide eastbound traffic lanes with curb and gutter.



2003 Plans for the Dry Land Bridge on the East Leg

Looking West at the Dry Land Bridge

The existing eastbound dry land bridge will be extended to the west with the addition of two spans. The existing bituminous wearing surface and waterproofing membrane will be removed and replaced on the entire bridge slab. A new 251' long westbound dry land bridge will be constructed immediately adjacent to the eastbound structure. This bridge will be 54'-7" wide to accommodate two 12' thru lanes, two 11' left turn lanes, a 6' foot median and curb and gutter. New bridge approach slabs will be constructed at both ends of the land bridge. IDOT recommended that the dry and bridge extend even further north to support the proposed sidewalk on the north side of 143rd Street.

However, as a cost savings measure, Patrick is proposing that the bridge only be extended north as far as the north curb & gutter and not to the extent of the sidewalk. This is a reasonable measure, as the sidewalk is separated from the road by a grass parkway and is more tolerant to minor settlement than the roadway pavement. Patrick has completed all geotechnical investigations and reporting during the Phase I, so we are highly confident in our proposed recommendations for the bridge foundation and soil treatments.

Cost Savings Recommendation #2

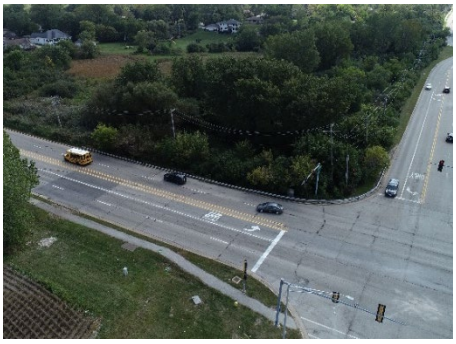
Patrick has experience designing dry land bridges with our recent being Phase II for IDOT's IL 132 (Grand Avenue) project in Lake County. This project involved the replacement of an existing 938' long dry land bridge. This recent project experience will benefit the Village because as part of that project, we evaluated several different cost savings measures that we can apply to your project.

Cost Savings Recommendation #3

The use of aggregate columns or geofabric would reduce costs but would not control settlement satisfactorily. A major cost-savings factor is our plan to reduce the number of drilled shafts from the Phase I, by increasing the bell size at the bottom of the shafts, allowing us to increase the spacing between the bells. Since a significant cost of the bridge is in the materials, this will have a substantial impact on the reduction of the cost of the project. Additionally, we propose to use precast concrete box beams instead of the 2'-6" cast-in-place concrete pier caps. Because precast elements are fabricated using assembly line techniques and are not subject to weather conditions, precast concrete typically results in a cost saving of 20-25%.

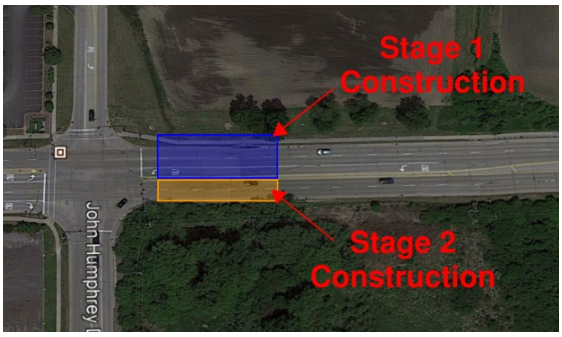
Drainage

In the proposed project design, portions of the existing drainage system will be retained, and portions will be replaced with larger diameter pipe. There are four outlets within the project area and these outlets are considered suitable for reuse. The existing drainage system at the existing land bridge will remain in place with extensions to accommodate the widening. Stormwater detention is not required since the added impervious area is less than 1 acre (0.85 acre), however, some replacement storage volume is required due to a nominal amount of fill (0.04 AC-FT) proposed in the existing depressional area associated with the Humphrey Drive Wetlands area. This will be provided in a roadside ditch fronting a Village-owned parcel along the east side of the south leg of JHD. While the Phase I drainage plan has been developed in a very cost-effective manner, our VE process has identified opportunities to reduce the project cost in the drainage design. Therefore, we have identified areas where we can eliminate sections of the enclosed storm sewer and utilize curb openings to drain the runoff directly into the roadside ditches, such as along the east leg of 143rd Street. Our subconsultant Christopher B. Burke Engineering, Ltd. (CBBEL) prepared the Phase I Drainage Study, therefore, for consistency and efficiency, they will develop the drainage design plans in Phase II.



Humphrey Drive Wetlands in SE Quadrant

Cost Savings Recommendation #4



Maintenance of Traffic

Safe and proper Maintenance of Traffic (MOT) is extremely important since JHD and 143rd Street has a mix of commercial and residential land uses and this intersection is frequently used to access the major Orland Square Mall to the south. The improvement of JHD and 143rd Street will be accomplished with temporary pavement and staged construction to keep one lane in each direction open at all times. From an MOT perspective, this project can be constructed all as one, or it can easily be separated into separate construction contracts for the bridge and intersection. For the dry land bridge construction, traffic will be shifted to the south on the existing dry land bridge, while the expanded portion of the dry lane bridge is constructed beneath the westbound lanes. For the intersection work, during the pre-stage, temporary pavement will be installed on the west side of JHD and on the north side of 143rd Street. No road closures or detours are needed. The existing traffic signals will need to be replaced due to the addition of the proposed turn lanes, therefore temporary signals during staged construction will be needed based on the lane configuration of the stage. We will work to time the construction start so that the entire project can be completed in one season, without the need to extend over the winter.

Utilities

Cost Savings
Recommendation #5

One of the biggest obstacles for contractors and reasons given for construction delays is utilities. During Phase I, we coordinated with Comcast, ComEd, AT&T, Nicor Gas, water main, and sanitary. The Patrick Team understands the importance of continuous and aggressive utility coordination and we will work closely with each utility to develop strategies to avoid and minimize impacts to their facilities without compromising the intent and integrity of the roadway project. Our approach will identify unique solutions to work around utility facilities to reduce the number of conflicts. Specifically, we will strive to avoid relocating the water main (south side of west leg and north side of east leg) and the sanitary sewer (along the west and north legs) as these relocations would be at Village cost. For non-Village utilities, we will obtain the actual CAD files of the utilities' relocation plans and compare them with our project to ensure their new locations will not conflict with our project or the proposed locations of other utilities. Fewer utility conflicts will result in reduced project cost, reduced risk, and better certainty during construction, ultimately saving the Village money.

Cost Savings
Recommendation #6

Traffic Signals and Lighting

The JHD and 143rd Street signal is owned by the Village. This location will require temporary traffic signals during construction staging. New permanent traffic signal equipment will be provided at the intersection to accommodate the additional turn lanes, as well as interconnection to the west to tie into the recently improved US Route 45 (LaGrange Road) at 143rd Street intersection. Roadway lighting will be provided at the proposed JHD and 143rd Street intersection, as required. A cost savings measure will be the inclusion of combination poles at the intersection, which will reduce the total number of poles required, hence reducing project cost.

Land Acquisition

ROW acquisition is required for the JHD project. Permanent acquisition of approximately 24,870 SF is required from a total of 8 parcels in addition to approximately 1,010 SF from 4 parcels of temporary easements. Patrick will obtain updated survey to re-model the areas of land acquisition to reduce these amounts to the extent possible. Reduction in the proposed amount of ROW needed will reduce the cost of the project. Once refined, we will prepare the plats and legals and Right of Way Acquisitions, Inc. will support the team for appraisals and

negotiations services. Our plan will be to work with each individual property owner to make sure they understand the ROW process, their rights, and what they can expect during construction of the project. We have facilitated land acquisition on numerous federally funded Local Agency projects and know how to work with IDOT through every step. Right-of-Way Acquisitions was recently assigned to two Village-owned parcels on IL Route 7 for negotiations, so they have recent experience in performing ROW acquisition for the Village of Orland Park.

Cost Savings
Recommendation #7

Our team has provided engineering design and permitting services for hundreds of bridge projects across the country, as well as here in Illinois. Patrick's PM, Jarrod Cebulski knows the importance of coordination and will lead the team away from delays caused by poor communication. As the Permitting Task Lead, Ilene Dailey, will proactively work with the permitting agencies to minimize comments and revisions to ultimately reduce review time.

Environmental and Permitting

The project requires several permits as outlined below:

Permit Type	Reason for Permit
MWRD Permit	Reconstruct outfalls at the Humphrey Drive Wetlands
IDRN-OWR Permit	Not required – No designated floodplain or floodway
IEPA Permits	Potential watermain or sanitary sewer relocation
USACE 404 Regional Permit	0.134 acres of impact to four wetlands
NPDES Permit	> 1 acre of soil disturbance

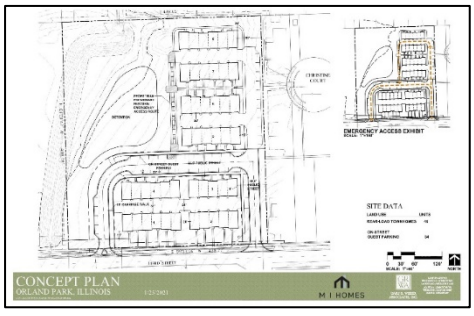
The Patrick/CBBEL Team is familiar with the submittal and permitting requirements for all of the above needed permits. These permit applications will be completed as early as possible so that the resource agencies have as much time as possible to review and grant the permit. Proper forms and a SWPPP will be included in the contract documents.

Our Team will update any environmental items that have expired during the course of the project. The wetlands will need to be redelineated, as the wetland report was from July 8, 2016 and is over 5 years old.

The special waste PESA identified eleven sites with potential REC's, so a PSI is required and will be prepared by Patrick during Phase II.

Adjacent Developments

Patrick has assisted the Village in coordinating with the developer in the northeast quadrant of the intersection. The site will be developed as townhomes called Metro East (*see exhibit to right*). The site will have two access points to 143rd Street east of JHD. We also coordinated the joint use of the frontage of the property for the new ROW line, sidewalk, sales, and grades. We agreed upon a layout of an 8' parkway, 6' sidewalk, and 2' for utility poles. This area is within a turn lane taper along 143rd Street further complicating the coordination. Drainage work has also been coordinated. Patrick's experience coordinating with this developer and engineer will bring value during Phase II due to our knowledge and understanding of the details that have already been agreed upon.



Plan Development

Our team will prepare three separate sets of plans, specifications, and time and cost estimates for the JHD at 143rd Street improvements, as follows:

- Entire project including the intersection improvements and the dry land bridge expansion
- Intersection improvements only
- Dry land bridge expansion only

All thee PS&E packages will be developed ad bid-ready and suitable for construction. We will prepare these plan sets to be as simple and concise as possible, while at the same time including enough detail to guide the contractor with no uncertainty.

For this project, we anticipate the following levels of completion: **Preliminary Design Phase (60%), Pre-Final Design Phase (90%), and Final Design Phase (100%).** The key elements are as follows:

Preliminary Plans (60%)

- Conduct a field review to verify existing conditions and identify any additional pick-up needs
- Meet with affected utility owners to review their locations and potential impacts
- Prepare preliminary plans
- Develop preliminary construction cost estimate and construction schedule
- Perform QA/QC compliance audit
- Submit preliminary plans, contract specifications, and cost estimate to the Village

Pre-Final Plans (90%)

- Incorporate and/or address all comments made during the preliminary plan review
- Further develop the design
- Schedule a plan-in-hand field review
- Meet with affected utility owners to finalize their relocation plans
- Refine construction cost estimate and construction schedule
- Perform QA/QC compliance audit
- Submit pre-final plans, contract specifications, and cost estimate to the Village and IDOT

Final Plans (100%)

- Ensure that pre-final comments have all been incorporated and addressed
- Submit final plans, contract specifications, estimate of time, cost estimate, drainage calculations, and quantity calculation book

Our Team will prepare and update the Estimate of Probable Construction Cost so that it is kept up-to-date throughout the Phase II process.

