

PUBLIC WORKS & UTILITIES COMMITTEE

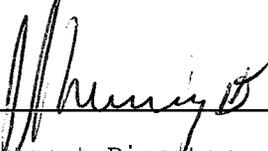
12-0581R

RESOLUTION AUTHORIZING A CONTRACT WITH LHB, INC. FOR PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION ADMINISTRATION FOR THE RECONSTRUCTION OF HAWTHORNE ROAD, VERMILION ROAD AND ST. MARIE STREET FROM SUPERIOR STREET TO WALLACE AVENUE IN THE AMOUNT OF \$356,318.

CITY PROPOSAL:

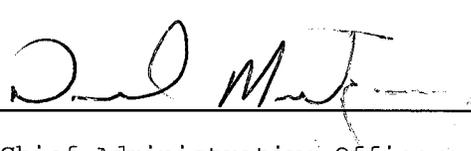
RESOLVED, that the proper city officials are hereby authorized to enter into an agreement with LHB, Inc. for professional engineering services related to the design and construction administration for the reconstruction of Hawthorne Road, Vermilion Road and St. Marie Street from Superior Street to Wallace Avenue in an amount not to exceed \$356,318, payable from Disaster Recovery Fund 225, Department/Agency 125 (Finance), Organization 1803 (Roads and Bridges), Object 5303 (Engineering Services), city project no. 1172, S.P. 118-134-016 and 118-156-011, requisition no. 12-0649.

Approved:



Department Director

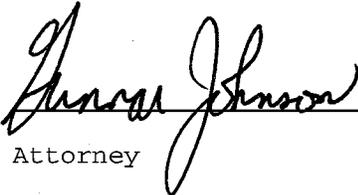
Approved for presentation to council:



Chief Administrative Officer

Purchasing Agent 

Approved as to form:



Attorney

Approved:



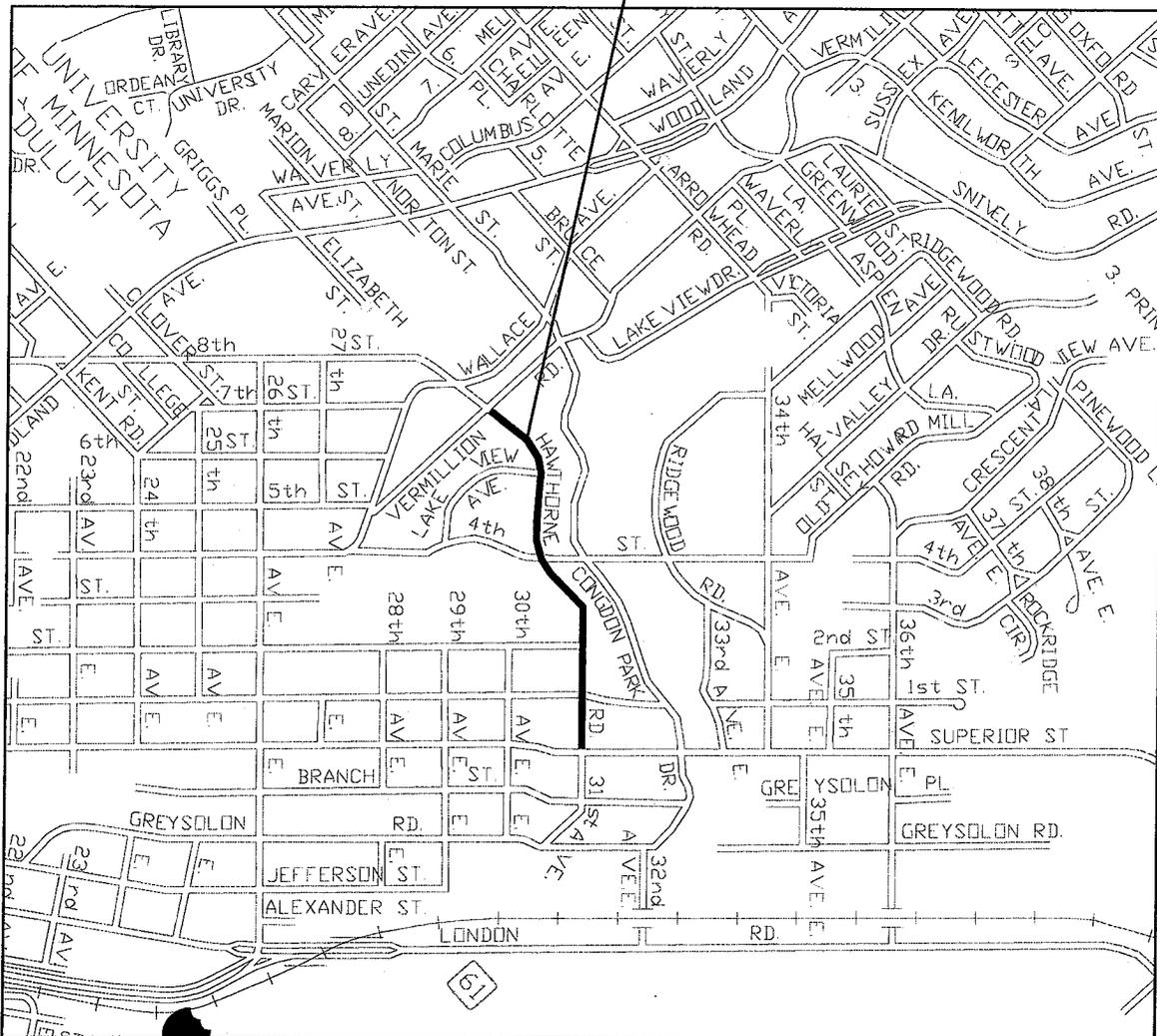
Auditor

ENG PTM:jh 11/14/2012

STATEMENT OF PURPOSE: This resolution will authorize a contract for professional engineering services for the design and construction administration for the reconstruction of Hawthorne Road, Vermilion Road and St. Marie Street from Superior Street to Wallace Avenue. Costs to be reimbursed by state of Minnesota disaster funding. Disaster Recovery Fund 225, Department/Agency 125 (Finance), Organization 1803 (Roads and Bridges), Object 5303 (Engineering Services), city project no. 1172, S.P. 118-134-016 and 118-156-011, FEMA flood site nos. 191, 332 and 334, requisition no. 12-0649.

