



**2022 21st Avenue East Rehabilitation Project -
Design Phase, Project No. 1993
RFP #2021-99527
July 14, 4:30 PM**



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July 14, 2021

City Purchasing Office
City Hall Room 120
411 West First Street
Duluth, MN 55802

PROPOSAL FOR 2022 21ST AVENUE EAST REHABILITATION PROJECT-DESIGN PHASE, PROJECT NO. 1993, RFP 21-99527 21ST AVENUE EAST REHABILITATION PROJECT

LHB is excited to present this proposal to the City of Duluth for the 21st Avenue East Rehabilitation project. This is a high-profile project that demands a high degree of care and coordination to satisfy the expectations of the residents, public, and businesses who rely on this vital corridor, and to meet the technical requirements of the work. We understand that meeting the individual agency requirements and the project bidding and construction timeline requires a well-managed and collaborative team who are able to spur prompt and sound decision-making at key project milestones.

To that end, and to provide a project team that brings both the technical expertise and capacity to meet the needs of the project, we have included SRF as our project partner. LHB and SRF have a long established and successful working relationship which includes previous work in the City of Duluth including the downtown Superior Street Reconstruction project as well as numerous other projects showcased in our proposal. We are confident our integrated approach will bring the right balance of project management and technical experts to complete the individual work tasks within a strong team environment.

As you review our proposal, we trust our project understanding and demonstrated experience will be evident. The team we have assembled, combined with our past experience and understanding of the challenges and opportunities of the project, ensures we are poised to join the City of Duluth in delivering a successful project. We propose a team you know well from current and past work experiences with you.

Additional benefits we bring to your project are:

- We Will Deliver – Our team has recently completed projects for the City of Duluth, so efficiencies can be found by having a knowledgeable team who needs no start up time. We will ensure your projects have the resources needed to meet the project deadlines.
- History and Project Experience – Our team has a proven track record of delivering State Aid projects in Duluth’s urban and downtown core which involve multi-phase staging and sequencing. We know the key components to success for these projects and how to identify and address possible issues with proven solutions early in the design phases.
- City Protocols and Project Requirements - Our familiarity with City of Duluth protocols and MnDOT’s State Aid plan set, and technical requirements will keep your project on track. We have been working the City of Duluth for almost 45 years and have adapted with you. You can be assured of our command of plan set formats, design requirements, details, and specifications to deliver a successful project.
- Commitment to Quality - Our internal quality processes ensure plan sets are accurate, checked, and cross checked. All these activities will be led by a dedicated QA/QC manager. Utilizing both software technology and verification procedures, you can be assured that plan sets will be accurate and will meet City standards. Our staff all drive these roads and take pride in designing them and making them safer for our community.

We acknowledge the receipt of Addenda #1. We look forward to hearing from you and remain available should you have any questions concerning our proposal.

BRAD SCOTT, PE | PROJECT MANAGER

1. GOALS AND OBJECTIVES

The City of Duluth is requesting engineering design services for work on 21st Avenue East between London Road and Woodland Avenue. The project will rehabilitate approximately 1,100 lineal feet of concrete roadway beginning near the intersection of London Road and extending up to Superior Street. An additional approximately 3,100 lineal feet of 21st Avenue from Superior Street to Woodland Avenue is anticipated to consist of 3.5" of mill and inlay of the in-place bituminous pavement. The overall length of the project is about 4,200 lineal feet. New signals will be provided at Superior Street and 2nd Street. New, full-depth, concrete pavement will be placed at the intersections of 21st Avenue with Superior Street and 2nd Street.



In addition, the City is looking to provide intersection curb extensions to allow for the construction of pedestrian curb ramps and decrease the crossing length for pedestrians across 21st Avenue East. Improvements to the in-place storm sewer system include rebuilding the storm manhole that connects to the Oregon Creek stone arch tunnel beneath 21st Avenue East at Superior Street, as well as repairing or replacing damaged storm sewer catch basins, manholes, and infrastructure as needed. The proposed curb extensions at Superior Street and 2nd Street will necessitate relocation of catch basins to the new curb lines and minor adjustments to the storm sewer.

The primary goals of the project are to improve the pavement condition and serviceability, increase safety, improve community connections and traffic flow, provide needed storm utility repairs, replace traffic signals, and improve pedestrian and ADA accessibility.



21st Avenue is a Municipal State Aid Street (MSAS 152) and the project is a Local Road Improvement Program (LRIP) grant project. The design must comply with State Aid standards. LHB has a proven track record of delivering successful State Aid / Federal Aid projects

for the City including projects that require multiple construction phases and work in Duluth's downtown urban core. We have included a Project Issues and Understanding illustration on page 2 for your reference as you review our further project discussion.

Roadway

21st Avenue East is a vital community connector in East Duluth, initially constructed in 1891. Located in the heart of Duluth's Endion neighborhood, it carries local neighborhood traffic, serving as a critical link between the nearby Chester Park-UMD, Hunters Park, and Woodland neighborhoods and as a primary access route to St. Scholastica and UMD as well as the London Road commercial district, I-35, and downtown. The project will need to carefully manage the needs of the local residents, the travelling public, and the destinations served by the route to minimize disruption and maintain traffic flow to the greatest extent possible during the work.

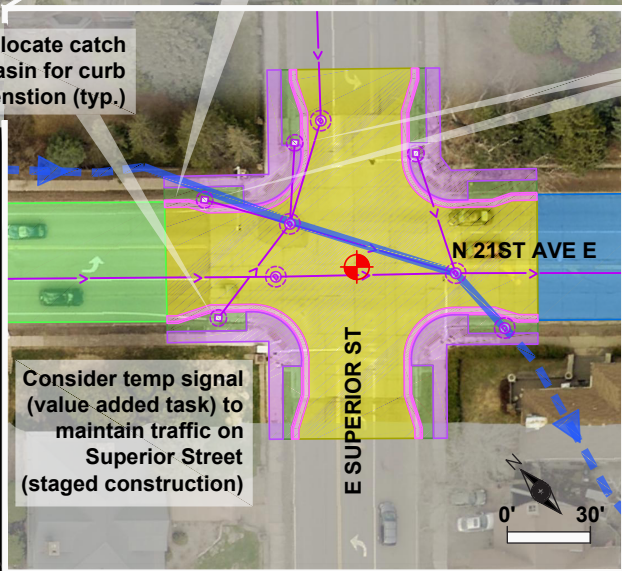
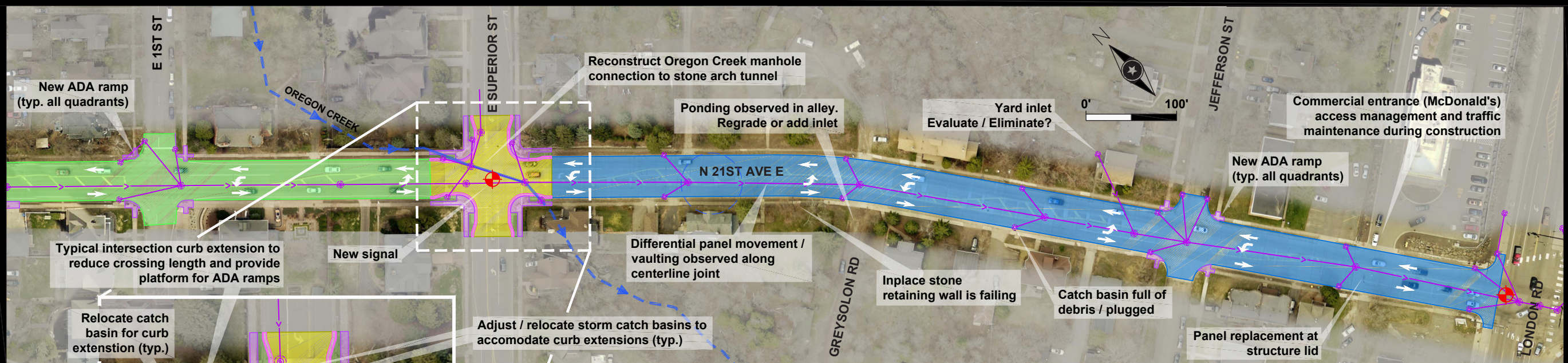
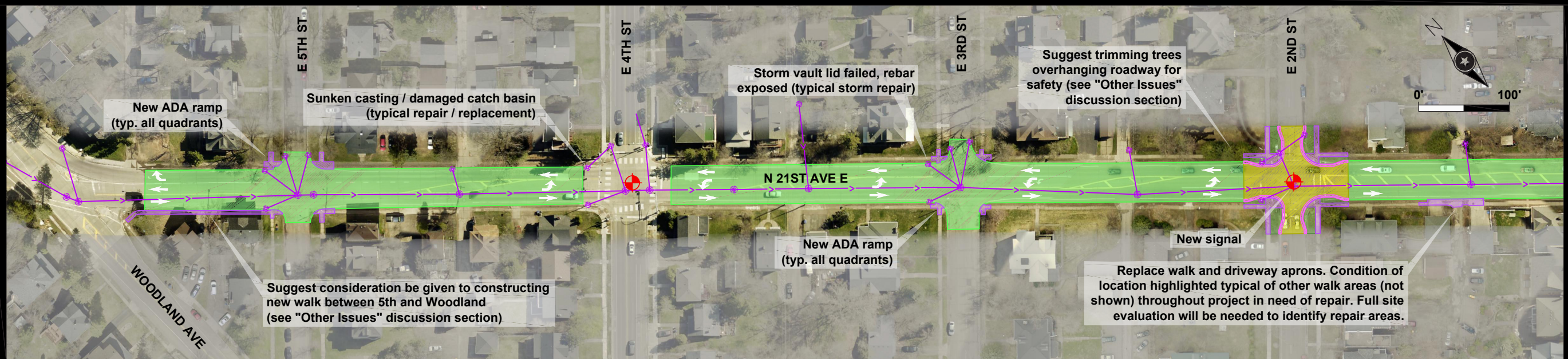
Functionally, the street consists of a lane of traffic in each direction with alternating left turn lanes at each intersecting street. Average daily traffic (ADT) is about 14,200 vehicles per day (vpd) along 21st Avenue East. The intersecting streets of London Road, Superior Street, and 2nd Street have ADT of 8,900 vpd, 5,200 vpd, and 2,300 vpd, respectively. 21st Avenue East and Superior Street are minor arterials while all the other intersecting streets are major collectors, with the exception of East 1st Street (a minor collector). The roadway's horizontal alignment is generally straight while the vertical profile is steep with grades over 12% that intermittently flatten to varying degrees at intersections. The corridor is busy and heavily trafficked, and is signed for no-parking.