Funding and Coordination with IDOT and the Southwest Municipal Conference

Our Project Manager, **Jarrod Cebulski**, worked closely with the Village, and the SCM during Phase I to craft an innovative funding plan for the JHD project. We secured Phase II funds via the CMAP STP-Local Program at 80%/20%. Federal funding for construction is included in the STP-L Contingency Program. In 2021, Patrick submitted an STP-Shared Fund application for right-of-way, construction, and construction engineering funding. Patrick continues to perform active project management for the Village per CMAP requirements by submitting project updates every quarter to the SCM Planning Liaison. Patrick will continue to handle this coordination with these agencies for the Village during Phase II to ensure full project funding is secured and maintained for a construction target in 2023. Attendance at IDOT District One and SCM meetings to provide project updates, discuss project details, and coordinate project decisions is expected.

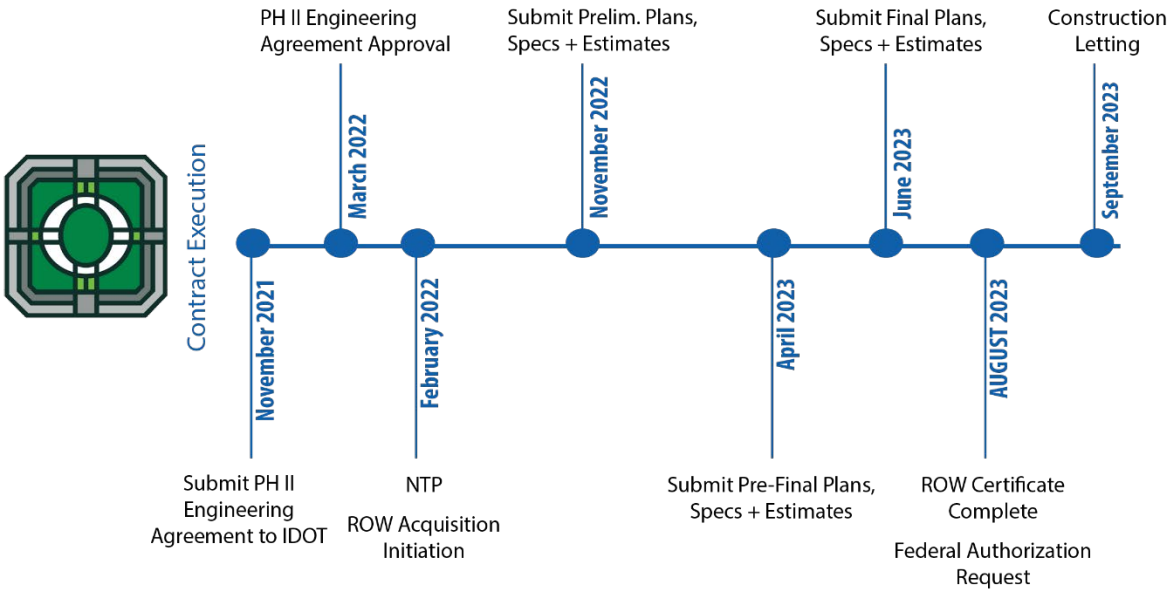
We have an excellent relationship with the IDOT BLRS, which will be critical in the expeditious coordination to secure project approvals. We worked closely with Kevin Stallworth during Phase I. Jarrod's 13 years at IDOT provides him with the understanding of the agency's requirements and extensive contacts within IDOT, to be able to advocate on the Village's behalf to achieve the desired outcome from the Department. His experience will be invaluable to efficiently navigate this project through this process to a timely construction letting.

Letting and Bidding

Once the project has been advertised and bids are received, Patrick will be available to perform the bid analysis and provide the contractor recommendation. We will attend the pre-construction conference at IDOT and fully

stand behind our design by providing answers to RFIs and meeting in the field with the contractor to resolve any plan-related issues during construction.

Projected Schedule and Proposed Milestones



HOW THE PATRICK TEAM WILL ASSIST THE VILLAGE WITH THE COMPLETION OF DESIGN DOCUMENTS IF CONSTRUCTION FUNDS ARE NOT AVAILABLE:

Patrick will proceed with the development of design plans, while we are working on funding applications to secure the needed funds for construction. To provide the greatest level of flexibility to the Village, we will develop three separate sets of contract plans and documents; 1.) bridge only, 2.) intersection only, and 3.) combined bridge and intersection. It is our recommendation that the project proceed as two separate contracts, and this is why: A highly viable source of funding for this project is STP-Local (STP-L) funds through the SCM. Based on recent coordination with Vicky Smith, Executive Director of the SCM, the next call for projects for the STP-L Program will be January 2022 and they have a limit of $1.5M per project. If we split the project into two, we could feasibly secure $1.5M for the bridge project and $1.5M for the intersection project. Even if we secure a larger source of funding, such as the STP-Shared Fund, this funding should be able to be split among the two construction contracts. Of course, our team will still develop the combined set of contract plans for both project components, should it become advantageous to implement the project in that manner.

Patrick's commitment to communication and quality, and the experience we bring from similar projects, as well as the Phase I for this project, will provide the best value for the Village.

Patrick will achieve the Village's project goals by way of our communication, quality, and project experience. Early and continuous communication is how we do business and is what will make your project a success. Our commitment to quality starts on day one and is critical to a successful design process. Our firm's vast experience with Phase II Plans for Local Agencies, coupled with our knowledge and history from leading the Phase I process, makes Patrick the best choice to give the Village confidence that all issues will be addressed, and every detail will be handled in the contract plans to be prepared to bring your JHD project to fruition. We have done this before, and we are eager to bring these skills to your project.

Key Personnel Resumes

Patrick Engineering has no contract commitments that will affect our ability to complete this work on schedule. Patrick brings a team that has the expertise and manpower to complete this project in a timely manner. We understand the sense of urgency that this project requires and are prepared to allocate appropriate staffing levels to expedite the design and construction of this project.

the right team with the right capacity BECAUSE:

1	The Patrick/CBBEL Team are trusted partners with the depth of resources to accelerate delivery for the Village of Orland Park, to get this project to construction as quickly as possible.
2	Our Team has overlapping services/prequalifications and can handle all engineering aspects of this project efficiently and with a high degree of quality.
3	Both our firms have decades of experience working with Local Agencies in Northeastern Illinois and developing federal transportation projects in coordination with the IDOT Bureau of Local Roads & Streets.
4	Patrick and CBBEL successfully completed the Phase I Study for the John Humphrey Drive at 143rd Street intersection and dry land bridge project, so we have firsthand knowledge of all the issues that need to be carried into Phase II.
5	Both firms have staff who spent years working at IDOT (Jarrod Cebulski with Patrick and Michael Matkovis with CBBEL), which means we have excellent relationships with IDOT staff and can advocate on the Village's behalf with this important agency.
6	Given the extensive Local Agency experience of both Patrick and CBBEL, we each have a long track record of successfully identifying and securing state and federal funds for the communities we work with and the projects that we deliver.

The Patrick/CBBEL Team is the right selection for this project. We are both fully committed to do what it takes to bring your project to a successful award-winning completion for the constituents of the Village of Orland Park.

Jarrod Cebulski, PE Project Manager | Patrick Engineering Inc.

Education
B.S., Civil Engineering, University of Illinois at Chicago, 1991

Expertise
Phase I-II, Traffic and Geometric Studies, Environmental Studies, Funding, Stakeholder Coordination, Multi-Modal Design, Context Sensitive Solutions, Contract Plan Preparation, Specifications, Cost Estimates, and QA/QC

Registration
Licensed Professional Engineer: **IL,** WI, IN, MI, CO, OH, IA

Mr. Cebulski has 30 years of experience in transportation design of all phases from feasibility studies and preliminary engineering, through final design, to construction oversight. Jarrod spent 13 years of his career at the Illinois Department of Transportation District One. He serves as project Director for many of Patrick's largest highway projects and specializes in navigating the IDOT federal process for project development. Since coming to Patrick, he has amassed 17 years of experience in developing and coordinating Phase II Design Engineering on similar projects with the IDOT Bureau of Local Roads and Streets.

PROFESSIONAL EXPERIENCE

Main Street, Maple Ave. to Hinman Ave., City of Evanston, *Evanston, Illinois*
Project Director for a Phase I Study and Phase II Contract Plans for this roadway improvement project. The corridor traverses a downtown central business district. The scope of the improvement includes upgrading the roadway and utility infrastructure, improving the pedestrian and bicyclist environment, addressing ADA compliance requirements, and streetscaping. The project was processed for federal eligibility and included two Public Meetings and smaller group Advisory Committee Meetings. Patrick assisted the City with funding applications and secured an Invest in Cook grant to help fund the project.

79th Street, Madison Street to County Line Road, Village of Burr Ridge, *Burr Ridge, Illinois*
Project Director for the Phase I, II and III engineering for the resurfacing of 79th Street. The proposed improvements included milling and resurfacing of the existing pavement. The project also included the replacement of deteriorated curb and sidewalk, guardrail replacement, and drainage, traffic signal detector loop installation, and traffic control during construction. Patrick expertly coordinated the project with the Cook County Department of Transportation and Highways to secure a permit for traffic signal work on their system.

John Humphrey Drive at 143rd Street, Village of Orland Park, *Orland Park, Illinois*
Project Manager for a Phase I Study for the Village of Orland Park for the improvement of the John Humphrey Drive at 143rd Street intersection. The study was processed through the Illinois Department of Transportation Bureau of Local Roads & Streets for federal eligibility. This project is a precursor to a future planned study for the improvement of John Humphrey Drive from 143rd Street south to Mall Drive, a main entrance to Orland Square Mall. This intersection improvement includes additional auxiliary turning lanes, improved signalization, and pedestrian improvements. The improvement transitions into recent improvements at the 143rd Street at LaGrange Road intersection. The study also evaluated improvements to an existing dry land bridge along 143rd Street just east of John Humphrey Drive that will be impacted by the proposed improvement. The Phase I Study includes highway capacity studies, an Intersection Design Study, crash analyses, geometric development, environmental evaluation, structural studies, drainage studies, and the preparation of a Bridge Condition Report and Project Development Report.

Woodward Avenue, Internationale Parkway to the I-55 Bridge, Village of Woodridge, *Woodridge, Illinois*
Project Manager for the Phase I, II and III engineering for the resurfacing of Woodward Avenue from Internationale Parkway to the I-55 Bridge. The improvements included resurfacing and ADA improvements for a multi-use path. This project utilized STP federal funding, and therefore was processed through the IDOT Bureau of Local Roads & Streets. Due to added railroad work and involvement in State owned ROW near I-55, Patrick navigated this coordination and kept the project on schedule.

Illinois Route 120, Lake County Division of Transportation, *Lake County, Illinois*
Project Director for the Phase I Study and Phase II Contract Plan Preparation. Work included widening and resurfacing to provide a center bi-directional left turn lane to improve safety and traffic operations along the commercial corridor, addition of sidewalks on both sides of the roadway, and extensive right-of-way updates. This project was locally funded and was processed via a permit with the Illinois Department of Transportation. Specific responsibilities included overall project management and direction, coordination with IDOT and local agencies, leading the stakeholder involvement program, and quality control of all project deliverables.

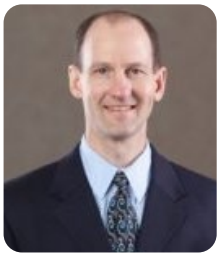
Washington Street from Hainesville Road to Lake Street, Lake County Division of Transportation, *Lake County, IL*
Project Manager for a Phase I Study and Phase II Contract Plans for the improvement of Washington Street from Hainesville Road to Lake Street. The scope of work included the reconstruction and widening of Washington Street from a two-lane to a five-lane cross-section. The project utilized federal funding. Patrick worked with the County to develop a creative funding package for two separate construction contracts.