MAP

VERMILLION/HAWTHORNE
LOCATION



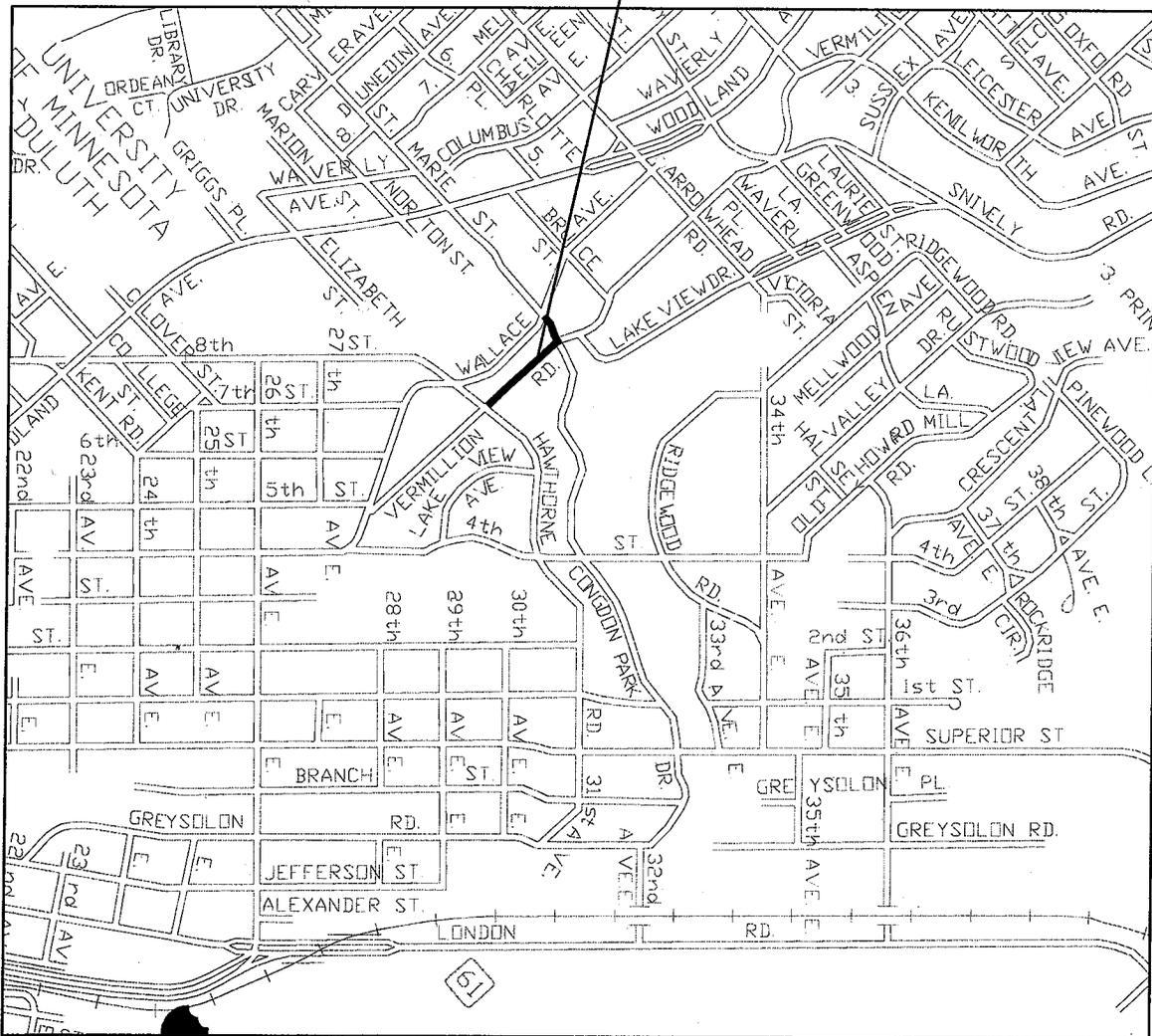
NO SCALE



PROJECT LOCATION
ST. LOUIS COUNTY
CITY OF DULUTH
SEC 11, 12, 13 & 14
T50W, R14W

MAP

E. ST. MARIE/
VERMILLION
LOCATION



NO SCALE



PROJECT LOCATION
ST. LOUIS COUNTY
CITY OF DULUTH
SEC 11, 12, 13 & 14
T50W, R14W



21 West Superior Street, Suite 500
Duluth, Minnesota 55802
218 727-8446
Fax 218 727-8456
www.LHBcorp.com

November 8, 2012

Patrick Mlakar
Senior Engineering Specialist
411 1st Avenue West, Room 211
Duluth, MN 55802

**CITY OF DULUTH PROJECT NO. 1172
HAWTHORNE, VERMILION & ST. MARIE STREET RECONSTRUCTION
ENGINEERING DESIGN AND CONSTRUCTION ADMINISTRATION
SERVICES**

The City has selected LHB to provide engineering design and construction administration services for the reconstruction of Hawthorne Road (from Superior Street to Vermilion Road), Vermilion Road (from Hawthorne to St. Marie Street) and St. Marie Street (from Vermilion Road to Wallace Street). The streets connect Duluth's Congdon Park and Chester Park neighborhoods and are part of the municipal state-aid street system. The project will consist of full-depth concrete pavement reconstruction; replacement curb and gutter; selective replacement of concrete walks; and utility work including watermain relocation and storm sewer replacement and CIPP lining. The project will be designed and administered during construction in accordance with city, MnDOT and federal aid requirements.

PROJECT UNDERSTANDING

Hawthorne, Vermilion and Wallace serve as urban collectors for the neighborhood local streets between urban arterials Woodland Avenue and Superior Street. 2011 AADT volumes for the streets are as follows: 3,600 vpd for Hawthorne between Superior Street and 4th Street; 4,650 vpd for Hawthorne between 4th Street and Vermilion; 4,000 vpd for Vermilion Road between Hawthorne and St. Marie; and 2,900 for Wallace between Vermilion Road and Woodland Avenue. The total street reconstruction length is approximately 3,900 Lin Ft (¾-mile). The project will be designed to meet 10-ton pavement design criteria. The design phase will include developing traffic control plans for the planned 2013 summer construction duration and coordination with Independent School District 709 for public and school bus traffic at Ordean-East Middle School.

HAWTHORNE ROAD

Hawthorne Road consists of approximately 2,900 Lin Ft of street reconstruction between Superior Street and Vermilion Road. Profile grades vary but, in general, are between 9% and 11% and rise continuously to Vermilion Road.

The existing typical section is 28-ft (face of curb to face of curb) except in the vicinity of the Ordean East Middle School where the section widens to 38-ft. The existing pavement

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section consists of 8-inch concrete pavement over 6-inch aggregate base with integrant curb and subdrain. Concrete pavement and joints on Hawthorne Road vary from fair to poor condition with numerous mid-panel breaks, joint deterioration, previous joint repairs, heaving, and evidence of subgrade undermining as a result of the June flood event. Previous construction plans reflect the presence of bedrock along Hawthorne Road. The street is no-parking on both sides. There is boulevard and concrete walk on both sides.