Driving and turn lanes are generally 11-ft to 12-ft in width. Along the bituminous portion of the project a striped 4-ft shoulder is provided. In general, the curb-to-curb width of the roadway is 44-ft. A narrow 3-ft to 4-ft grassed boulevard exists between the back of curb and sidewalk in most areas. The in-place sidewalk is relatively narrow and, in some cases, is in poor condition, with vaulting and cracks presenting tripping hazards. The corridor is generally constrained near the right-of-way by often steep residential yards, retaining walls (stone and cast-in-place), fences, and concrete stairs connecting to or located immediately adjacent to the in-place walk.



Sidewalk panels in poor condition are anticipated to be removed and replaced as part of the project. New ADA compliant pedestrian ramps will be provided at the intersections, including curb extensions at 2nd Street and Superior Street.

1. GOALS AND OBJECTIVES CONT.



- LEGEND**
- BITUMINOUS MILL AND INLAY
 - CONCRETE INTERSECTION PAVING
 - CONCRETE PAVEMENT REHABILITATION (CPR)
 - ADA AND SIDEWALK IMPROVEMENTS
 - INPLACE SIGNAL SYSTEM
 - TRAFFIC ARROWS
 - INPLACE STORM SEWER

Project Issues and Understanding



PERFORMANCE DRIVEN DESIGN.

1. GOALS AND OBJECTIVES CONT.



As indicated in the City’s LRIP grant application, segments of the street were last fully reconstructed in 1959 and 1965 and have had numerous maintenance projects to maintain serviceability to the present day. State Aid Standards 8820.9946 for urban reconditioning projects requires a total width of 22-ft for two lane traffic or 44-ft for 4-lane traffic. Based on our preliminary review and evaluation, no variances from State Aid design standards are currently anticipated. The roadway designs are intended to meet 10-ton pavement designs.

The proposed roadway repairs consist of full-depth replacement of concrete intersection pavement at 2nd Street and Superior Street. LHB will develop detailed intersection details for each location that includes jointing and adjustment of utility structures (valves and manhole lids) to grade.



Detailed spot elevations and ADA design will be provided to implement the curb extensions and provide ADA compliant ramps. Below Superior Street, the project work will consist of concrete pavement rehabilitation (CPR) which are anticipated to include joint repairs as well as selective panel and curb replacement. We anticipate panel replacement will be largely limited to panels with manhole lids that show deep distress and failures in some cases. We note in reviewing the City’s estimate cost that both full depth and partial depth repairs have been identified. The great majority of pavement distresses noted during our field walk consisted of joint damage, corner cracking, and some random cracking consistent with these identified repairs. However, we also noted some differential movement (1 to 1.5 inches) and vaulting of the panels along the centerline joint just south of the Superior Street intersection.



LHB has completed numerous CPR projects in the greater Duluth area including projects on Garfield Avenue, East Superior Street and Central Entrance, among others. We will perform a field walk with the City to validate the quantity and type of repairs needed, and utilize MnDOT’s standard CPR repair details and specifications for the design plans. The repair locations will be identified in the plans and tabulated by quantity and type. For the 3.5” bituminous mill and inlay section, we will provide the required typical section and detail design plans to identify the work, including cross slope and special grades as needed. Manholes and structures within the roadway will be adjusted to finish grade using concrete encased collars or adjustments as required.



Storm Sewer

From a storm sewer perspective, 21st Avenue East carries a 26-inch to 32-inch diameter storm trunk main that is concrete or brick depending on location. The storm main is located just to the west of centerline. During our field walk, we counted about 45 catch basins along the project corridor as well as 25 storm manholes. As part of our field walk, we noted that several intersections are flanked on the uphill side by large stormwater inlet vaults. While many of the vaults showed damage or deterioration at the roof and inlet, overall, the structures appeared to be sound. However, many of the smaller catch basin structures are in poor condition with damage to the surrounding curb as well as sunken or damaged castings, concrete cracking and spalling, and structure defects. The in-place storm sewer will be evaluated by visual inspection and repair details or replacement designs will be provided as part of the design. As discussed earlier, the proposed curb extensions at Superior Street and 2nd Street are anticipated to require relocation of in-place catch basins to the new curb line. Drainage plans and profiles will be prepared for the new storm sewer inlets and connections to the in-place system.



1. GOALS AND OBJECTIVES CONT.

The project is located almost wholly within the Oregon Creek watershed. Oregon Creek is a relatively small watershed that has its headwaters near UMD and discharges to Lake Superior beneath I-35. At the point where the creek enters the limits of the project, the creek is housed within a tunnel before discharging to open channel flow near Greysolon Road. Oregon Creek crosses the intersection of 21st Avenue East diagonally from the northeast to southwest and is carried by a stone arch tunnel. The tunnel is located approximately 10 feet below grade at this location. The in-place manhole needs to be re-built, and a new, sound connection to the underlying tunnel created. LHB has performed work on the Oregon Creek Tunnel in the past. In addition, LHB has provided innovative rehabilitation and repair solutions for storm sewers throughout the City of Duluth for over 25 years. Duluth's storm water system dates back to the 1800's and as such is made up of many different designs and materials. In addition, the extreme topography of the area means some facilities can be very deep, making replacement options limited. Our staff is uniquely equipped to apply their experience marrying historic methods of construction such as brick and native stone arches with modern materials and construction techniques to develop a functional and cost-effective repair/rehabilitation approach to the project. Our staff has designed repairs for legacy storm water infrastructure throughout the City of Duluth including Miller Creek under 26th Ave West, West 4th Street over un-named creek at 11th Ave. West, Brewery Creek over 6th Ave. East, Coffee Creek under 21st Ave. West, and the London Road Culvert Flood Repairs (Mn/DOT Trunk Highway Project).

Traffic Signals

Along with pavement reconditioning and curb extensions to meet ADA requirements at the intersections of 21st Avenue East with Superior Street and 2nd Street, this project includes replacement of the existing permanent traffic signal systems at these intersections. Superior Street and 2nd Street lie in the middle of a series of four signalized intersections along the 21st Avenue East corridor; other signals are at London Road and 4th Street. Since the city is in the process of building out its fiber optic communications network, it makes sense to install fiber interconnect along 21st Avenue East from London Road, through the two signals being replaced, to 4th Street as part of this project.



Since funding for this project is being administered through the MnDOT Office of State Aid, signal justification reports (SJR) will be required; our work plan and cost proposal includes preparation of these documents for the Intersection Control Evaluation work scope identified in the RFP project schedule.

The signals along 21st Avenue East were retimed by SRF in 2018 and they still retain the Synchro files that were developed at that

time. As a value-added service, SRF can update the signal timing for the corridor based on the new turning movement counts that will be conducted for the warrants analysis. We can also develop event timing plans to help to accommodate diverted traffic during Grandma's Marathon.

Traffic Control

Within the project limits, 21st Avenue East is largely flanked by residential properties. Of the forty or so residential buildings located along the corridor, about 15 have driveways directly connecting to 21st Avenue East. Of the alleys connecting to 21st Avenue East, some are dead-end alleys with 21st Avenue East being their only means of egress. It also serves as a primary connection point for a main entry / exit to McDonald's, as well as an apartment complex located near London Road. Maintaining access to these residences and McDonald's will be an essential need. Communication with residents and stakeholders along the route will be key to managing expectations and providing solutions to manage the impacts of the construction work.