Springinsguth and Wiley Roads Resurfacing Project, Village of Schaumburg, *Schaumburg, Illinois*
Project Manager for the Phase II contract plan preparation for the full-depth patching and resurfacing, as well as ADA ramp improvements for an existing multi-use path, of two major collector roads. This project utilized 80% STP federal funding, and therefore was processed through the IDOT Bureau of Local Roads & Streets. This project was completed on a very expedited schedule. During the course of the work, both projects were combined into a single plan set, with IDOT's approval. Two areas along Wiley Road were revised to full reconstruction to address pavement deterioration and upgrade a section of asphalt pavement to concrete. Geometric improvements were also incorporated at the Wiley/Tower intersection to improve turning radii for trucks. Enhancements were included in the plans, including aesthetic brick patterned crossing markings of Springinsguth Road at the primary entrance to the Schaumburg Boomers Baseball Stadium.

Kenilworth Avenue, Green Bay Road to Sheridan Road, Village of Kenilworth, *Kenilworth, Illinois*
Project Manager for a Phase I Study and Phase II Contract Plans for the Village of Kenilworth for the improvement of Kenilworth Avenue from Green Bay Road to Sheridan Road. The project included resurfacing the roadway, curb & gutter repair, and sidewalk and ADA improvements. The project utilized federal funding and was coordinated with the IDOT Bureau of Local Roads & Streets. The project includes geometric improvements for a mini-roundabout design at the intersection of Richmond Road near the west end of the project near the Village Hall and Metra Station. The existing Richmond Road intersection has a decorative circular feature in its center and the improvements will encourage safe consistent usage.

Kirk Road, Illinois Route 56to Cherry Lane, Kane County Division of Transportation, *Kane County, Illinois*
Project Manager for the Phase I Study and Phase II Contract Plans for this roadway improvement project, a distance of approximately 4.8 miles. This project used federal Highway Safety Improvement Program (HSIP) funding for systemic improvements to the corridor. The scope of the work included traffic signal improvements at four intersections by increasing signal head conspicuity (placing one signal head per center of each lane), installation of dynamic speed display signs, the addition of centerline rumble strips, wider reflective pavement markings for increased visibility, ADA sidewalk ramp improvements, and high-friction pavement surface treatment at the intersection with Cherry Lane. Patrick also coordinated this project with the Illinois Department of Transportation (IDOT) Bureau of Local Roads & Streets (BLRS) to ensure continued eligibility of the project for federal HSIP funding.

Illinois Route 47 at Waubonsee Drive/Old Oaks Drive, Waubonsee Community College, *Kane County, Illinois*
Project Director for the Phase I Engineering Study, Phase II Contract Plan Preparation, and Phase III Construction for the safety improvement at this intersection. The scope of work included the installation of a traffic signal, additional left-turning lanes, drainage improvements, and the re-alignment of Old Oaks Drive to mitigate a history of fatal crashes at this location. This project was coordinated through the IDOT Bureau of Local Roads and Streets and included an Intersection Design Study, highway capacity studies, drainage design, wetlands, and local coordination. Phase II included preliminary, pre-final, and final plan submittals, permit applications, land acquisition support, cost estimates, and coordination during Phase III construction.



Mike Dumas Project Engineer | Patrick Engineering Inc.

Education
B.S., Civil Engineering, University of Illinois-Chicago, 1995

Registration
Licensed Professional Engineer: IL

Expertise
Phase II design work, including management, design, coordination, scheduling, plan reviews, and quality auditing.

Mr. Dumas has experience in project management, program management, design consulting, intergovernmental agreements and quality management systems. He has managed and coordinated transportation projects and worked on program management teams for large capital improvement programs.

PROFESSIONAL EXPERIENCE

Main Street, Maple Avenue to Hinman Avenue, *City of Evanston*, *Evanston, Illinois*
Project Manager for the Phase II contract plan preparation for the improvement of Main Street. The corridor traverses a downtown central business district and an historic district within the City of Evanston. The scope of the improvement includes upgrading the roadway and utility infrastructure, improving the pedestrian and bicyclist environment, addressing ADA compliance requirements, and streetscaping. Vaulted sidewalks exist within the corridor and are being investigated. The project includes coordination with the CTA and Union Pacific Railroad regarding rail overpasses near the east end of the project. The project is being processed for federal eligibility.

Bridge Design Coordinator Services, Chicago Department of Transportation, *Chicago, Illinois*
Project Manager responsible for performing bridge design coordinator services for multiple Phase I and II projects from project inception to project closeout. This work included cost and schedule management, plan on hand field review meetings, preparation of applicable local, state and federal permits, leading progress meetings, utility coordination, detailed review of Phase I and Phase II documents including BCR, PDR, PESA, TS&L, and contract specifications and plans, coordination with adjacent property owners and community outreach, coordination with Coast Guard and U.S. Army Corps of Engineers, Design coordination during construction phase, and project closeout.

Wentworth Avenue Roadway Improvement from Glenwood-Lansing Road to Ridge Road , Cook County Department of Transportation and Highways, *Lansing, Illinois*
Project Manager for the Phase II contract plan preparation for the widening and reconstruction of 1.5 miles of a rural county roadway in a suburban setting. The project included the widening of two 12-foot lanes to three 11-foot lanes which included a bi-directional middle turn lane, curb and gutter, 10-foot multiuse path and an improved drainage system. The project utilized federal funds and was coordinated with the IDOT Bureau f Local Roads & Streets. Work performed on the project included a traffic study, new horizontal and vertical alignments, detailed detour and traffic control plan, railroad coordination and the design of a new drainage system.

Illinois Route 161 Reconstruction from Parkview Road to Moonglow Road, Illinois Department of Transportation – District 8, *Centralia, Illinois*
Project Manager for the Phase II contract plan preparation for the reconstruction and widening of Illinois Route 161. Project improvements included widening from a 2-lane section to a 4-lane section with a bi-directional middle turn lane, curb and gutter, 10-foot bike path, sidewalk, storm sewers, box culverts and a traffic signal.

Francis Road over I-80, Illinois Department of Transportation, *Will County, Illinois*
Project Manager responsible for the oversight, management, and deliverables review for the preparation of the Phase I Study for the improvement of the bridge carrying Francis Road over I-80 (099-0205). The existing structure is over 55 years old and has a sufficiency rating of 17. The scope of work of the project is to replace the two-lane

structure with a wider one to provide for wider shoulders. The project includes preparation of a Bridge Condition Report, Project Report, Traffic Management Analysis, and Location Drainage Study.

Illinois Route 64 Reconstruction from Illinois Route 59 to 38th Avenue, DuPage County Division of Transportation, *West Chicago and St. Charles, Illinois*
Project Manager for the Phase II contract plan preparation for the widening and reconstruction of the roadway. The project improvements included widening from a 4-lane section to a 6-lane section with a divided landscaped median, bridge reconstruction, MSE retaining walls, roadway lighting including lights adjacent to DuPage County Airport meeting FAA standards, and traffic signals with an interconnect. The project utilized federal funds and was coordinated with the IDOT Bureau of Local Roads & Streets.

South Lake Shore Drive Reconstruction – Jackson Park Section, Chicago Department of Transportation, *Chicago, Illinois*
Lead Project Civil Engineer for the $68 million reconstruction of Lake Shore Drive in Chicago. The Phase II project was funded by Illinois First, as well as federal funding, and included the preparation of construction documents for five separate contracts to be built over three years. The work consisted of 2.8 miles of 4- to 5-traffic lanes, seven intersections with interconnects, five new underpasses, new roadway lighting, and reconstruction of the historic Animal Bridge. The project also included the reconstruction of three parking lots. All of the construction was in historic Jackson Park and included enhancements in character with the park such as a boardwalk, extensive landscaping, and architectural precast treatment of bridges and walls.

Great Western Trail Extension, Leroy Oakes to Randall Road, Forest Preserve District of Kane County, *St. Charles, Illinois*
Project Manager for the Phase II contract plans for the extension of the Great Western Trail from the Leroy Oakes Forest Preserve to Randall Road. This new multi-use trail extension will be located along an abandoned Union Pacific Railroad (UPRR) corridor for a length of approximately 3,700'. The trail will be bituminous and have a width of 10'. The project is using federal ITEP funds and is being coordinated with the IDOT Bureau of Local Roads & Streets. The project includes permits from the US Army Corps of Engineers, a Kane County Stormwater Permit, and a Kane County Division of Transportation permit for work within the Randall Road ROW. Land acquisition services are also needed to obtain the needed property from the UPRR.

U.S. Route 6/159th Street over I-57, Illinois Department of Transportation, *Cook County, Illinois*
Project Manager responsible for the oversight, management, and deliverables review for the preparation of the Phase I Study for the improvement of the bridge carrying U.S. Route 6 over I-57 (SN 016-1013). The existing structure is over 50 years old and has a sufficiency rating of 48. The scope of work of the project is to rehabilitate and widen the four-lane structure to extend its useful service life and accommodate pedestrian and bicycle facilities on the structure. The project includes preparation of a Bridge Condition Report, Project Report, Traffic Management Analysis, and Location Drainage Study.

John Humphrey Drive at 143rd Street [2016-Ongoing], Village of Orland Park, *Orland Park, Illinois*
Project Engineer for a Phase I Study for the Village of Orland Park for the improvement of the John Humphrey Drive at 143rd Street intersection. The study was processed through the Illinois Department of Transportation Bureau of Local Roads & Streets for federal eligibility. This project is a precursor to a future planned study for the improvement of John Humphrey Drive from 143rd Street south to Mall Drive, a main entrance to Orland Square Mall. This intersection improvement includes additional auxiliary turning lanes, improved signalization, and pedestrian improvements. The improvement transitions into recent improvements at the 143rd Street at LaGrange Road intersection. The study also evaluated improvements to an existing dry land bridge along 143rd Street just east of John Humphrey Drive that will be impacted by the proposed improvement. The Phase I Study includes highway capacity studies, an Intersection Design Study, crash analyses, geometric development, environmental evaluation, structural studies, drainage studies, and the preparation of a Bridge Condition Report and Project Development Report.

Nicholas Schilling, PE Roadway QA | Patrick Engineering Inc.

Education
B.S, Civil Engineering, Bradley University, 2000

Registration
Licensed Professional Engineer: **IL**, CA
Envision Sustainability Professional (ENV SP)

Expertise
Traffic and Geometric Studies, Urban Design, Roundabout Design, Maintenance of Traffic, Cost Containment, Scheduling, Specifications, Stakeholder Coordination, Engineering Management

Mr. Schilling has over 20 years of experience in the design, development, and management of urban, corridor type reconstruction projects. His responsibilities plan all aspects of project management, planning, preparation of design drawings and specifications, cost estimating, environmental permitting, and stakeholder coordination.

PROFESSIONAL EXPERIENCE

Illinois Route 120, Lake County Division of Transportation, *Lake County, Illinois*
Technical Advisor for the Phase II Contract Plan Preparation for Illinois Route 120 from Knight Avenue to IL 131 (Green Bay Road) in Park City and Waukegan. Work included widening and resurfacing to provide a center bi-directional left turn lane to improve safety and traffic operations along the commercial corridor and addition of sidewalks on both sides of the roadway. This project is locally funded and is being processed via a permit with the Illinois Department of Transportation. Specific responsibilities included technical review and coordination with the design team.

IL Route 132 (Grand Avenue) Roadway Widening and Resurfacing, Dry Land Bridge and Box Culvert Replacement – Deep Lake Road to Munn Road, Illinois Department of Transportation, *Lake County, Illinois*
Project Manager for Phase II contract plans, specifications, permit applications, and estimates of time and cost for the $13 mil reconstruction of Illinois Route 132 from Deep Lake Road to Munn Road, in the Villages of Lindenhurst and Lake Villa in Lake County. The roadway widening will include left turn channelization and a median. Between Deep Lake Road and Munn Road, a shared-use path will be constructed on the north side of the road and sidewalk will be constructed on the south side of the road with ADA curb ramps. The project also includes the complete replacement of a 938' long dry land bridge.