Hawthorne is notable for its large boulevard trees which are highly valued by local residents. The City of Duluth has initiated a tree survey to evaluate the quality and viability of trees along Hawthorne to provide a basis for removal or preservation efforts in the design phase.

To minimize potential impact to boulevard trees and facilitate construction, the proposed typical section will consist of a 26-ft street width (face of curb to face of curb). The anticipated section will be concrete pavement over aggregate base and select granular borrow. Pavement lugs will be provided due to the profile grade. The intersection at 4th Street shows evidence of joint deterioration. For the longitudinal joints along 4th Street, the joints are deteriorating on one side only suggesting that the joint was over-finished during initial construction and that water added to the pavement surface to aid finishing may have contributed to the failure. Transverse joints show deterioration along both sides of the joint. It is the City's desire to do selective concrete pavement restoration (CPR) work at the joints and preserve the in-place slabs which are in good condition.

Existing walks in poor condition will be selectively replaced as needed and proposed driveway connections are expected to tie-in at the back of existing apron. It is the City's intent to eliminate the free-right turn at Hawthorne and Vermilion and construct the intersection as a four-way stop. The existing drive connected to the free-right at the carriage house on Hawthorne will be re-aligned to connect directly to Hawthorne Road. The City is presently reconstructing portions of Vermilion Road east of the project area and that work scope will be incorporated into the project design.

VERMILION ROAD

Proposed work at Vermilion Road consists of approximately 700 Lin Ft of street reconstruction between Hawthorne Street and St. Marie Street. Moderate profile grades rise toward St. Marie Street at about 6%. The street has a boulevard with trees on the east side. The west side of the street is wooded with steep grades rising to Wallace Avenue. Concrete pavement and joints on Vermilion Road vary from fair to poor conditions with significant wash out from the flood present.

The existing typical section is 28-ft (face of curb to face of curb). The pavement section consists of 8-inch concrete pavement over 6-inch aggregate base with integrant curb and subdrain. The street is no-parking on both sides. There is concrete walk on the east side of the street. The street has only a single residential entrance located on the east side of the street.

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The proposed typical section will perpetuate the new section at Hawthorne and consist of a 26-ft street width (face of curb to face of curb). Existing walks in poor condition will be selectively replaced as needed.

ST. MARIE STREET

St. Marie Street consists of approximately 300 Lin Ft of street reconstruction between Vermilion Road and Wallace Avenue. Steep profile grades rise toward Wallace Avenue at about 9%. Exposed bed rock is visible on the east side of the street and is also reflected in the historic plans for the project.

The existing typical section is 28-ft (face of curb to face of curb). The pavement section consists of 8-inch concrete pavement over 6-inch aggregate base with integrant curb and subdrain. The street is no-parking on both sides. There are 4-ft wide concrete walks on both sides which were severely damaged or undermined as a result of the June flood and will be replaced. The street has no residential entrances. The project abuts the upcoming flood repair project of the Bridge crossing over Tisher's Creek.

The proposed typical section will perpetuate the new section at Hawthorne and consist of a 26-ft street width (face of curb to face of curb) up to the street's intersection with Wallace Avenue.

The horizontal curvature on St. Marie Street does not meet State Aid Rules. The existing curve is a 75-ft radius at normal crown. The minimum required radius per State Aid Standards for 30-mph is a 215-ft radius at 0.06 ft/ft superelevation. A variance from State Aid rules will be required as part of the project design and is expected to be granted based on the presumed environmental and construction costs of constructing to the required standards and the lack of historical traffic accidents or incidents at the current location.

Work at the intersection of St. Marie and Vermilion Road will be coordinated with the proposed work at the Tischer Creek bridge.

WATER MAIN REPLACEMENT

The project will replace all water mains, valves, water services, and hydrants within the project limits.

Existing main on Hawthorne Road consists of approximately 1,300 Lin Ft of 6" CI main between 4th Street and Vermilion Road and 1,150 Lin Ft of 6" CI main from approximately 800-ft north of 2nd Street to 1st Street.