We evaluated the project work zone and possible project staging. We understand, based on Addendum 1, that the City is looking to minimize closure of the roadway and conclude therefore, that most of the work is anticipated to occur under traffic. This should be feasible particularly for the mill and inlay section between Woodland and Superior Street. For the more extensive work required at Superior Street and Second Street, work under traffic may be a challenge and time intensive, particularly for the deeper work related to the Oregon Creek storm sewer improvements at Superior Street. The Superior Street intersection would be a candidate for considering short term closure, at least to complete portions of the work. If Superior Street is to remain open and work needs to be staged, we believe a temporary signal is likely warranted. We have included the use of a temporary signal at this location as a value added task in our cost proposal for the City's consideration. As for 2nd Street, we believe, at a minimum, that the cross-street can be closed and detoured during construction based on our understanding and past experience working in downtown Duluth. For the project as a whole, we will work with the city to determine preferred detour route(s) needed and evaluate the intersections along that detour route to determine if any traffic control improvements are needed to handle detouring traffic.



1. GOALS AND OBJECTIVES CONT.

Other Issues

Although not specifically mentioned in the RFP, we also noted other issues along the corridor that would be worth considering in final design, depending on City preference and budget:

- Pedestrian Connection (5th Street to Woodland Avenue - See Project Issues and Understanding illustration): We note that no walk currently exists along the west side of 21st Avenue East between Woodland and 5th Street. As such, pedestrians headed up to Woodland Avenue on the west side of 21st Avenue East or approaching 21st Avenue East on 5th Street from the west are obliged to cross 21st Avenue East to access the walk on the east side of 21st Avenue. The space available to construct a walk in this area is limited and would likely require a short retaining wall and some utility relocation but is worth considering given that 21st Avenue East's intersection at 5th Street is not signalized and is a less safe crossing for pedestrians to make. Completing the connection may be a desirable goal to evaluate as part of the design.



- Utility Poles (See Project Issues and Understanding illustration): Several third-party utility poles exist directly at the back of curb and are, strictly speaking, roadside safety hazards. Although not required by State Aid rules for this preservation project but from a safety perspective, the City may wish to look at requiring these power poles to be located to a setback that is a minimum 1.5-ft distance measured from face of curb (or more). This would seem a prudent measure to consider, particularly in relation to traffic heading southbound (downhill) on the avenue which are more prone to skidding or sliding in icy conditions.
- Drainage: We did note in our review of the project that several catch basin structures connecting to the 21st Avenue East trunk main are located at residential yards or farther away from the roadway in alleys. It would seem prudent to consider if the yard drains are needed or could be eliminated with minor grading.

We would also suggest that alley drains be verified for condition and operability as the alley pavements are in very poor condition and these drains may be damaged or clogged. We noted these structures at the east alley between 3rd Street and 4th Street; the east alley between 1st Street and 2nd Street; Greysolon Road (west side of 21st Avenue East); and the property located at 222 S 21st Avenue East.

- Tree Pruning (See Project Issues and Understanding illustration): We would recommend that the City consider pruning trees along the corridor for vehicle and pedestrian safety. At the northeast quadrant of 21st Avenue East and 1st Street, the canopy of a large tree overhangs the northbound (uphill) lane. We observed truck traffic veering out of the driving lane into oncoming traffic to avoid the canopy. Trees and shrubs from yards also overhang sidewalks in some locations and should be considered for selective pruning.



- Retaining Walls: During our field review we noted several retaining walls in poor or failing condition. The City may wish to notify homeowners of wall conditions prior to project start so repairs can be made prior to construction and to reduce the potential that construction activities may adversely affect the retaining walls.

Site Investigation and Survey

Site survey will consist of full topographic survey within the likely limits of the project and is expected to consist of survey to the City right-of-way. Topographic survey at the intersections will be required to prepare the required ADA layouts. The design survey will also capture the existing storm and other utility manhole structures in the pavement for adjustment to final grade. LHB will survey the existing driveways and alleyways. The project will include full utility coordination including mapping of in-place utilities and utility meetings. Due to the nature of the work on the project, third party utility relocations are not generally anticipated, with the possible exception of work related to ADA improvements at intersections.

2. EXPERIENCE (* Indicates LHB/SRF projects)

LHB has a consistent track record of delivering projects for the City of Duluth that provide the technical solution to address the project issues at hand. In addition, we work and have demonstrated a vigorous attention and commitment to project delivery that tracks project milestones and meets deadlines for design and bidding. The following projects demonstrate not only our past experience and success working with the City of Duluth to deliver projects with comparable scope and issues as the work on 21st Avenue East but were also delivered on budget to the identified scope of services. The City can rest assured that we remain absolutely committed to meeting the budget and timelines for the current project.

LHB has chosen to partner with SRF to deliver this project. SRF will be supporting the design for the traffic signal and traffic engineering work. LHB and SRF have a strong record of collaboration working on projects for the City of Duluth. In the last 5 years we have completed over six projects in the Duluth area including the multi-year, multi-phased construction of Superior Street in downtown Duluth; preservation of Central Entrance between Mesaba Avenue and Anderson; Garfield Avenue CPR; 45th Avenue West and Railroad Street; 2nd Street; and Kenwood Avenue. Our firm roles on this project mirror those of our past work and the City can be assured that we have the people and protocols in place to replicate our past success.

a. Superior Street Reconstruction (Project Features: Urban Reconstruct; Minnesota State Aid; Multi-Phase Project; Concrete Pavement; Traffic Signals; ADA; and Utilities)*



The project consisted of full-depth street reconstruction and new signal systems. Utility work included new water main and service laterals; a temporary water main provided service during construction; converted the existing steam system to hot water; and new storm sewer. Private utility work (MP electrical) occurred concurrently with the project. Project improvements included new streetscape elements consisting of decorative sidewalks, street furniture, landscaping, lighting, and other amenity features. The

construction duration was phased over three-years and the design for the entire 11-block project length was prepared as a single plan set in accordance with City of Duluth and MnDOT State Aid standards. SRF provided traffic signal and amenity design as a subconsultant on LHB's team.



2. EXPERIENCE CONT. (* Indicates LHB/SRF projects)

b. East Superior Street between Lester River Road and Trunk Highway 61 (TH 61) (Project Features: Minnesota State Aid; Phased Construction; Bituminous Pavement Rehabilitation; CPR; ADA Improvements; and Storm Sewer)



LHB designed the rehabilitation of East Superior Street between Lester River Road and Trunk Highway 61 (TH 61). The unique project included multiple rehabilitation methods to improve in-place failing concrete and bituminous roadway sections.

The project consisted of over 2,500 lineal feet of concrete pavement section comprised of a 9-inch unreinforced, non-dowelled concrete pavement over 6 inches of aggregate base over native clay subgrade. In-place pavement distresses included joint deterioration, panel cracking, and joint displacement. The proposed project provided for removal and replacement of cracked or failing panels, concrete pavement rehabilitation (CPR) joint repairs, selective curb replacement, pavement dowels, and reinforcement. Upon completion of the required CPR work, the in-place pavement was overlaid with a layer of bituminous pavement to improve the roadway ride quality, increase safety, and provide noise reduction. The bituminous pavement section included the application of a so-called “Texas Underseal” which placed a bituminous seal coat on top of the in-place concrete to provide an impervious water seal that also delays and mitigates the severity of reflective cracking of the underlying concrete joints. The project also provided for the full-depth reclamation of the in-place bituminous roadway at the approach to TH 61. Full-depth pavement reclamation milled the in-place pavement and in-place base to provide new roadway base for the new paved surface. For this project, the reclaim material was also used as base material for both the driving lanes and to improve the in-place gravel shoulders which were then paved with new bituminous.



Storm sewer improvements included replacement of full depth replacement of existing storm sewer and inlets. Manhole and structure lids were adjusted to the final grade of the overtopping bituminous lift. New drains and storm sewer were provided to control yard and drainage issues that were observed during the project field walk.



c. Second Street Reconstruction (Project Features: Downtown Urban Project, Concrete Intersection Pavement, ADA Improvements, Traffic Signals and Storm Sewer Design)*

As part of the construction of Essentia Health’s new Vision Northland campus expansion, LHB designed the reconstruction and provided construction inspection of Second Street between 4th and 6th Avenues East, and on 4th Avenue from Superior Street to Second Street. The project involved traffic coordination, utilities, and replacing the concrete paving at the intersections. New traffic signals were designed by project subconsultant SRF. Second Street construction is anticipated to be complete at the end of 2021.