Medinah Road Reconstruction, DuPage County Division of Transportation, *DuPage County, Illinois*
Staff engineer for the Phase I & II engineering for the reconstruction and widening of a two-mile portion of Medinah Road from Lake Street to Irving Park Road. The project included the widening of a two-lane, ditched road to a three-lane road with curb and gutter, and a new drainage system. The project also included a new retaining wall and eight-foot-wide bike path on one side.

Algonquin Road, McHenry County Division of Transportation, *McHenry County, Illinois*
Roadway engineer for proposed reconstruction of five miles of Algonquin Road from two lanes to five lanes. Developed the preliminary geometrics for the roadway.

Illinois Route 22 Reconstruction, Illinois Department of Transportation, *Village of Lincolnshire/Lake County, IL*
Lead project engineer for the roadway reconstruction, bridge rehabilitation, lighting, and traffic signals for the reconstruction of Illinois Route 22. The reconstructed road included new pavement, curb, and gutter, retaining walls, decorative medians and a new drainage system. The project also included a new bridge and a bike path. The project received a 2005 ACEC Merit Award.

Village of Lincolnshire Elm/Oxford to Oakwood Sidepath, Village of Lincolnshire, *Lake County, Illinois*
Roadway engineer involved with the development of an 8-foot sidepath on the north side of Illinois Route 22 from Elm Road/Oxford Drive to Oakwood Lane. The necessary right-of-way and grading easements were identified to accommodate the sidepath. Prepared the contract plans, specification, developed a cost estimate, and submitted the necessary permit to the Illinois Department of Transportation.

Chris Erwin, PE, SE Structural QA | Patrick Engineering Inc.

Education
M.S., 2004, Marquette University
B.S., Civil Engineering, 2002, Marquette University

Registration
Licensed Professional Engineer: CO, FL, IA, IL, IN, KY, MI, MN, OH, SC, UT, WI
Licensed Structural Engineer: IL

Expertise
All aspects of design work, including structural assessments, field investigation, remediation of existing buildings, permitting, and cost estimating.

Mr. Erwin has experience in the design and management of structural projects. Design experience includes a wide array of structure types including high rise, long span, industrial, and commercial. He has an extensive knowledge of complex steel and concrete structural design and has performed extensive FEM analyses.

PROFESSIONAL EXPERIENCE

Elmhurst Metra Station, Johns Manville, *Rockdale, Illinois*
Bridge inspection and rating for an existing structure providing only access to the Rockdale facility. Developed replacement options for consideration by the client, including engineering estimate of probable cost.

Bridge Inspection over I & M Canal, Johns Manville, *Rockdale, Illinois*
Bridge inspection and rating for an existing structure providing only access to the Rockdale facility. Developed replacement options for consideration by the client, including engineering estimate of probable cost.

CN over Washington Street, Lake County, *Grayslake, Illinois*
Structural Engineer for review of design plans and shop drawings for the railroad / highway grade separation project at Washington Street in Grayslake, Illinois.

West Lake Street, City of Chicago Bureau of Bridges and Transit, *Chicago, Illinois*
Structural Engineer for the proposed column relocations for the CTA structure over Ogden Avenue and column relocation plans for the CTA structure over Damen Avenue. Project provided reinforcing schemes for the 100-year-old girders at Damen Avenue and a 225-foot truss to span Ogden Avenue with sequencing to allow for construction without stopping service for the green line.

South Tri-State Tollway Reconstruction, Illinois Tollway, *Hazel Crest, Illinois*
Structural Engineer for the Master Plan, design and preparation of contract plans and documents for the widening and reconstruction of 1.3 miles of mainline pavement and shoulders, two mainline bridges, two cross road bridges, three box culverts, and twelve retaining walls. Developed Performance Specifications for Bridges and Retaining walls to allow contractors to develop bridge and retaining wall designs based on the type, size and location plans provided in the contract documents.

Arsenal Road over the BNSF Railroad and Jackson Creek, Will County Department of Highways, *Will County, Illinois*
Structural Engineer for the design review and shop drawing review for the reconstruction of 2.5 miles of Arsenal Road from a two- to a four-lane facility and the construction of a new bridge spanning both the Burlington Northern Santa Fe Railroad and Jackson Creek. The bridge was a three-span continuous steel plate girder superstructure on tall concrete abutments and drilled shaft bent piers. The project was part of the highway improvements to accommodate the increase of truck traffic from the Joliet Arsenal Intermodal facility.

Steve Lynch Plan Preparation | Patrick Engineering Inc.

Education
Bachelor of Engineering (B.E.)., Civil Engineering, Vanderbilt University, 2001

Registration
Licensed Professional Engineer: IL, MI

Expertise
Plans and specifications; preparation and submittal of permit applications with IDNR, ACOE, City of Chicago, and IDOT; and project related public involvement coordination with elected officials, utility owners and other project stakeholders.

Mr. Lynch's experience has encompassed design for site/civil, building structures, drainage, transportation (Roadway, Rail and Aviation) projects and construction management. Steve spent a year working for Patrick's general contractor, Albin Carlson, as a site superintendent for a major roadway/stormwater management project in suburban Cook County. This experience reinforced the importance of evaluating potential construction logistics and challenges during the design phase in order to successfully complete projects efficiently and on-time.

PROFESSIONAL EXPERIENCE

Burr Ridge Parkway Resurfacing, County Line Road to Bridewell Drive, Village of Burr Ridge, *Burr Ridge, Illinois*
Project Manager for the abbreviated Phase I Study and Phase II contract plans. Federal funds were used for construction necessitating coordination with the IDOT Bureau of Local Roads. The work also included a special waste PESA, survey, and a lighting assessment. An intersection safety and capacity analysis were also included, as well as a concept study for a pedestrian overpass across I-55. Primary responsibilities included the preparation of the Phase I plans depicting the improvements were prepared and the Phase II Contract Plans for the resurfacing improvements detailed in the scope of work.

Madison Street Viaduct , City of Chicago Department of Transportation, *Chicago, Illinois*
Project Manager for the Phase II Design of the reconstruction of the Madison Street viaduct over the Chicago Union Station Tracks. The project included geotechnical investigation to determine the capacity of the existing caissons, roadway and ADA sidewalk design, sub and super structural design, traffic signal design, roadway lighting, utility coordination, maintenance of traffic coordination with the adjacent Wacker Drive reconstruction project, and coordination with project stakeholders including Amtrak and Union Station. Design time was highly expedited to meet construction window coordinate with adjacent planned projects.

Illinois Route 22 at Interstate 94 Reconstruction, Illinois Department of Transportation, *Lincolnshire, Illinois*
Project Engineer responsible for completing unfinished Phase II drainage plans that had been shelved for 3 years. The project was the reconstruction of Illinois Route 22 at I-94 from Hewitt Drive to Lakeside Drive. Work consisted of revising trunk sewer layout to avoid conflicts, design of a storm water treatment system to meet local storm water ordinances, updating all detention calculations to meet current requirements, redesign and recalculation of compensatory storage requirements, utility coordination and updating specifications and quantities.

Center Street Reconstruction and Widening, Cook County Highway Department, *Harvey, Illinois*
Project Engineer. The project was for the complete reconstruction of the existing two-lane roadway to a three lane roadway with a bi-directional center turn lane. The project required coordination with the local municipalities, Canadian National (CN) Railroad, private and public utilities, and adjacent property owners. The proposed roadway is a concrete pavement with a combined closed and open drainage system through the project limits. Responsibilities: Concept design and contract Plan preparation including roadway and drainage plans, rail coordination, permitting, and cost estimating.

Eric Boelter, PE Plan Preparation | Patrick Engineering Inc.

Education
B.S., Civil Engineering, University of Illinois at Chicago, 2008

Registration
Licensed Professional Engineer: IL

Expertise
His experience includes traffic impact studies, traffic signal timing and operations, intersection design studies, highway capacity analysis, airport landside transportation planning, geometric roadway design and analysis, and construction inspection.

PROFESSIONAL EXPERIENCE

IL Route 132 (Grand Avenue) Roadway Widening and Resurfacing, Dry Land Bridge and Box Culvert Replacement – Deep Lake Road to Munn Road, Illinois Department of Transportation, Lake County, Illinois
Technical Reviewer for Phase II contract plans, specifications, permit applications, and estimates of time and cost for the $13 mil reconstruction of Illinois Route 132 from Deep Lake Road to Munn Road, in the Villages of Lindenhurst and Lake Villa in Lake County. The scope of work for this 0.89 mile project includes complete removal and reconstruction of a dry land bridge and the replacement of a reinforced concrete box at Hastings Creek. The opening and length of the reinforced concrete box culvert will be increased to improve flow conveyance and accommodate the widening of IL 132. The roadway widening will include left turn channelization and a median. The profile of IL 132 will be raised approximately 3 feet to mitigate flooding within the project limits. Between Deep Lake Road and Munn Road, a shared-use path will be constructed on the north side of the road and sidewalk will be constructed on the south side of the road. ADA curb ramps are proposed at all pedestrian routes within the project limits. Resurfacing and curb replacement of IL 132 is proposed west of Deep Lake Road to the estimated project limits at Sheehan Drive.

Illinois Route 120, Lake County Division of Transportation, *Lake County, Illinois*
Project Engineer responsible for the Phase I geometrics and Phase II contract plan preparation for Illinois Route 120 from Knight Avenue to IL 131 (Green Bay Road) in Park City and Waukegan. Work included widening and resurfacing to provide a center bi-directional left turn lane to improve safety and traffic operations along the commercial corridor, addition of sidewalks on both sides of the roadway, and extensive right-of-way updates. This project was locally funded and was processed via a permit with the Illinois Department of Transportation.

Plank Road at IL 47, Kane County Division of Transportation, *Illinois*
Project Engineer for the Phase II development of contract plans and cost estimating for the improvement of the intersection of Plank Road with Illinois Route 47. The project included pavement widening and resurfacing for the addition of left turn lanes on Plank Road and right turn lanes on Illinois Route 47.

Rakow Road from Ackman Road to Illinois Route 31, McHenry County Division of Transportation, *Illinois*
Project Engineer for the preparation of Phase II contract plans for this 3-mile arterial highway from Ackman Road to Illinois Route 31. Work included the addition of mainline lanes in each direction as well as turn lanes at six signalized intersections, and a major realignment of the roadway.

Illinois Route 22 Emergency Access Improvements, Village of Lincolnshire, *Lincolnshire, Illinois*
Project Engineer for the design of a second access drive to serve as an emergency access for the Lincolnshire Village Hall and Police Station complex. Access to the site is currently provided via one driveway to Old Half Day Road and this second access will be off of IL 22, which is a heavily travelled roadway under the jurisdiction of IDOT. As such, an IDOT permit is required for this work. The project is evaluating traffic impacts, design challenges (turning movements, steep grade between the existing parking lot turnaround and the State highway), drainage (new culvert, floodplain impacts, and compensatory storage), and environmental concerns (wetlands and trees). A Lake County Stormwater Management permit is also needed for this project.

Adam Newman, PE Maintenance of Traffic | Patrick Engineering Inc.

Education
B.S., Civil Engineering, Purdue University, 2014

Registration
Licensed Professional Engineer: IL

Expertise
Mr. Newman is responsible for completing project studies, plan preparation, field visits, highway design calculations, cost estimates, and quantity calculations for Phase I and Feasibility studies, Phase II Design and contract plans, and Phase III Construction Supervision. Responsibilities have ranged from technical design, to plan preparation, to construction inspection, and most recently roadway modeling and design.

PROFESSIONAL EXPERIENCE

Main Street Reconstruction, Maple Avenue to Hinman Avenue, City of Evanston, *Evanston, Illinois*
Staff Engineer for Phase II Engineering Services for the reconstruction and streetscaping of Main Street. The scope of the project includes complete reconstruction of the pavement structure and sidewalks on Main Street, replacement of a water main, reconstruction of a traffic signal at Sherman Avenue, modernizing a traffic signal at Chicago Avenue, addition of midblock crossings and a speed table in between Sherman Avenue and Custer Avenue, adding permeable pavers to the street parking, lighting improvements, ADA improvements at all of the sidewalks, and beautification improvements such as new trees, benches, litter and recycling receptacles, and new signage. Responsibilities include plan preparation of plan and profile, removals, erosion control, drainage, maintenance of traffic, intersection details, signing, pavement markings, typical sections, ADA ramps, and alignment and ties. Responsibilities also include quantity calculations, creating cost estimates, and coordinating with each subconsultant.

IL Route 132 (Grand Avenue) Roadway Widening and Resurfacing, Dry Land Bridge and Box Culvert Replacement – Deep Lake Road to Munn Road, Illinois Department of Transportation, *Lake County, Illinois*
Staff Engineer for Phase II plan preparation, maintenance of traffic plans, and utility conflict analysis for the $13 mil reconstruction of Illinois Route 132. The scope of work for this 0.89 mile project includes complete removal and reconstruction of a dry land bridge and the replacement of a reinforced concrete box at Hastings Creek. The opening and length of the reinforced concrete box culvert will be increased to improve flow conveyance and accommodate the widening of IL 132. The roadway widening will include left turn channelization and a median. The profile of IL 132 will be raised approximately 3 feet to mitigate flooding within the project limits. Between Deep Lake Road and Munn Road, a shared-use path will be constructed on the north side of the road and sidewalk will be constructed on the south side of the road. ADA curb ramps are proposed at all pedestrian routes within the project limits. Resurfacing and curb replacement of IL 132 is proposed west of Deep Lake Road to the estimated project limits at Sheehan Drive.

Illinois Route 120, Lake County Division of Transportation, *Lake County, Illinois*
Staff Engineer for the Phase II Contract Plan Preparation for Illinois Route 120 from Knight Avenue to IL 131 (Green Bay Road) in Park City and Waukegan. Work includes widening and resurfacing to provide a center bi-directional left turn lane to improve safety and traffic operations along the commercial corridor, addition of sidewalks on both sides of the roadway, and extensive right-of-way updates. This project is locally funded and is being processed via a permit with the Illinois Department of Transportation. Specific responsibilities included preparing maintenance of traffic plans, detour plans, pay item quantity calculations, and quantity checking.

Illinois Tollway - Roadway and Bridge Rehabilitation – Veterans Memorial Tollway, M.P. 22.3 (Butterfield Road) to M.P. 29.8 (Army Trail Road), Illinois Tollway, *DuPage County, Illinois*
Staff Engineer responsible for plan preparation and maintenance of traffic plans for the $51 mil roadway and bridge rehabilitation and widening along a seven mile stretch of the Veterans Memorial Tollway (I-355).

Yinghong Cao, PhD, PE, SE Lead Structural Engineer | Patrick Engineering Inc.

Education

Ph.D., Structural Engineering, Tongji University, China, 1999
M.S., Structural Engineering, Southwest Jiaotong University, China, 1996
B.S., Civil Engineering, Southwest Jiaotong University, China, 1993

Registration

Licensed Professional Engineer: IL, WI, IA, IN, MI, WA
Licensed Structural Engineer: IL, WA

Expertise

His expertise includes complex bridge analysis, structural dynamics, wind engineering, seismic design, rail-structural interaction, and structural health monitoring. He has designed/analyzed bridges all cross the US, including high-speed rail bridges, tied-arch bridges, cable-stayed bridges, and other highway/railway bridges. He developed two computer programs to perform structural dynamic analysis and rai-structure interaction for railway bridges.

PROFESSIONAL EXPERIENCE

Illinois Route 132 Dry Land Bridge (Grand Ave), Illinois Department of Transportation, *Lake County, Illinois*
Lead Bridge Engineer. This is a replacement dry land bridge on the uncapable ground soil. The bridge is 938 ft long with 42 spans varying from 20 ft to 25 ft. Deep Metal Shell (MS) piles are used to support the bridge. Responsibilities are leading the final production of the design, managing, and checking the drawings, calculations.

Canal Street Viaduct – Harrison St to Taylor St, Chicago Department of Transportation, Cook County, Illinois
Provided conceptual investigation and design review for the replacement of the Canal Street Viaduct between two city blocks, abutment relocation, streetscape improvements, full-depth access road replacement, pavement resurfacing, and coordination with adjacent property owners including the USPS, Amtrak, and private businesses. Construction is slated to begin in 2023, coordination with project stakeholders, design teams, and the client are to be continued for the duration of the project.

CREATE P3 / GS19 75th Street Corridor Improvement Project [2020-Ongoing], CSX Transportation, *Chicago, Illinois*
Lead Bridge Engineer. This is the largest project in the CREATE program located in the Chicago neighborhoods of Ashburn, Englewood, Auburn Gresham and West Chatham along two passenger and four freight rail lines. The structural work is to elevate the plain intersection near 75th St with a bridge of 38 spans and two other bridges over 69th St and 71st St. The main bridge includes 2 flyover crossing spans, 3 straddle bents and 33 approach spans. The 69th St and 71st St bridges are single-span deck girder bridges. Responsibilities include leading the design of the 69th St Bridge and providing peer review to the design of the main bridge.

JEF-7 Bridge Rehabilitation, Ohio Department of Transportation, *Jefferson County, Ohio*
Lead Bridge Engineer. This is a seven-span highway bridge that was built in 1965 and 1994. The bridge has tall slender piers with high skew of 55 degrees. Some rocker bearings are significantly tilted and deteriorated. The plan was to investigate the feasibility of rehabilitation through bearing replacement. Responsibility was leading the advanced structural analyses investigating the causes of structural problems and structural behavior during bearing replacement. The analyses were based on complex 3D plate models in LARSA 4D. Performed analyses included staged construction, dead load, live load, thermal load and bearing jacking activities.

Burlington Bridge Overlay Replacement, Iowa Department of Transportation, *Burlington, Iowa*
Lead Investigator. The US 34 Burlington Bridge was opened to traffic in 1993. The main river crossing unit is a cable-stayed bridge with a 660-ft main span, composite steel superstructure supported by a reinforced concrete tower. The project was to investigate the feasibility, constructability, staging and sequencing for replacement of the overlay and the barrier rails on the cable stayed spans while maintaining traffic with reduced lanes. Responsibilities included investigating the structural behavior during construction using LRASA-4D, proposing construction staging sequence and providing design drawings.

Praaveenyan Vangara, EIT Structures | Patrick Engineering Inc.

Education

M.S., Civil Engineering, specializing in Structural Engineering, Georgia Institute of Technology, Atlanta, USA, 2017
B.Tech., Civil Engineering, Indian Institute of Technology, Madras, India, 2016

Expertise

Mr. Vangara has experience in planning, designing, evaluating, inspecting and load rating various reconstruction and rehabilitation bridge projects (steel, prestressed, RC) in Illinois. He coordinated with various municipalities, counties and IDOT on multiple bridge projects. He worked on design and analysis of many structural systems and he is well versed in the bridge design, hydraulics and load rating software such as AASHTOWare BrR, RISA, DCALC, CSiBridge, Pile Buck SPW911, HEC-RAS, customized Mathcad and spreadsheets.

PROFESSIONAL EXPERIENCE

Geneva Road over W Branch of DuPage River, DuPage County Division of Transportation, *DuPage County, Illinois*
Project Engineer for preliminary design of a bridge replacement project. The project involves replacement of a 2-span PPC deck beam bridge over closed abutments. The project includes a grade raise of more than 7 ft. and increase in footing depth by several feet. Responsibilities include preliminary superstructure and substructure layout, preliminary structural design and development of Type, Size and Location drawing.

Alpine Road over Forest Hills Road, Winnebago County Highway Department, *Winnebago County, Illinois*
Structural Engineer for preliminary and final design engineering for the removal and replacement of the existing concrete deck of a four span (52′ -6″ ; 70′ -8″ ; 70′ -8″ ; 50′ -0″) steel beam bridge, skewed 48 degrees right ahead, along with grade raise of about 2.5′ to provide adequate vertical clearance for the underpass traffic under staged construction. Phase-I responsibilities included site inspection, environmental coordination, permitting with IDOT, bridge condition report, preliminary bridge design report, project development report, utility coordination and preliminary bridge design. Phase-II responsibilities included partially composite steel superstructure design, FEM analysis to verify lateral stresses, bearing design, substructure structural evaluation, Segmental Block Wall layout, development of structural contract plans and estimates, and coordination with IDOT District 2.

F.A.S. Rte. 38 (Harrison Road) over Sugar River, Illinois Department Of Transportation, *Winnebago County, Illinois*
Structural Engineer for inspecting and performing load rating for a single span (1@150′) steel truss bridge originally constructed in the year 1922 and rehabilitated in 1960. Responsibilities included field inspection with deterioration log, load rating of the bridge, damaged members and gusset plates, and bridge condition report preparation.

Rehabilitation of Five Bridge & Culvert structures, Will County Division of Transportation, *Will County, Illinois*
Structural Engineer for a rehabilitation project that involved repairs/rehabilitation of 5 bridge/culvert structures. Phase-I responsibilities included environmental coordination, hydrologic and hydraulic calculations, designing scour protection, hydraulic reports and utility coordination. Phase-II responsibilities involved designing a skewed anchor-tie back system, permanent sheet piling, checking a slab bridge design, preparing rehabilitation plans, specifications and estimates.

Goodenow Road over Plum Creek, Will County Division of Transportation, *Will County, Illinois*
Design Engineer for the wingwalls of a triple barrel box culvert. Due to the conflicts with underground utilities, typical concrete cantilever wingwalls were modified to soldier pile wingwalls. Responsibilities included soldier pile layout to miss the utilities, designing soldier pile wingwalls and shop drawing review.

Cedar Road over Spring Creek, Will County Division of Transportation, *Will County, Illinois*
Structural Engineer for the preliminary re-design engineering of a bridge replacement project. The proposed structure is a single span PPC-I beam bridge on integral abutments. The bridge width was reduced to account for the Right-Of-Way issues. Phase-I responsibilities included preliminary design checks for a new superstructure layout, stage construction layout, environmental coordination and rechecking hydraulic adequacy. Phase-II responsibilities included preparing prefinal plans, specifications and estimates.

Steve Kroll, PG Special Waste | Patrick Engineering Inc.

Education
M.S., Geology, Northern Illinois University, 2004; B.S., Environmental Science, Bradley University, 1999

Registration
Licensed Professional Geologist: IL, IN, WI

Expertise
Mr. Kroll is responsible for the planning and implementation of hydrogeological and environmental investigations, review and analysis of geological and environmental data, and managing multiple environmental and geological projects.

PROFESSIONAL EXPERIENCE

Site Remediation Program (SRP) Investigation and Reporting, City of West Chicago, *West Chicago, Illinois*
Managed the investigation and reporting for parcel of land enrolled in the Illinois Site Remediation Program that the City wished to develop for both municipal and commercial use. The site was impacted by several different classes of contaminants including VOCs, SVOC's and heavy metals as well as radium. Tasks completed included several rounds of field investigations, data analysis and modeling, design of remediation strategies, and reporting. Future tasks will include additional design and implementation of remedial strategies and confirmation sampling and reporting.

Illinois Route 120 from Knight Road to Illinois Route 131, Lake County Division of Transportation, *Lake County, Illinois*
Project Geologist for preparation of the special waste Preliminary Environmental Site Assessment (PESA) during Phase I engineering and the Preliminary Site Assessment (PSI) during Phase II engineering. The proposed improvement included the reconstruction and widening of Route 120 to provide a central turn lane for both directions.