2. EXPERIENCE CONT. (* Indicates LHB/SRF projects)

e. 180312 TPI Local Street Improvements for Mill and Overlay. Grand Avenue and Railroad Street (Project Features: Downtown Urban Project, Phased Project; ADA Improvements; Traffic Signal Modifications; CPR; and Bituminous Street Rehabilitation)*



The proposed Twin Ports Interchange (TPI) Local Street Improvements project lays the groundwork for the major I-35, I-535, Highway 53 TPI project that will follow in 2020 by ensuring key local connections are ideally configured and in good condition to support traffic needs during the major project. A major focus of the design through the 30% design phase was the relocation of Coffee Creek at 22nd Avenue West which shifted the creek alignment from beneath TH 53 to the west and under 22nd Ave West to facilitate construction. LHB provided preliminary storm, sanitary, water and gas main as well as street and roadway design for the reconstruction of 22nd Avenue West. LHB also provided field topographic survey and performed an in situ investigation of the in-place Coffee Creek brick arch tunnel to assess its condition and determine options for connecting the new Coffee Creek box culvert to the in-place brick arch tunnel.

Broadly, the project consists of work within five unique roadway corridors in Duluth:

Concrete pavement rehabilitation (CPR) on GARFIELD AVENUE from Superior Street to Nelson Street, approximately one mile of low-speed, urban major collector with ADT of 5,200. Garfield Avenue connects downtown Duluth, Lincoln Park, and Central Hillside to Duluth's ClurePublic Marine Port Terminal and industrial and warehouse area as well as I-535 and Superior.

Mill and Overlay on RAILROAD STREET: from Garfield Avenue to 5th Avenue West, just over one mile of low speed, urban major collector with an ADT of about 7,000 to 8,500 vpd linking Garfield Avenue to the DECC, Duluth Aquarium, Bayfront Park, Pier B and Canal Park Commercial Business District and serving industrial facilities in between.

Bituminous Overlay on 27th AVENUE WEST: from I-35 to Michigan Street, about 0.2 miles of urban, low-speed minor arterial serving more than 11,000 vpd consisting of local, commercial and freight traffic between I-35 and Superior Street / Michigan Street and flanked by local commercial businesses and restaurants.

30% Design of Road and Utility Work on 22ND AVENUE WEST: from above 1st Street to Michigan Street, just under two blocks of street reconstruction associated with the relocation of Coffee Creek.

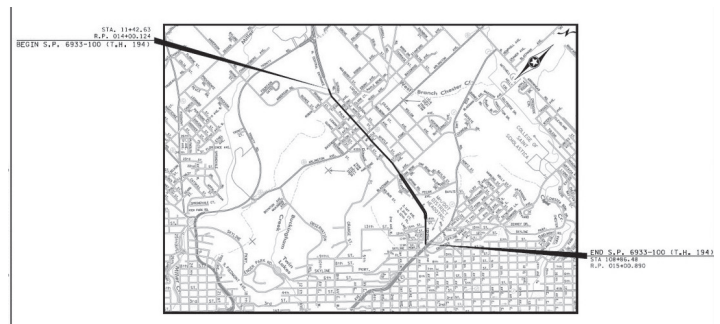
Bituminous Overlay on 46TH AVENUE WEST: from I-35 to Garfield Avenue about 1-mile of urban, low speed arterial street including signal revisions and ADA improvements.



Existing Coffee Creek Brick Arch Tunnel

f. Central Entrance Mill & Overlay (Project Features: Downtown Urban Project; Bituminous Street Rehabilitation; and Traffic Signal Modifications)*

LHB and subconsultant SRF created the final design plan for a 1.8-mile-long mill and inlay project on MnDOT S.P. 6933-100, TH 194 (Central Entrance) from west of Anderson Road to Blackman Avenue and patches from Blackman Avenue to Mesaba Avenue. Other work items include traffic control and traffic signal design for replacement of 16 signal loop detection systems.



2. EXPERIENCE CONT. (* Indicates LHB/SRF projects)

g. MnDOT London Road Flood Repairs (Project Features: Urban Project; Historic Tunnel and Storm Sewer Repairs; Multi-Phased Construction; and Full Depth Road Reconstruction)

The TH61 Flood Repairs project on London Road (S.P. 6925- 137) replaced or repaired drainage structures along 4.8 miles of TH 61 (London Road) between 32nd Avenue East and the Lester River Bridge that were damaged as a result of the June 2012 floods in Duluth. LHB provided full design services for the project which involved the rehabilitation of historic stone arch culverts and general roadside drainage repairs that required multi-stage traffic control to allow for crossing culvert replacement under traffic. The project also included full utility design coordination for private and city utility relocations and adjustments that were required.

LHB's design work included: highway design for culvert repair sections; detail design for drainage repairs related to highway crossing culverts and drainage structures; traffic control plans; utility coordination; and concrete pavement and bituminous mill and overlay at culvert replacement areas.



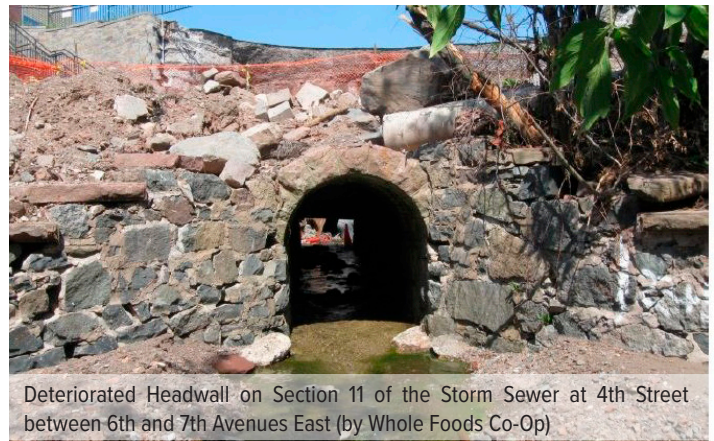
Culvert E Outlet Before



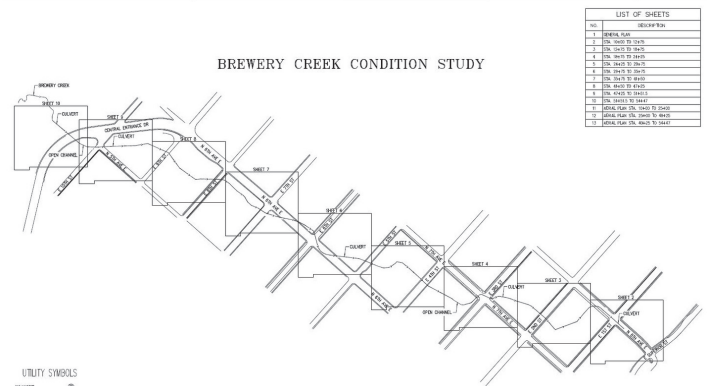
Culvert E Outlet After

h. Brewery Creek historic Brick Arch Tunnel Work on Central Entrance (Project Features: Downtown Urban Project; Historic Stone Arch Tunnel Repairs; Staged Construction; and Minnesota State Aid)

LHB provided an in-depth inspection and report of the entire Brewery Creek Storm Sewer Culvert/Tunnel located under the UDAC property near the busy intersection of East 9th Street and 6th Avenue East in 2012 and 2013. The comprehensive report documented the condition of each of the 35 different sections of the storm sewer and prioritized repairs. Two sections rated as "critical" required LHB to develop plans and specifications for lining the existing six-foot-diameter, reinforced concrete pipe. LHB provided topographical and legal survey, hydraulic analysis to confirm performance, coordination with the city and vendors, plans, specifications, cost estimation, and bidding assistance.

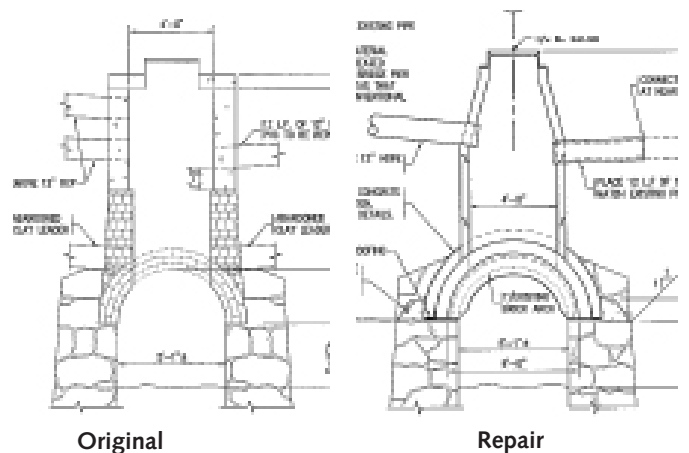


Deteriorated Headwall on Section 11 of the Storm Sewer at 4th Street between 6th and 7th Avenues East (by Whole Foods Co-Op)



35 different sections of the tunnel carrying Brewery Creek were inspected.

i. Coffee Creek Culvert Repair (Project Features: Stone Arch Tunnel Repairs)



After the inlet structure partially collapsed following heavy rains, the City of Duluth hired LHB to provide engineering services for the repair of Coffee Creek Culvert. Services included inspection and engineering design/plan preparation for repair of the structure. After a thorough field inspection, it was determined that a replacement manhole structure was required, while simple maintenance in the form of the masonry tuckpointing and other minor repairs would suffice for the adjacent walls, and floor of the tunnel structure.

2. EXPERIENCE CONT. (* Indicates LHB/SRF projects)

i. Coffee Creek Culvert Repair Cont.

To facilitate replacement of the manhole, LHB employed an innovative approach that utilized a precast T-section cut in half, inverted and placed on top of the stone walls of the tunnel structure. Standard manhole sections were then placed vertically until the proper grade was met. This greatly improved speed on construction and increased safety since little work needed to occur within the tunnel.

j. West 4th Street Culvert Repair (Project Features: Urban Project; Concrete Intersection Pavement & ADA; Curb Extensions; Storm Sewer; Bituminous Mill and Inlay, Multi-Phased Construction; and Minnesota State Aid)

HB inspected and provided design to repair a 1,636-linear-foot-long, five-foot-high bluestone and brick arch storm tunnel on West 4th Street between 10th and 11th Avenues West. The tunnel traveled beneath a concrete base road with bituminous surfacing. LHB assessed how the existing tunnel's future profiles to handle 25- and 100-year storms.

k. East 9th / 8th Street Reconstruction (Project Features: Urban Project; Concrete Intersection Pavement & ADA; Curb Extensions; Storm Sewer; Bituminous Mill and Inlay, Multi-Phased Construction; and Minnesota State Aid)

LHB prepared plans and provided construction administration for the reconditioning of 1.5 miles of MSAS 134 (East 8th and East 9th Streets), from MSAS 192 (6th Avenue East) to MSAS 157 (Woodland Avenue). East 9th and East 8th street are heavily trafficked, low speed urban major collectors that run east to west through Duluth's East Hillside and Chester Park-UMD neighborhoods that are abutted by commercial, residential, and businesses along the entire project segment.

condition and was heaving and vaulted with widespread cracking and deterioration causing drainage issues and ponding. In certain areas, larger diameter trees took up the full width of the boulevards and caused sidewalk and curb damage. Existing pedestrian curb ramps at intersections did not comply with ADA requirements due to steep slopes, narrow pedestrian access routes and insufficient tactile warning surfaces.



The project consisted of mill and overlay of the full width of the bituminous roadway surface. Sections of the underlying concrete pavement were replaced to correct vaulting and differential settlement to improve ride and drainage. The project also replaced substantial sections of damaged and vaulted curb and gutter to re-establish positive drainage along the curb line and to storm sewers. High priority pedestrian crossings were retrofitted with bump outs to provide traffic calming and shorten pedestrian crossings for improved safety. Selective tree clearing was performed and in-place vaulted walks were replaced. The project also consisted of full ADA ramp improvements at eighteen (18) intersections to current MnDOT and PROWAG standards.

The project included a public involvement process to solicit neighborhood input and provide an overview of the project and anticipated issues during construction. LHB oversaw construction and provided inspection on the project. The project was completed in 2018.



The existing street consisted of bituminous over concrete pavement. The bituminous roadway surface was in fair-to-poor condition and was characterized by numerous patches and repairs over utility trenches and potholes. Much of the existing curb was in poor

2. EXPERIENCE CONT. (* Indicates LHB/SRF projects)

I. City of Duluth Woodland Avenue/Kent Road/East 8th Street to Clover Street (Project Features: Urban Project; Traffic Signals and ADA)



SRF designed and prepared plans, specifications, and signal justification documentation for the replacement of the traffic signal at the intersection of Woodland Avenue and Kent Road/East 8th Street for the City of Duluth. The design of the new traffic signal system included ADA pedestrian ramp improvements, flashing yellow arrow phasing, advance detection at the Woodland Avenue/College Street intersection, and fiber optic interconnect to Clover Street. In addition to the traffic signal design, SRF developed work zone traffic control and detour signing plans that maintained through movements on Woodland Avenue and closed Kent Road/East 8th Street at the intersection during construction. After the design was completed, SRF provided construction services, including administration, surveying/staking, and inspection.

m. City of Duluth Kenwood/Arrowhead Reconstruction (Project Features: Urban Project; Traffic Signals and ADA)

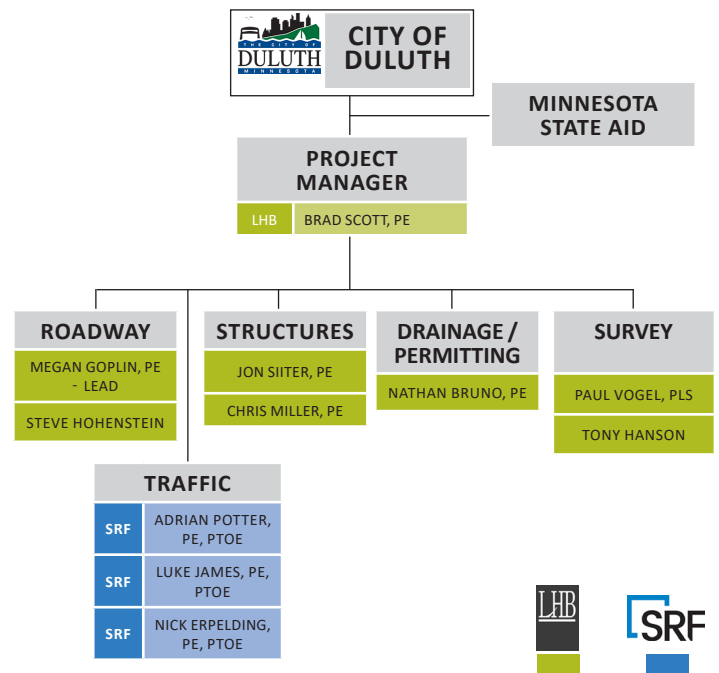


SRF prepared design plans and led two-consultant team for this multi-intersection reconstruction project. Project included two traffic signals, fiber optic interconnect, and red-light enforcement beacons. Devised a staging plan that minimized disruption for area residents and commuters. Optimized signal timing and TSP operation. SRF coordinated with LHB who was the design firm for the Kenwood Village mixed-use housing and commercial development project that was the impetus for the road reconstruction.

3. PERSONNEL

LHB's and SRF's key project staff on this project will serve in roles similar to our past project work for the City of Duluth. Our past project relationships, history, and knowledge of City of Duluth standards and requirements will ensure a successful project.

Resumes and past project experience for key project staff follow. As a team we are committed to this project's success and will ensure that key staff and resources are mobilized at the critical points in the design to progress the design efficiently on time and within budget.



3. PERSONNEL CONT. (* Indicates LHB/SRF projects)



Brad Scott, PE
Project Manager, LHB Duluth

Brad has over 23 years of experience performing all phases of project delivery for road and highway projects. Brad will rely on an in-house team of design professionals

and technicians to assist with the delivery of the project and who have demonstrated experience in developing high-quality projects in roles similar to those proposed on this project. Brad is a licensed professional engineer in Minnesota. Brad's representative project experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth East 8th/9th Street Rehabilitation
- City of Duluth Superior Street from Lester River Road to TH61 Reconstruction
- Essentia Health Vision Northland 2nd Street Design*
- Essentia Health Vision Northland 6th Avenue East Design*
- Essentia Health Vision Northland 4th Avenue Utility Design
- Dakota County S.A.P. 019-642-060 CSAH 42 Eastbound Turn Lane Extension
- MnDOT S.P. 6933-100 TH 194 Central Entrance from Anderson Road to Blackman Avenue Mill and Inlay*
- MnDOT S.P. 6982-328 Twin Ports Interchange (TPI) Local Street Improvements for Mill and Overlay on Grand Avenue and Railroad Street*
- MnDOT S.P. 3116-151 TH 169 Safety Improvements Design
- MnDOT S.P. 1604-45 Grand Portage Safety Improvements
- MnDOT S.P. 6987-79 Stewart River Bridge Grading
- MnDOT TH 61 Flood Repair of Drainage Structures along London Road from 32nd Avenue East to Lester River Bridge



Megan Goplin, PE
Project Engineer, LHB Duluth

Megan brings over 14 years of professional experience in site, stormwater, utility, roadway, ADA and intersection design for both public and private clients. She offers extensive knowledge in national accessible building

codes and is proficient in AutoCAD Civil 3D, including Federal and State-Aid projects. Megan has worked on many site development projects for government, corporate, commercial, educational, and healthcare clients. She is a strong advocate of client interaction and coordination with the project team throughout the design and construction process. Megan is a licensed professional engineer in Minnesota. Her representative project experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth East 8th/9th Street Rehabilitation
- City of Duluth Superior Street from Lester River Road to TH61 Reconstruction
- City of Duluth TH 53 and I 35 Utility Relocations

- City of Duluth Waseca Industrial Road Extension
- Essentia Health Vision Northland 2nd Street Design*
- Essentia Health Vision Northland 6th Avenue East Design*
- Essentia Health Vision Northland 4th Avenue Utility Design
- St. Louis County TH 2 / Canosia Road Turn Lanes
- MnDOT TH 33, Cloquet, MN