Site Remediation Program (SRP) Remediation, Illinois Tollway Authority, *Itasca, Illinois*
Conducted field oversight for the environmental remediation of a parcel of land that will be used for stormwater retention as part of the Elgin-O'Hare Expressway. The site had several underground storage tanks and buried solid waste from historical uses. Tasks completed included confirmation sampling, determination of soil disposal options, and coordinating activities between the environmental consultants and the contractor.

Preliminary Environmental Site Assessments (PESAs), Various Clients, *Illinois*
Managed the investigation and reporting for several PESA's at various locations in Illinois in support of large transportation projects. Tasks included planning and coordination of investigation activities, review of environmental documents, site reconnaissance, and development of PESA reports.

Main Street Evanston, City of Evanston, *Cook County, Illinois*
Project Geologist for preparation of the special waste Preliminary Environmental Site Assessment (PESA) during Phase I engineering and the Preliminary Site Assessment (PSI) during Phase II engineering as well as a subsurface investigation for potential vaulted sidewalks. The PESA identified several potentially impacted properties that were further investigated during the PSI. The results of the PSI were used to prepare a soil disposal plan that met IDOT requirements. The proposed improvements included resurfacing of the roadway and sidewalks as well as streetscaping.

Kirk Road from Cherry Lane to Illinois Route 56, Kane County Division of Transportation, *Kane County, Illinois*
Project Geologist for preparation of the special waste Preliminary Environmental Site Assessment (PESA) during Phase I engineering and the Preliminary Site Assessment (PSI) during Phase II engineering. The proposed improvement included the reconstruction of several intersections to improve safety.

Anthony DeRicco, PE, LEED AP, LC Lighting | Christopher B. Burke Engineering

Education
Bachelor of Science, 1990 Electrical Engineering University of Illinois at Chicago

Registration
Professional Engineer, IL, 062.057484, 2004; Professional Engineer, WI, 42880-6, 2013; LEED Accredited Professional

Expertise
Responsibilities include assessing initial design criteria, evaluating design scenarios, creating photometric design submittals, creating exhibits, designing and constructing complete CAD drawings, generator sizing, developing cost estimates, shop drawing review, QA/QC review and construction observation.

PROFESSIONAL EXPERIENCE

Broadway Street Reconstruction and Streetscape, *Coal City, Illinois*
Project Engineer. Project included approximately 3,400' of roadway widening and streetscape improvements. Project consisted of removal of existing lighting and installation of 42 new decorative type light poles and 1 new lighting controller. New light poles were 35' tall with 172W decorative teardrop type LED luminaires and GFCI receptacles. Also included design of conduits/handholes for future fiber optic cable and CCTV cameras. Project was let by IDOT. Duties included photometric calculations, electrical design, creation of contract drawings and specifications, summary of quantities, engineer's cost estimate, new electric service coordination, shop drawing review and construction observation.

Roadway and Bridge Reconstruction (I-294) Mile Long Bridge, *Willow Springs/Hodgkins/Countryside, Illinois*
Project Manager. Project included approximately 11,000' of interstate widening (5000' of which were on a bridge). Project consisted of removal 81 light poles, 114 temporary wood light poles, 131 proposed light poles, 24 underpass luminaires, 3 lighting controllers and waterway navigation lighting. Also included was coordination with pole manufacture for design of 21 custom temporary 60' steel poles attached to bridge pier caps. Project was permitted thru IDOT and the US Coast Guard. Project was Tollway let. Duties included master plan design options, photometric calculations, electrical design, creation of contract drawings and specifications, summary of quantities, engineer's cost estimate, and new electric service coordination.

Stage 1D-Harrison and Main Streets, *Algonquin, Illinois*
Project Engineer. Project included approximately 2300' of roadway lighting improvements. Project consisted of removal of existing lighting and installation of 49 new decorative type roadway and pedestrian lighting units and one new lighting controller. Roadway lighting units were 25' and 30' tall with decorative LED type luminaires and GFCI receptacles. Pedestrian lighting units were 14' tall with decorative acorn LED type luminaires and GFCI receptacles. There were three roadway cross sections and one roundabout that required photometric calculations. Project was IDOT let. Duties included photometric calculations, electrical design, creation of contract drawings and specifications, summary of quantities, engineer's cost estimate, and new electric service coordination.

IL Route 59 and Black Road, *Shorewood, Illinois*
Project Manager. Project included approx. 10,300' of roadway lighting along IL 59 (from Ridge Rd north to Village limits) and along Black Road (from Parkshore Dr to Shock Dr). Project consisted of 129 new decorative roadway type light poles and 2 new lighting controllers and modifications to an existing controller. Scope included IDOT permitting, photometric calculations, electrical design, creation of contract document, drawings and specifications, summary of quantities, engineers cost estimate, new electric service coordination, utility relocation coordination, evaluated design alternatives using LED luminaires, revisions to Village's pole standard, bidding assistance and construction observation.

Frank Nemes, PE, PTOE Signals | Christopher B. Burke Engineering

Education
Master of Science, 2000 Computer Science, Illinois Institute of Technology; Bachelor of Science, 1994 Civil Engineering Marquette University

Registration
Professional Engineer, IL, 062.052813, 1999; Professional Traffic Operations Engineer

Expertise
Traffic Engineer involved in projects concerned with traffic signals, Signal Coordination and Timing (SCAT), and traffic operations analysis. Responsibilities include preparation of intersection design studies, traffic signal design, railroad sequences, isolated intersection capacity analysis and development of Time-of-Day (TOD) and Traffic Responsive Program (TRP) closed loop system signal timings utilizing both Eagle/Tactics and Econolite/Aries controller software.

PROFESSIONAL EXPERIENCE

Signal Coordination and Timing (SCAT), Illinois Department of Transportation, *Various Locations, Illinois*
Districts 2-5: PTB 124-028; PTB 162-035; PTB 130-014; PTB 172-029; PTB 138-026; PTB 184-037; PTB 142-027; PTB 192-023 **Districts 2-5:** PTB 134-014; PTB 150-046; PTB 158-038

Phase I Study), Illinois Department of Transportation, *District 1, Illinois*
Traffic operations analysis of IL Rt 60 (Half Day Rd) and I-94. Traffic modeling using Synchro, Sim Traffic and HCS for alternatives analysis and operational evaluation.

Design Services), Illinois Department of Transportation, *District 1, Illinois*
Grounding research and design. Developed specifications and design standards for grounding systems at signalized intersections.

Illinois Department of Transportation, *District 1, Illinois*
Sequence of Operation, Railroad Sequence of Operation and Emergency Vehicle Sequence of Operation for various intersections in Cook, DuPage, Lake and Will Counties. Developed new format for railroad sequence of operation.

Signal Coordination and Timing (SCAT), Cook County Department of Transportation and Highways, *Illinois*
Project included two intersections on Park Blvd from Devon Ave to Pierce Rd.; five intersections on Old Orchard Rd from Woods Dr to Lavergne Ave.; nine intersections on Lake Cook Rd and three intersections on IL Rt 83.; four intersections on Meacham Rd from Nerge Rd to Home Depot/Texas St.; 21 intersections on Lake Cook Rd from Portwine Rd to US Rt 41 ramps; 17 intersections along Schaumburg Rd from Martingale Rd to Knollwood Dr, funded through CMAQ program; 6 intersections on Arlington Heights Rd from Devon Ave to Oakton St, funded through CMAQ program and 3 intersections on 127th St from Timberline Drive to I-355 ramps.

Signal Coordination and Timing (SCAT), McHenry County Division of Transportation, *Illinois*
Project included Traffic Signal Timing Assistance and Review; 18 intersections along Randall Rd/Rakow Rd, Algonquin Rd, Virginia Rd and Pyott Rd. and 3 intersections on Randall Rd from Huntington Dr/Bunker Hill Dr to Acorn Ln.

Cedar Road and Haven Avenue, New Lenox
Project Manager and Project Engineer. Phase I project to construct oval type roundabout through the existing two stop controlled intersections on Haven Avenue at Cedar Road. Responsibilities included crash analysis, capacity analysis, warrant analysis and FHWA crash prediction.

Deerfield Rd to I-94 Southbound Ramp, Lake County Department of Transportation, *Illinois*
Project Engineer. Phase I project to reconstruct Deerfield Road from Milwaukee Avenue (US 45/IL 21) to Saunders/Riverwoods Road to address existing and future capacity, mobility, safety, and operational deficiencies associated with this section of Deerfield Road. Responsibilities included 2040 volume development and CMAP concurrence, crash analysis, capacity analysis, QA/QC Synchro model and calibration of SimTraffic model.

Digna Gomez Land Acquisition | Right of Way Acquisitions, Inc.

Education

A. A. Applied Science, Paralegal Studies, Northwestern Business College, Chicago, IL, 2002

Licenses/Certifications

Ilinois Real Estate Broker, Certified Paralegal, IDOT Approved Negotiator, IDOT Approved Relocation Agent, IRWA Relocation Assistance Certification, IRWA Negotiation Certification, Candidate, Certified Illinois Notary Public , SARPA Scholarship Award

Expertise

IDOT approved Negotiator Expert who manages title and condemnation files by maintaining channels of communication between the Department and the Negotiators in an effort to obtain approval from both the Office of Chief Counsel and the Attorney General's office. Digna oversees quality assurance and control by ensuring that property acquisitions and negotiations with property owners are in compliance with applicable regulations and the Land Acquisition Policies and Procedures Manual. She also manages warrant requests, recording of conveyance documents; title policy requests and payment to property owners. As IDOT's Negotiation Management Assistant, Digna was responsible for processing and obtaining approvals on the Wood Street project, which consisted of 273 parcels. This job required a high demand since limited time was given to receive federal funding.

PROFESSIONAL EXPERIENCE

Various Projects, Illinois Department of Transportation
Job# R-91-035-09 / IL 59 - N. Aurora Rd. to New York St. (22 Partial Take Acquisitions, Permanent & Temporary Construction Easements)
Job# R-91-001-15 / US 14 @ CN Railroad (5 Full Take Acquisitions)
Job# R-91-012-10 / I-80 @ US 30 (6 Permanent & Temporary Construction Easements involving parcels owned by Public Agencies including Forest Preserve District, ComEd & Metra)
Job# R-91-069-00 / IL 53 from Elgin O'Hare to Army Trail Road (23 Partial Take Acquisitions)
Job# R-91-067-01 / IL 59 from IL 126 to Caton Farm Rd (16 Temporary Easement Renewals)

Various Projects, Illinois Tollway
Job: Elgin – O'Hare Expressway
(62 Partial Take Acquisitions, Permanent & Temporary Construction Easements)
Job: I-294/I-57 Interchange (15 Full Take Acquisitions)

Negotiation/Acquisition Support, *Illinois* Department of Transportation, *Bureau of Land Acquisition, District 1 Office*
IDOT approved Negotiator Expert who manages title and condemnation files by maintaining channels of communication between the Department and the Negotiators in an effort to obtain approval from both the Office of Chief Counsel and the Attorney General's office. Digna administers quality assurance and control by ensuring property acquisitions and negotiations with property owners are in compliance with applicable regulations and the Land Acquisition Policies and Procedures Manual. She also manages warrant requests, recording of conveyance documents, title policy requests and payment to property owners. As IDOT's Negotiation Management Specialist, Digna was responsible for processing and obtaining approvals on the Wood Street project, which consisted of 273 parcels. This job required a high demand since limited time was given to receive federal funding.

Relocation Agent, Chicago-O'Hare International Airport, O'Hare Modernization Project, O. R. Colan Associates, *Chicago, Illinois*
Conducted property owner and tenant interviews; performed replacement housing searches and calculations; provided relocation advisory services; and prepared relocation claims. Maintained acquisition and relocation project files to ensure FAA agency compliance and to provide data base support. Ordered and received title commitments and researched title discrepancies; maintained surveys, environmental reports, appraisals, and review appraisals; coordinated regulatory notices; and researched Township Assessor's Office for property assessments. Served as an information manager for the office; scheduled meetings and appointments; organized and maintained paper and electronic files; and provided project information to clients, property owners & stakeholders.