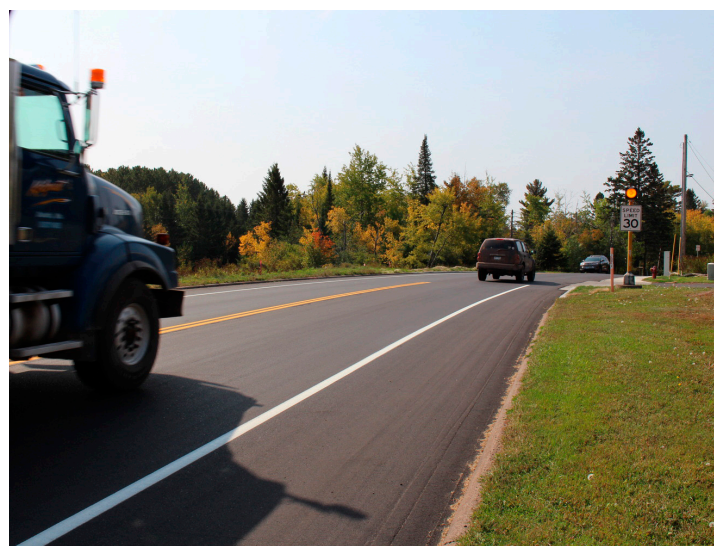


Nathan Bruno, PE
Drainage Lead, LHB Duluth

Nathan has 16 years of drainage design experience and is well-versed in State Aid drainage design requirements. His extensive experience includes designing storm water

treatment ponds, storm sewer and other conveyance systems, bridge hydraulics, utilities, site grading and drainage plans, and Stormwater Pollution Prevention Plans. Nathan is a licensed professional engineer in Minnesota. Nathan's relevant experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth Grand Avenue Corridor Improvements
- City of Duluth Superior Street from Lester River Road to TH61 Reconstruction
- Essentia Health Vision Northland 2nd Street Design*
- Essentia Health Vision Northland 4th Avenue Utility Design
- St. Louis County CSAH 4 Storm Sewer, Culvert, Pond Design
- St. Louis County Haines Road Retaining Wall and Storm Sewer Redesign
- MnDOT TH 61 Flood Repair of Drainage Structures along London Road from 32nd Avenue East to Lester River Bridge
- S.P. 3116-151 TH 169 Safety Improvements Design
- S.P. 1604-45 Grand Portage Safety Improvements
- S.A.P. 069-609-043 Woodland Avenue Storm Sewer



3. PERSONNEL CONT. (* Indicates LHB/SRF projects)



Jon Siiter, PE
Bridge Design Lead, LHB Duluth

Jon has been responsible for the design, construction and investigation/inspection of bridges and structures for almost 30 years. His experience

includes new design, historic rehabilitation design and inspection of structures utilizing steel, reinforced concrete, prestressed concrete, post tensioned concrete, stone masonry, brick masonry and timber. Jon has been responsible for design engineering for numerous bridge structure types including haunched steel plate girder, flared continuous steel plate girder, rolled steel beam, steel truss, prestressed concrete girder, stone and brick masonry and concrete slab spans for various state, county and municipal agencies. He has also investigated and rated over 1,200 existing bridges and structures from simple timber spans to complex movable steel trusses. Jon also has significant experience in the planning and rehabilitation design for stone masonry retaining walls and brick and stone masonry bridge, tunnel, and culvert structures. Jon is a licensed professional engineer in Minnesota. His representative project experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth Coffee Creek Culvert Repair
- City of Duluth Bridge No. 93402 2nd Street over Chester Creek Culvert Repair
- City of Duluth Brewery Creek Tunnel Assessment
- City of Duluth Miller Creek 26th Avenue West Storm Tunnel Rehabilitation
- St. Louis County CSAH 4 Storm Sewer, Culvert, Pond Design
- St. Louis County CSAH 89 Highland Street Reconstruction



Chris Miller, PE
Bridge Engineer, LHB Duluth

Chris has over 14 years of experience in structural and bridge engineering, computer aided design, structural inspection and condition assessments and construction

project administration. Chris' design experience includes new bridge structure design in concrete and steel as well as extensive analysis experience in the rating of complex steel trusses and steel curved girder bridges. As a member of LHB's bridge design group he has participated as a design team member on numerous bridge projects including extensive experience in reinforced concrete structure design and pile supported foundation design. Chris has performed construction administration services for a variety of civil and structural projects. His design and construction knowledge and communication skills make him an effective team member and an asset to assuring project objectives are met. Chris is a licensed professional engineer in Minnesota. His representative project experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth Bridge No. 93402 2nd Street over Chester Creek Culvert Repair
- MnDOT TH 61 Flood Repair of Drainage Structures along London Road from 32nd Avenue East to Lester River Bridge
- MnDOT S.P. 6982-328 Twin Ports Interchange (TPI) Local Street Improvements for Mill and Overlay on Grand Avenue and Railroad Street*
- St. Louis County Haines Road Retaining Wall and Storm Sewer Redesign
- St. Louis County CSAH 89 Highland Street Reconstruction



Paul Vogel, PLS
Professional Land Surveyor, LHB Duluth

Paul has over 32 years of surveying experience and has provided services for various private and public clients. Paul's role is to complete and oversee

a variety of professional assignments to facilitate the completion of roads, building sites, recreational areas, developments, and bridges. He performs ALTA/ACSM, boundary, cadastral, topographic, environmental site, route surveys, which involve section subdivision, right-of-way acquisition, and preparation of appropriate legal description. Paul prepares design, concept plats, preliminary plats, final plats, site maps, and a variety of exhibits for land transfers, right-of-way acquisition, easements, and utility infrastructure. He provides research, computations, layout, field work, drafting, and correspondence. Paul is a licensed professional land surveyor in Minnesota. His representative project experience includes:

- City of Duluth SAP 2012-Oxford, Livingston, and Glenwood
- City of Duluth Superior Street Reconstruction*
- City of Duluth East 8th/9th Street Rehabilitation
- City of Duluth Superior Street from Lester River Road to TH61 Reconstruction



3. PERSONNEL CONT. (* Indicates LHB/SRF projects)



Tony Hanson
Crew Chief, LHB Duluth

Anthony has 20 years of surveying and computer aided drafting experience. He provides field survey services for highway/roadway construction, construction

staking, and site topography. His experience helps with the layout of primary and secondary roads, curb and gutter, buildings, and parking ramps. Tony also has substantial experience with use of total station and GPS instrumentation as well as in CADD drafting and quantity computation work. Tony's unique combined skill set that includes both field inspection and field survey results in an extremely efficient project delivery as he has both the knowledge and the equipment at his disposal to stake his own projects as needed. This ensures maximum efficiency and minimizes delay to the contractor's schedule. Some of Tony's relevant experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth East 8th/9th Street Rehabilitation



Steven Hohenstein
Senior Technician, LHB Duluth

Steve has been with LHB for 14 years which, combined with his prior employment, totals over 20 years of experience in the preparation of roadway and

utility construction plans, inspection, surveying and construction administration. Steve's roadway design and CADD experience combined with his years of inspection and CA gives him a unique ability to fully visualize the project as it is being constructed. Steve has excellent communication skills and has proven his ability to gain the respect and cooperation of contractors whose work he is inspecting. Steve's design and construction administration experience includes numerous State and Federal Aid funded projects. He is fluent in the requirements and processes of a State Aid funded project and has worked on a number of projects utilizing One Office documentation and administration software. Steve also has extensive experience utilizing ESRI's ArcGIS software and in the creation of digital plat and parcel data sets, and administration software. Steve's representative project experience includes:

- City of Duluth Superior Street Reconstruction*
- City of Duluth Superior Street from Lester River Road to TH61 Reconstruction
- Essentia Health Vision Northland 2nd Street Design*
- MnDOT S.P. 6933-100 TH 194 Central Entrance from Anderson Road to Blackman Avenue Mill and Inlay*
- MnDOT S.P. 6982-328 Twin Ports Interchange (TPI) Local Street Improvements for Mill and Overlay on Grand Avenue

and Railroad Street*

- S.A.P. 019-642-060 Dakota County CSAH 42 Eastbound Turn Lane Extension
- S.P. 3116-151 TH 169 Safety Improvements Design



Adrian Potter, PE, PTOE
Traffic Design Project Manager, SRF Minneapolis

Adrian has 23 years of experience in traffic engineering. His responsibilities include intersection control evaluations (ICEs), roundabout

and signal justification reports (RJR's & SJR's), pavement marking and signing design, traffic forecasting, work zone traffic control design, transportation management plans (TMPs) and traffic signal design. Adrian's proactive approach and communication skills have helped him foster design solutions for a variety of clients in city, county, state DOT, and private sectors. Adrian is a licensed professional engineer in Minnesota and a certified professional traffic operations engineer. He has provided traffic evaluation and design deliverables for more than 50 projects in the past two years:

- MnDOT S.P. 6982-328 Twin Ports Interchange (TPI) Local Street Improvements for Mill and Overlay on Grand Avenue and Railroad Street*
- MnDOT TH 194 Central Entrance from Anderson Road to Blackman Avenue Mill and Inlay*
- West Arrowhead Road and Costco East Access Traffic Signal Design in Duluth, MN
- Robert Street Improvements Traffic Signals in West St. Paul, MN



3. PERSONNEL CONT. (* Indicates LHB/SRF projects)



Luke James, PE, PTOE
Traffic Design Engineer, SRF
Minneapolis

Luke has eight years of traffic and transportation engineering experience. He is primarily involved with traffic signal design, signing/pavement

marking design, temporary traffic control plans, traffic analysis, and construction inspection. His responsibilities include the preparation of plans, specifications, estimates, and reports. Luke is a licensed professional engineer in Minnesota and a certified professional traffic operations engineer, and is certified in MnDOT Signal and Lighting. He is a member of the Institute of Transportation Engineers. Luke's experience in traffic signal design includes a number of projects in Duluth, such as:

- City of Duluth Superior Street Reconstruction Signal and Interconnect Design*
- Essentia Health Vision Northland 2nd Street 4th to 6th Avenue East Traffic Signal and Interconnect Design*
- Woodland Avenue and Kent Road/East 8th Street Signal Replacement
- West Arrowhead Road and Costco East Access Traffic Signal Design



Nick Erpelding, PE, PTOE
Traffic Engineer, Signal
Timing, SRF Minneapolis

Nick has 20 years of experience in traffic and transportation engineering with a focus on traffic signal operations. His work for the past 15

years includes coordinated signal timing optimization, Transit Signal Priority (TSP) benefit evaluation; and corridor operational analysis. Nick is a recognized expert in signal operations, having optimized signal timing for more than 1,000 signals in the past 10 years. His expertise extends to the field, where he excels in hands-on programming and adjustment of signal control and TSP hardware and software to maximize performance. His other traffic engineering experience includes traffic signal and pedestrian signal design (over 40 signals designed); ITS planning, including systems engineering and traffic signal communications plans; ITS design, including fiber optic interconnect design; roadway lighting design, and traffic impact studies. Nick is a licensed professional engineer in Minnesota and a certified professional traffic operations engineer and a member of the Institute of Transportation Engineers. Some of his recent Duluth projects with traffic signal design include:

- City of Duluth Superior Street Reconstruction Signal and Interconnect Design*
- 21st Ave/Woodland Ave Signal Timing Optimization
- Kenwood/Arrowhead Reconstruction involving Signal Timing and Fiber Optic Interconnect and red-light beacons
- DTA Multimodal Facility Traffic Signal Design
- DTA City-Wide Traffic Signal and TSP Improvements Procurement
- Grand Avenue Five Pedestrian Beacons



4. KNOWLEDGE OF DULUTH REQUIREMENTS

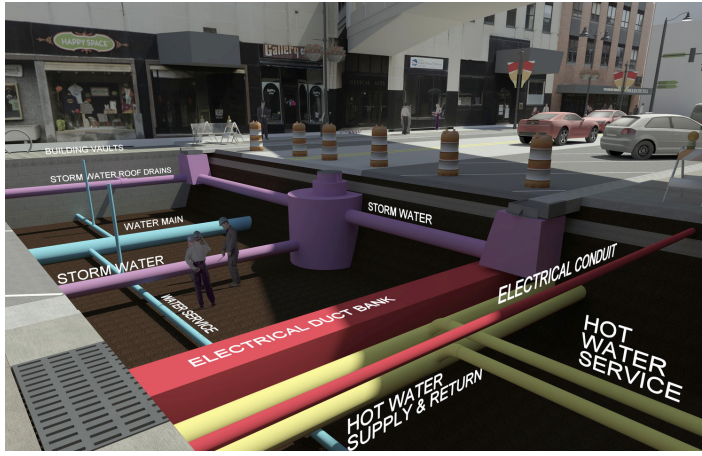
3. PERSONNEL

LHB's and SRF's key project staff on this project will serve in roles similar to our past project work for the City of Duluth. Our past project relationships, history, and knowledge of City of Duluth standards and requirements will ensure a successful project.

Resumes and past project experience for key project staff follow. As a team we are committed to this project's success and will ensure that key staff and resources are mobilized at the critical points in the design to progress the design efficiently on time and within budget.

For LHB's Public Works group, the City of Duluth remains our first and highest priority client. LHB was founded in Duluth, and we have worked hand in hand with City staff since our Public Works group's inception in the 1980's. We have worked hard over the course of our projects to continually improve our project delivery to match the City's expectations for design including technical excellence, project delivery on time and in budget, and a rigid adherence to quality control and plan checking processes.

Our key project staff have a proven working knowledge of City



5. WORK PLAN

The following is a general project work plan. Included, where applicable, are project deliverables and required City responsibilities and action items.

| | | | |
|---|-----------------------|---|---|
| TASK 1 - INITIAL SITE VISITS AND CONSULTATIONS | Services | LHB | Participate in coordination meeting(s) with City staff to review project and preliminary mapping and confirm project scope and complexity. |
| | | | Review and establish project design criteria. |
| | | | Participate in site visit with City staff to walk site with mapping in hand and review project issues. |
| | | | Perform detailed structural review of Oregon Creek storm tunnel at repair area. |
| | | | Perform Gopher State One Call design locate to collect private utility facilities information. |
| | Input | City | Ensure key City staff members participate in design meeting and site visit as desired. |
| | | Route and review meeting minutes and provide feedback on project design elements. | |
| | Deliverable(s) | LHB | Meeting minutes and design criteria summary. |
| TASK 2 - RECONNAISSANCE, FIELD SURVEYS | Services | LHB | Provide full topographic survey within the right-of-way including concrete curb, joints, walks, driveways, intersections, bituminous pavement, shoulders, in-place signs, utilities, storm sewer, and miscellaneous features. |
| | | | Perform Gopher State One Call design locate to collect private utility facilities information |
| | | | Perform a regulatory assessment of required permits and prepare all permits as required. |
| | Input | City | Provide historic plans, maintenance history and other existing data relevant to the design. |
| | | | Review and sign permit applications and pay permit fees as required. |
| | | Deliverable(s) | LHB |
| | | | Permits. |
| TASK 3 - PLANS & SPECIFICATIONS | Services | LHB | Review available records and information to provide project recommendations and preliminary cost estimate to facilitate project decision making with respect to the City's budget constraints. |
| | | | Prepare project plan to 30% design level including project typical sections, construction plans and anticipated construction limits. |
| | | | Complete and submit 60% design plans – complete design to the level that all significant design decisions have been addressed to properly construct the project. |
| | | | Complete and submit 90%, 95% and 100% plan submittals -- complete design to biddable level including quantity takeoffs, construction details, and statement of estimated quantities. |
| | | | Coordinate with the city and stakeholders regarding provisions for traffic circulation and property access in the project area. Coordinate with Grandma's Marathon stakeholders regarding event traffic control needs. |
| | | | Develop work zone traffic control plans, including detour signing plans and temporary pedestrian access where appropriate, consistent with agreed-upon construction staging. |
| | | | Evaluate temporary intersection traffic control needs to accommodate detours. |
| | | SRF | Gather 48 weekday hours of video at the intersections of 21 st Avenue East with Superior Street and 2 nd Street. Perform turning movement counts from the video. |
| | | | Perform signal warrants analysis for the Superior Street and 2 nd Street intersections. Prepare draft and final signal justification reports (SJR). |
| | | | Design and prepare plans, special provisions, and engineer's estimate (PS&E) for two new permanent traffic signals at the 21 st Avenue East intersections with Superior Street and 2 nd Street. |
| | | | Design fiber optic signal interconnect along 21 st Avenue East from London Road to 4 th Street (4 intersections). |
| | | | Design a construction temporary signal for the intersection of 21 st Avenue East and Superior Street (Optional Value Added Task). |
| | | | Develop, implement and fine-tune coordinated signal timing plans. Develop an event timing plan for Grandma's Marathon. (Optional at City's Request) |

5. WORK PLAN CONT.

| | | | |
|---------------------------------------|----------------|--|--|
| TASK 3 - PLANS & SPECIFICATIONS CONT. | Input | City | Provide available records, information, historical cost data and other information relative to the project. |
| | | | Review and provide feedback on 30%, 60% and 90% design plans. |
| | | | Furnish historical intersection turning movement count or hourly approach volume count data, if available, beyond the data that SRF already has from its most recent signal timing effort. |
| | | | Furnish the most recent three years of crash data for the subject intersections. |
| | | | Furnish current signal timing settings, if different from the timing last input by SRF. |
| | | | Provide input on staging, traffic circulation and property access requirements. Provide input on event traffic control needs during Grandma's Marathon. |
| | | | Provide review comments on deliverables. |
| | Deliverable(s) | LHB | 30%, 60%, 90% Design Submittals to City. |
| | | | 95% Design Submittal to MnDOT State Aid including checklists and forms. |
| | | | 100% Design Submittal. |
| | | | Bid-ready Special Provisions. Video files capturing intersection turning movements. |
| | | | Draft and final SJRs. |
| | | | Construction temporary signal plans, special provisions, and engineer's estimate (Optional Value Added Task). |
| | | Coordinated signal timing plans and Synchro/SimTraffic files (Optional at City's Request). | |
| TASK 4 - COST ESTIMATE | Services | LHB | Prepare estimates for the project throughout the design including preliminary design estimate, updated cost estimates at the 30%, 60%, 90%, and 100% (final) design levels. |
| | Input | City | Provide recent historical cost data and bid tabs. |
| | | | Review and provide feedback on estimates as desired. |
| Deliverable(s) | LHB | Preliminary, 30%, 60%, 90% and 100% engineer's estimates. | |
| TASK 5 - PROJECT BIDDING | Services | LHB | Answer City and Contractor questions during bidding. |
| | | | Attend pre-construction conference. |
| | Input | City | Advertising, bidding, and letting management. |
| Deliverable(s) | LHB | Clarifications or addenda, as required. | |

5. WORK PLAN CONT.



WORK PLAN

PROJECT NAME **21ST AVE EAST**
 CLIENT **CITY OF DULUTH**
 PREPARER **LHB/SRF**

PROJECT NUMBER **210433**
 DATE **07/14/2021**

| Work Task | Description | LHB | | | | | | | SRF | | | | | | | TOTAL HOURS | |
|--------------------|---|-----------------|------------------|-----------------|---------------------|---------------|-------------------|---------------|-------------|-----------------|------------------|------------------------|--------------------|------------|----------------|-------------|----------------------|
| | | Brad Scott | Megan Goplin | Jon Siiter | Chris Miller | Nathan Bruno | Steven Hohenstein | Paul Vogel | Tony Hanson | Adrian Potter | Luke James | Jake Folkeringa | Nick Erpelding | | | | |
| | | Project Manager | Project Engineer | Structural Lead | Structural Engineer | Drainage Lead | Technician | Land Surveyor | Survey Tech | Project Manager | Traffic Designer | Fiber and Network Lead | Signal Timing Lead | Technician | Fiber Designer | | Data Collection Tech |
| 1.00 | INITIAL SITE VISITS AND CONSULTATIONS | 12 | 12 | 6 | 6 | 4 | 8 | 0 | 0 | 2 | 14 | 0 | 0 | 0 | 0 | 64 | |
| 1.01 | Review Information / Initial Site Visit / Meeting Minutes | 6 | 6 | 6 | 6 | 4 | 6 | | | 2 | 14 | | | | | | |
| 1.02 | (3) Status Meetings with City | 6 | 6 | | | | | | | | | | | | | | |
| 1.03 | Gopher State One Call & Utility Verification | | | | | | 2 | | | | | | | | | | |
| 2.00 | RECONNAISSANCE, FIELD SURVEYS | 4 | 6 | 0 | 0 | 0 | 40 | 8 | 80 | 0 | 0 | 0 | 0 | 0 | 0 | 138 | |
| 2.01 | Field Survey & Mapping | 2 | 4 | | | | 40 | 8 | 80 | | | | | | | | |
| 2.02 | Permits | 2 | 2 | | | | | | | | | | | | | | |
| 2.03 | Survey Traffic Control | | | | | | | | | | | | | | | | |
| 3.00 | PLANS AND SPECIFICATIONS | 43 | 176 | 6 | 40 | 60 | 211 | 0 | 0 | 54 | 299 | 2 | 0 | 26 | 8 | 28 | 953 |
| 3.01 | Title Sheet (1 Sheet) | | 2 | | | | | | | | | | | | | | |
| 3.02 | Statement of Estimated Quantities (2 Sheets) | 2 | 10 | | | | | | | | | | | | | | |
| 3.03 | Construction Notes & Standard Plates (1 Sheet) | 1 | 2 | | | | | 1 | | | | | | | | | |
| 3.04 | Tabulations (4 Sheets) | 4 | 24 | | | 4 | 12 | | | | | | | | | | |
| 3.05 | Typical Sections (2 Sheets) | 4 | 8 | | | | 6 | | | | | | | | | | |
| 3.06 | Construction Details (15 Sheets) | | | | | | | | | | | | | | | | |
| | CPR Details & City Standard Details | | 4 | | | | 8 | | | | | | | | | | |
| | ADA Layouts (4 Intersections: Jefferson St, 1st St, 3rd St, and 5th St) | 1 | 32 | | | | | | | | | | | | | | |
| | Concrete Paving and ADA Layout (2nd St & Superior St) | 2 | 32 | | | | | | | | | | | | | | |
| | Storm Sewer Repair Details | 2 | | | 8 | 8 | 16 | | | | | | | | | | |
| | Oregon Creek Tunnel Manhole Replacement | | | 6 | 32 | | 40 | | | | | | | | | | |
| 3.07 | Construction Plans and Profiles (7 Sheets - 1" = 40') | 21 | 56 | | | | 112 | | | | | | | | | | |
| 3.08 | Erosion and Sediment Control Plan (3 Sheets) | | | | | | 8 | | | | | | | | | | |
| 3.09 | Drainage Profiles & Tab (3 Sheets for Storm Relocations due to Curb Extensions) | | 2 | | | 40 | 8 | | | | | | | | | | |
| 3.10 | Signal Justification Reports (ICE) | | | | | | | | 9 | 31 | | | 10 | | | 28 | |
| 3.11 | Traffic Control and Permanent Signing/Pavement Markings (30 Sheets) | | | | | | | | 10 | 98 | | | | | | | |
| 3.12 | Signal Systems (27 Sheets) | | | | | | | | 31 | 154 | 2 | | 16 | 8 | | | |
| 3.13 | Special Provisions | 4 | | | | | | | 4 | 16 | | | | | | | |
| 3.14 | State Aid Plan Submittal | 2 | 4 | | | | | | | | | | | | | | |
| 4.00 | COST ESTIMATE | 4 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| 4.01 | Project Estimates at Preliminary, 30%, 60%, 90%, 95% & 100% | 4 | 12 | | | | | | | 9 | | | | | | | |
| 5.00 | PROJECT BIDDING | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 5.01 | Bidding Assistance | 2 | 4 | | | | | | | 4 | | | | | | | |
| TOTAL HOURS | | 65 | 210 | 12 | 46 | 64 | 259 | 8 | 80 | 56 | 326 | 2 | 0 | 26 | 8 | 28 | 1190 |

6. WORK SCHEDULE

We are committed to meeting the City’s schedule for the project as listed below. Our team will provide key deliverables at the required project milestones. We will work diligently in the early phase of the project to provide input and cost estimates to validate the project scope and budget. We will rigorously adhere to the timelines for the design and review of the plans, reports, State-Aid forms, and other required deliverables.

| Task | Days | Start | Finish |
|---|-------------|----------------|----------------|
| Proposal Submittal | 1d | 7/14/21 | 7/14/21 |
| CONTRACT APPROVAL AND KICKOFF | 12d | 7/15/21 | 7/27/21 |
| Contract Approval | 11d | 7/15/21 | 7/26/21 |
| Kickoff Meeting with City | 1d | 7/27/21 | 7/27/21 |
| INTERSECTION EVALUATION | 47d | 7/28/21 | 9/13/21 |
| ROADWAY DESIGN | 125d | 7/27/21 | 1/17/22 |
| 30% Design Submittal and City Concurrent Review | 25d | 7/27/21 | 8/30/21 |
| 60% Design | 25d | 8/31/21 | 10/4/21 |
| 60% Design Submittal and City Review | 10d | 10/5/21 | 10/18/21 |
| 90% Design | 30d | 10/19/21 | 11/29/21 |
| 90% Design Submittal and City Review | 10d | 11/30/21 | 12/13/21 |
| 90% Design Corrections Complete | 10d | 12/14/21 | 12/27/21 |
| 100% Plan Submittal to DSAE | 1d | 12/28/21 | 12/28/21 |
| Submit State Fund Grant Agreement to DSAE | 1d | 1/17/22 | 1/17/22 |
| BIDDING | 21d | 2/9/22 | 3/2/22 |
| Advertise for Bids | 20d | 2/9/22 | 3/1/22 |
| Bid Opening | 1d | 3/2/22 | 3/2/22 |
| CONTRACT APPROVAL AND KICKOFF | 1d | 3/14/22 | 3/14/22 |
| Construction Contract Approval | 1d | 3/14/22 | 3/14/22 |
| Council LRIP Grant Approval | 1d | 3/14/22 | 3/14/22 |
| CONSTRUCTION | | | |
| Start Construction | 1d | 5/2/22 | 5/2/22 |

7. REFERENCES

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