Keith T. Tadrowski Appraiser | "T" Engineering Services

Education

Bachelor's of Science in Electrical Engineering, University of Notre Dame, South Bend, Indiana; Masters in Fine Arts, from New York University, Tisch School of the Arts, New York, New York; Specialized education includes course with the Appraisal Institute: 1A1, Real Estate Appraisal Principles; 120, Appraisal Procedures; 410 USPAP, Part A (USPAP); 210 Residential Case Study; 310 Basic Income Capitalization; 320 General Applications

Registration

State Certified General Real Estate Appraiser, State of Illinois No. 153.0001238; IDOT Approved Fee Appraiser & Review Appraiser

Expertise

Mr. Tadrowski has been a Real Estate Appraiser, Analyst, and Consultant since 1989. "T" Engineering Services, which was formed in 1970, is organized to perform a comprehensive list of services including real estate appraisal, appraisal review, expert witness court testimony, and cost to cure estimate. Mr. Tadrowski has been on the Illinois Department of Transportation Approved Appraiser list since 1996, and concentrates on the appraisal of proposed right-of-way for State, County, and Municipal clients.

PROFESSIONAL EXPERIENCE

Elgin-O'Hare Expressway Western Access, Illinois Tollway, *Illinois*
This project includes: 1) extending Illinois Route 390 to O'Hare and constructing or improving interchanges at Illinois Route 53, I-290, Park Boulevard, Arlington Heights Road/Prospect Avenue, Wood Dale Road and Illinois Route 83; 2) constructing a new road connecting I-90 and I-294 west of O'Hare and interchanges at I-294, Green Street, Franklin Avenue, Irving Park Road, Illinois Route 390, Higgins Road and I-90; and 3) providing direct access to O'Hare property from York Road via a new ramp crossing over York Road and the Union Pacific Railroad and Canadian Pacific Railway. Appraisals were prepared on properties located in Franklin Park, Elmhurst, Elk Grove Village, Schiller Park, Berkeley, Northlake, and Bensenville. Property types were mostly small and large-scale industrial buildings, but also included single-family residences, auto repair facilities, an adult entertainment complex, public street right-of-ways, parks, billboards, retail showrooms, a recycling plant, an asphalt plant, and office buildings

Mile Long Bridge, Illinois Tollway, *Hodgkins, Illinois*
This project involves the building of a new bridge along a stretch of I-294 between 75th Street and La Grange Road. The existing bridge is 61 years old, and a new bridge is to be constructed to the east of the existing bridge.
Appraisal assignments were generally industrial in nature and included a liquid transfer facility, a food processing plant, a truck yard, warehouses, public right-of-way, billboards, and a railroad.

IL Route 83 at Atkinson Road, Illinois Department of Transportation, *Grayslake, Illinois*
This project involves realigning Route 83 to meet the new Atkinson Road extension and relocating the Route 83 / Route 137 intersection. Appraisal assignments included a boat sales building, a material storage facility, a car dealership, a gas station, multiple auto repair, fast food restaurant, two small strip centers, a large shopping center, a home supply retail store, and a bus depot.

Illinois 7 (159th Street), Illinois Department of Transportation, *Homer Glen, Illinois*
The proposed improvement involved widening of IL Route 7 (aka 159th Street) between I-355 and Will-Cook Road. The Project involved valuation analysis of commercial, industrial, and residential properties sought by the Department of Transportation. The properties appraised included retail buildings, auto repair, light industrial, and other uses. There were major damages on many of the properties including loss of parking, and cost to cure.

US 45 (La Grange Road), Illinois Department of Transportation, *Orland Park & Tinley Park, Illinois*
The proposed improvement involved widening US 45 (La Grange Road) from 131st to 179th Street through Orland Park and Tinley Park from a four-lane to six-lane arterial route. The Project involved valuation analysis of generally commercial properties (with some scattered single-family residences) sought by the Department of Transportation. The properties appraised included big box retail, strip centers, auto repair, a funeral home, motel, hotel, animal hospital, medical offices, banks, and large-scale shopping centers. There were major damages on many of the properties including loss of parking, and cost to cure.

Miroslaw Antas, PE Drainage | Christopher B. Burke Engineering

Education

Master of Science, 2006 Civil Engineering|University of Illinois at Chicago; Bachelor of Science, 2003 Civil Engineering; University of Illinois at Chicago

Registration

Professional Engineer, IL, 062.060781, 2008

Expertise

Civil Engineer experienced in drainage design. In addition to his experience at CBBEL, Miro took part in a 2-year training program at USACE Chicago District which included a series of rotation assignments within the various engineering functional areas. Current responsibilities include creation of Location Drainage Study, hydraulic reports, storm sewer design, existing drainage plan, proposed drainage plan and profile using MicroStation and GeoPak, quantity calculation, preparing cost estimate, and project budget tracking. Preparation of several Phase I and Phase II contract plans. Drainage calculations include the use of several computer applications for culvert sizing, inlet spacing, storm sewer design, and ditch capacity.

PROFESSIONAL EXPERIENCE

Elgin O'Hare Western Access (I-490) and Tri-State Tollway (I-294) between North Ave and Wolf Rd, *DuPage and Cook Counties, Illinois*

Project Lead Engineer for Phase II drainage plans. Project includes approx. 3.2 miles of expressway and interchanges in 2 watersheds. Completed an Existing Drainage Plan and Proposed Drainage Plan. Design of proposed storm sewer system, roadway ditches, crossroads culverts and integration of BMP features. Calculated detention and compensatory storage requirements, preparation of several technical memorandums, cost estimate and quantity calculations for each of the 8 contracts within project limits. Attended all project coordination meetings with local municipalities and the client. Responsible for all project submittals.

Municipal Project Engineering and Management, *Wilmette, Illinois*

Project Manager for assisting Village with engineering permit reviews for compliance with local regulations, issuing permits, on-site construction inspections on private development sites and addressing residential concerns.

Aptakisic Road, *Buffalo Grove and Lake Zurich, Lake County, Illinois*

Preparation of drainage study for a 1.5-mile roadway widening between IL 83 and Buffalo Grove Rd. Development of existing and proposed drainage plans. Design of crossroad culverts, roadway ditches, proposed storm sewer system and detention ponds. Prepared 3 water information tables for major crossings.

US Route 14, *Barrington, Lake County, Illinois*

Preparation of Phase I LDS for roadway widening and underpass between IL 59 and Valencia Ave. Development of existing and proposed drainage plans. Design of oversized storm sewer system, conveyance sewers and detention ponds. Attended coordination meetings and public hearing.

Elgin O'Hare Western Access, IDOT/Illinois Tollway, *DuPage and Cook Counties, Illinois*

Project Manager. Preparation of drainage study for entire corridor, which was broken down into several projects. Study includes approx. 52 miles of expressway and interchanges over 8 watersheds, including Elgin O'Hare Expressway/Thorndale Ave, I-90 and I-294. Analyzed/integrated survey data with record drawings, drainage atlases and topographic mapping to determine existing drainage patterns and divides to develop Existing Drainage Plan. Design of proposed storm sewer system, roadway ditches, crossroad culverts and integration of BMP features. Calculated detention and compensatory storage requirements for over 50 ponds, determined site locations and ROW analysis for drainage purposes. Responsible for over 1,150 drainage plan sheets for multiple project submittals. Technical memo, cost estimate and quantity calculations were provided for each project. Attended all project coordination meetings with local municipalities, state and federal agencies. Responsible for all project submittals and budget tracking.

Scott Lutz, PLS Survey/Plats | Patrick Engineering Inc.

Education
B.S., Civil Engineering, Purdue University, 1997; B.S., Land Surveying Engineering, Purdue University, 1997

Registration
Professional Land Surveyor: IL, MI, WI, CO

Expertise
Review of Global Positioning Systems (GPS) static and RTK campaigns as well as data reduction and adjustments. Mr. Lutz directs and oversees activities for topographic, bathymetric, boundary, and ALTA surveys. He is also versed in High Definition Surveys (LIDAR) and oversees field and office work. He is also the prime project manager for all Height Modernization projects.

PROFESSIONAL EXPERIENCE

Ogle County IL Route 2, IDOT Project # R-92-002-18, IDOT, District 2, *Oregon, Illinois*
Acted as the overall lead surveyor for locating all lot and block corners of each side of IL 2 from Fair Street to the extension of South 6th Street. The corridor is approximately 7,050 feet long. This effort will be in support in the creation of Plat of Highways and easement descriptions to facilitate ADA handicap ramps at the intersection returns. Scope of work tasks involved in this project were: Survey Control Work: tie into existing control, Boundary Recon and Survey, Plat of Highway Sheets, Legal Descriptions, and a total of 37 easements were created at various intersections.

IL 120 Improvements, Lake County Highway Department, *Lake County, Illinois*
Directed field crews and provided survey scope coordination for topographic survey along a two-third mile corridor of IL 120 and a half-mile corridor of Green Bay Road. Survey included cross-section data at 50-foot intervals along the entire corridor. Processed GPS observations and level data and processed control adjustments to establish State Plane coordinates for project control. Performed data import and mapping in Microstation V8 basemap. Created and edited TIN files to produce 1-foot contour data. Supervised production of plats of survey for 20 parcels affected by 34 easement takes using IDOT and LCDOT standards.

Washington Street, Lake County Division of Transportation, *Lake County, Illinois*
Directed crews performing a complete survey within, and 40 feet beyond, the existing 2 miles Right-of-Way of Washington Street corridor and its major side streets and along 1.5 miles of the Canadian National Railroad corridor. Reviewed GPS data reduction and control network analysis. Reviewed the basemap in Microstation Version 8 format, including all surveyed topographic and planimetric data to aid in design of roadway improvements, drainage studies, and a grade separation crossing for the railroad. Utilized ArcMap for quality assurance to show survey coverage over an aerial photograph background.

Rakow Road, McHenry County Division of Transportation, *McHenry County, Illinois*
Performed GPS adjustments for necessary ground control targets for the aerial photography acquisition and control for terrestrial survey. Directed field crews performing comprehensive survey within existing and proposed Right-of-Way limits, including both planimetric and topographic data. Reviewed the basemap in Microstation Version7 and later Version 8 including all collected field data to be used for subsequent engineering design. Planned field verification for quality assurance. Directed the merging of terrestrial data with TIN from aerial mapping in the Phase 1 project. Utilized ArcMap for quality assurance to show survey coverage over an aerial photograph background.

Fullerton Avenue Bridge Survey, Addison Township Highway Department, *Addison, Illinois*
Coordinated field crews and provided survey scope management. Processed GPS data from field collection. Processed and managed all project control coordinates. Performed quality checks on data, basemap, and TIN file.

Paul Keating Construction Advisor | Patrick Engineering Inc.

Education
B.A., Business Finance, Eastern Illinois University, 1982

Registration
Licensed Contractor in Florida, Georgia, Louisiana, North Carolina, South Carolina, Tennessee

Expertise
all aspects of construction including estimating, project management, self-perform work, safety, client and employee development, and team organization. He has a proven track record of obtaining results through creativity and discipline.

PROFESSIONAL EXPERIENCE

Intake Channel and Lost Creek Rail Bridges, Midwest Generation EME, LLC, *Pekin, Illinois*
Construction & Project Manager for the Lost Creek Rail Bridge that included a 350' precast railroad bridge on drilled piers over the intake channel and a 120' precast bridge on steel pile over Lost Creek. Responsible for project scheduling, coordination of engineering assignments and communication with client, procurement of equipment and materials, project phasing, project safety, and project documentation. Project Cost: $1.5M

CSX 14 Bridge Replacement, CSX Transportation Inc., *Tuscola, Illinois*
Project Executive for a $10M bridge replacement project in Central Illinois. The project included replacing 14 open-deck timber bridges, each spanning approximately 30 to 80 feet, with new precast concrete bridge structures. Seven of the bridges were previously designed and were constructed by Patrick, while the remaining seven were completed by Patrick on a design-build basis. Mr. Keating's responsibilities included oversight of design services (geotechnical, hydraulic, structural, track, and survey) and construction services (construction management and contracting, material procurement, scheduling, estimating, safety, and coordination with CSX labor forces). The project included an aggressive schedule which required all 14 bridges to be completed within 10 months, and Patrick replaced the last bridge two weeks ahead of schedule.

New Track Construction, CSX Transportation, Inc., *Smithboro, Illinois*
This project included the design and construction of a new siding track and connection linking the CSX with an adjacent railroad. Approximately 12,000 feet of new rail was installed to provide capacity for storage of a unit train. The project also included relocation of a township roadway and public crossing to allow vehicle traffic to pass when a unit train is parked onsite. Patrick coordinated all design and construction activities with CSX, the Illinois Department of Transportation, and the local township roadway commissioner. Patrick completed the project in two phases in order to expedite the schedule and meet CSX's operational needs. Mr. Keating's responsibilities included oversight of all design and construction services.

Rail Facilities, Canadian National Railways, *Warren, Michigan*
Project Executive for a design build $2.6M expansion of rail unloading facilities to unload Methylene Diphenyl Diisocyanate (MDI), polyol, caustics, and HCLN's Warren rail yard. Patrick developed an initial concept design with CN, and completing the full design, permitting, and constructing the facility. The project also includes the procurement of (2) mobile pumping platforms to transfer the MDI product.

Rail Construction and Facilities, Canadian National Railways, *Memphis, Tennessee*
Project Manager for the design and construction of a $1.5M Design-Build transload facility to load (MDI) from railcars into tanker trucks. The project included relocation of an existing track, installation of a new boiler, construction of a new steam and condensate system, and associated civil and electrical improvements. The project also included the procurement of (2) mobile pumping platforms to transfer the MDI product. Patrick developed an initial concept design with CN, completed the full design, secured permits, and constructed the facility.

Karl Wilson, PE Constructability | Patrick Engineering Inc.

Education
Bachelor of Science, Civil Engineering, University of Toledo, 1989

Registration
Licensed Professional Engineer: IL, OH, IN

Expertise
Civil engineering and construction management on various transportation and utility projects for state and local governments. Mr. Wilson is highly skilled in project management and business communications.

PROFESSIONAL EXPERIENCE

Windsor Drive Bridge Replacement over Illinois Tollway Connector Ramps M&N Between I-88 & I-294, Contract I-18-4352, Illinois Tollway, DuPage *County, Illinois*
Project Manager responsible for contract administration; management of project staff; management of budget and schedule for construction management services. The project included the removal and replacement of the Windsor Drive Bridge with a new wider bridge structure. The new bridge provided four lanes on Windsor Drive along with a 10' wide landscaped median and sidewalks in both directions. The existing four span bridge is replaced by a two-span structure.

Roadway and Bridge Reconstruction – Roselle Road Mile Post 65.57 (I-90), Illinois Tollway, *Schaumburg, Illinois*
Construction Manager responsible for contract administration; management of project staff; management of budget and schedule. As a prime consultant, provided Construction Management (CM) services in the role of Resident Engineer. Reconstruction of Roselle Road Bridge and ramps. The work included removal, realignment, and reconstruction of the Roselle Road pavement. Removal and reconstruction of the Ramp B and Ramp C pavements. Structure replacement of Bridge No. 517 carrying Roselle Road over I-90.

108th Street City of West Allis; Hank Aaron State Trail, Wisconsin Department of Transportation, *Milwaukee Area, Wisconsin*
As Project Manager, provided supervision over surveyors for survey control and layout. Responsible for contract administration; management of project staff; management of budget and schedule. Survey layout for the complete replacement of W. Brown Street Bridge and Approaches.

City-Wide Roadway & Bridge Improvements, Chicago Department of Transportation, *Chicago, Illinois*
Project Manager responsible for contract administration; management of project staff; management of budget and schedule. As a sub consultant, provided Construction Management (CM) services. Phase III engineering services as a subconsultant to prime on project Construction Inspection for bridge deck and substructure repairs.

Various Construction Program Management for Phase III Projects, PTB 178-010, Illinois Department of Transportation District One, *Kane County, Illinois*
Project Manager responsible for contract administration; management of project staff; management of budget and schedule. As a sub consultant, provided Construction Management (CM) services. Phase III engineering services as a subconsultant to V3 on various projects in Kane County for the improvement of US 30/IL 56 from County Line to I-88. The work included pavement widening and resurfacing of existing pavement. Also worked on the sidewalk improvements contract at various locations in Kane County which included sidewalk removal and replacement with upgrades for ADA standards. In addition, provided staff to review invoices and other audit documentation elements.

69th Street Improvements, Chicago Department of Transportation, *Chicago, Illinois*
As a prime consultant, provided Construction Management (CM) services in the role of Resident Engineer. A $3 million roadway project. Major construction included lowering the roadway at two railroad viaducts. IDOT documentation.

Peter Knysz, CWS, CPESC Permitting | Christopher B. Burke Engineering

Education

Master of Science, 1999 Biology, Northern Illinois University; Bachelor of Arts, 1995 Biology, North Central College

Certifications

Certified Professional in Erosion and Sediment Control; Certified Wetland Specialist, Lake County, C-070; Designated Erosion Control Inspector (DECI), Lake County; NHI Course #142051 National Highway Institute; TNM Computer Modeling National Highway Institute; Midwest Ecological Prescription Burn Crew Member Training

Expertise

Coordinates with contractors, clients, engineers and local, state and federal agencies regarding Clean Water Act issues (Sections 401, 402, and 404) and environmental regulations. Has experience in the National Environmental Policy Act (NEPA), Endangered Species Act, and consultation pertaining to threatened and endangered species. Responsible for performing soil erosion and sediment control site visits and preparing reports. Prepares Section 404 Permit Applications and requests for Section 401 Water Quality Certification (including Antidegradation Rules). Assists clients with resolving alleged permit violations (including Section 404 and NPDES).

PROFESSIONAL EXPERIENCE

Illinois Tollway Trees Initiative, System-wide, *Illinois*
CBBEL Lead for the preparation of three tree planting contract plans associated with a System-wide Landscape Masterplan (LMP) for the Illinois Tollway. CBBEL coordinated with Illinois Tollway staff and the Morton Arboretum to prepare the LMP, contract plans, and special provisions. The LMP was developed to meet an immediate need to identify suitable planting locations within the Illinois Tollway right-of-way (ROW) for an accelerated implementation schedule to plant 58,000 trees. Preparation of the LMP took into consideration the following primary criteria which guided the recommendations for planting locations: Safety, Accessibility and Maintenance, Connectivity, and Sustainability. Tree and shrub planting locations were selected to complement the Illinois Tollway's existing aesthetic palette.

Elgin O'Hare – Western Access, IDOT, Illinois Tollway, *Cook and DuPage Counties, Illinois*
CBBEL Lead for preparation of EIS, environmental fieldwork, data collection, impact assessment, and GIS database development (as subconsultant) for 127 square mile study area. Specific responsibilities included preparation of scope of services, methodology, data collection, preliminary environmental fieldwork/coordination (wetlands, water resources, upland habitat, and aquatics), agency coordination, and quality assurance and quality control pertaining to environmental resources.

Illiana Corridor (I-55 to I-65), IDOT & INDOT, *Will and Kankakee Counties and Lake County, IN*
CBBEL Lead for preparation of Water Resources section of Tier One and Tier Two EIS, environmental fieldwork, data collection, and impact assessment (as subconsultant) for approx. 950 square mile study area. Specific responsibilities included technical writing for Tier One and Tier Two EIS; preparation of scope of services, budget, methodology, data collection, environmental fieldwork/coordination (for Indiana water resources: streams, lakes/ponds, habitat assessments, fish, mussels, and aquatic macroinvertebrates), agency coordination, and quality assurance and quality control.

US Route 45 (IL 132 to IL 173) & Millburn Bypass, Lindenhurst and Old Mill Creek
Senior Environmental Resources Specialist responsible for preparation of Environmental Survey Request, EA, and Wetland Impact Evaluation, coordination with LCFPD and US Fish and Wildlife Service, attendance at Community Advisory Group meetings and Public Meetings. Project consisted of preparation of Phase I Engineering and Environmental studies to secure Phase I Design Approval for a US Route 45 bypass around the Millburn Historic District, a National Register Historic Place. Based on coordination with IDOT and FHWA, this project required the completion of an EA to address logical termini issues. Federal (SAFETEA-LU) funding required assessment of the purpose and need for improvements to US Route 45 by the 2040 regional planning horizon, the need for a bypass and a full range of potential alternatives, and a public involvement program consistent with CSS principles. Scope included preparation of a CDR and LDS for the bypass area (1.5 miles), and an EA from IL Route 132 to IL Route 173 (5.5 miles).

Chu E. Ho, Sc.D. Geotechnical Engineer | Patrick Engineering Inc.

Education

Sc.D., Geotechnical Engineering, Massachusetts Institute of Technology, 2005
M.Sc./D.I.C., Engineering Rock Mechanics, Imperial College London, 1985
B.Eng. Hons., Civil Engineering, National University of Singapore, 1984

Registration

NCEES New York PE Exam (Passed)

Expertise

Dr. Chu Ho is a geotechnical specialist with significant expertise in foundation and geotechnical construction in difficult ground conditions. His key contribution is in providing technical leadership for delivering innovative geotechnical designs that incorporate constructability and sustainability in urban infrastructure development. He has been involved in the design and construction of underground transit structures and deep basements, tunnels and shafts, foundations for bridges and buildings, structural underpinning, land reclamation, ground improvement, slope stabilization and rock excavations, and has provided specialist forensic advice to insurance companies, as well as private and public clients. His background in both consulting and contracting practice gives him a unique perspective in dealing with both the technical as well as the broader economic aspects of projects.

PROFESSIONAL EXPERIENCE

Lower Hudson Transit Link Phase B, New York State Department of Transportation, *New York, New York*
Lead Geotechnical Engineer on Owner's Design Consultant Team (Arup) for the design of highway widening for new acceleration lane located on existing steep embankment side slopes. Responsibilities included implementation of soil investigation and design of Geosynthetic Reinforced Soil System (GRSS) Walls to support new highway lanes.

East End Crossing Project, *Louisville, Kentucky*
Technical Reviewer (Arup) for bid design of a design-build 7.4-mile long highway alignment. The project consisted of a 0.5-mile long cable stayed bridge over the Ohio River, an approximately 2,500-foot long mined tunnel, and over 20 one- to two-span highway overcrossings. Design elements included shallow and deep foundations supported on shale and karstic limestone, deep rock cuts, high embankments, and Mechanically Stabilized Earth walls.

Nouvelle Autoroute 30, *Montreal, Quebec*
Technical Reviewer on Public-Private Partnership's (PPP) Design Consultant Team (Arup) for 138 base grouted drilled shafts 2m in diameter with 4m long rock sockets 1.85m in diameter for 1.6 miles of high-level bridge over Beauharnois Canal and 1400 high capacity drilled-grouted micropiles with 6 to 9m long rock sockets 150mm in diameter with 65mm diameter threaded central bar for 1.2 miles of low-level bridge over St. Lawrence River. Challenges included pile installation in deep glacial deposits of soft sensitive Champlain Clay overlying very strong Quartzite Sandstone bedrock.

Central Expressway (CTE) Interchange, Public Works Department, *Singapore*
Senior Geotechnical Engineer on Owner's Design Consultant Team (Arup) for design of foundations for cut-and-cover tunnels for underground highway interchange. Design involved interaction analysis for stress and displacement between the buried box structures and transitions between roadway alignments.

Chin Swee Road Interchange, Public Works Department*, Singapore*
Lead Geotechnical Engineer on Owner's Design Consultant Team (Arup) for design and installation of retaining walls for bridge abutment and slip roads, bored piles, roadside drainage culverts and road alignments for major public works highway interchange.