It is also anticipated that approximately 310 Lin Ft of water main running down streets that intersect the project will be replaced to the limits of construction at Vermilion Road (40 Lin Ft), Lakeview Avenue (80 Lin Ft), 4th Street (130 Lin Ft) and 2nd Street (60 Lin Ft). There is no water main on Vermilion Road or St. Marie Street. The project will therefore replace a total of approximately 2,760 Lin Ft of existing water main with new 8" HDPE main.

The existing 36-inch CI main that runs along the west side of Hawthorne from Superior Street to the alley north of 2nd Street will be left as-is.

Frequency and placement of hydrants will be based on providing hydrants in lieu of air release valves at high points in the main; ensuring not more than 300 ft distance from any house to a hydrant; and providing a hydrant at each street intersection.

There is a gap in the existing water system on Hawthorne between 4th Street and approximately 500-ft north of 2nd Street. The City has indicated that this main does not need to be interconnected at this location.

All new water mains will be HDPE pipe and the City requires that LHB staff working on its projects demonstrate a combined minimum of 10,000 Lin Ft of 8-inch or larger HDPE water main design experience within the last 5-years. The following table summarizes the HDPE water main experience for LHB staff assigned to the project:

LHB Staff	Lin Ft of HDPE Water Main Design Experience (8" or larger)	Project
Matt Ryan	2,304	Harbor Highlands Ph. II (Duluth)
Matt Ryan	1,443	Harbor Highlands Ph. III (Duluth)
Matt Ryan	308	Harbor Highlands Ph. IV (Duluth)
Brad Scott	1,042	Duluth SIP 2006 Duluth Heights I
Brad Scott	3,450	Duluth SIP 2008 Morley Heights
Joe Litman	5,564	Kirkus Street (Proctor)
Matt Ryan	5,794	Oxford, Livingston & Glenwood (Duluth)
Total	19,905	

Considerations during design will include balancing the goals of the street design and the known presence of bedrock to provide the minimum cover depths over the main; maintaining temporary water services during construction; and ensuring thoroughness of the new design in the plans and special provisions.

SANITARY SEWER

Existing sanitary main on Hawthorne consists of 12" PVC from Superior Street to Second Street; 8" VCP from 2nd Street to Lakeview Avenue; and 8" PVC from Lakeview Avenue to Vermilion Road. There is approximately 220 Lin Ft of 8" VCP on Vermilion Road that enters Vermilion Road from Wallace Street about 180 Ft east of the Hawthorne Road and Vermilion Road intersection.

The project will leave all sanitary sewer main, manholes, service wyes and mains within the project limits as-is except where a sanitary service is encountered during the installation of a new water service on existing clay main. In that event the existing

service will be replaced and reconnected at the main with a new service wye. It is the City's general intent to line the existing main in the future when it is needed.

The City may wish to video the existing sanitary main to determine the condition of the main. In the event that selective sewer main replacement is required due to pipe failures, intrusion of roots or other deficiencies, such work would be added so it could be performed prior to the placement of the permanent concrete pavement and the future lining work.

STORM SEWER CONSTRUCTION

The City has videoed the existing storm sewer system and determined that the mains on the project are, in general, in good condition and that many catch basin leads and structures are in poor condition and are damaged from the June 2012 flood event.

In general, on Hawthorne Road, existing storm water trunk main will be lined (CIPP) where it is possible to do so or otherwise replaced where they are in poor condition or conflict with the installation of other utilities. Catch basins and pipe leads will be removed and replaced. There is an existing storm sewer outfall that carries storm water from Lakeview Avenue and Hawthorne Road north of Lakeview to an outfall at Tischer's Creek. This existing outfall was severely damaged by the June 2012 flood events and will be repaired by the City as part of a separate project. The street reconstruct project will only replace that portion of the Tischer Creek Lakeview Avenue outfall directly within the road excavation limits.

New storm sewer main will be installed on Hawthorne between 1st Street and Superior Street. The existing storm sewer system in this segment discharges to a 2-ft x 4-ft box culvert at 1st Street that discharges to an open channel flowage located in the residential yards of the two homes located on the east side of the street. The channel flows to the south to Superior Street where the surface flow then re-enters the City storm sewer system via a 44-inch x 40-inch concrete culvert that continues south and east to Tisher's Creek. The project will intercept the storm sewer flow at the inlet to the 2-ft x 4-ft box culvert at the intersection of Hawthorne Road and 1st Street. Approximately 450 Lin Ft of new storm main will be required to convey the flow south to Superior Street and connect to the existing system. The 2-ft x 4-ft box culvert inlet will be bulk headed at the manhole and abandoned in place. The 44-inch x 40-inch concrete culvert will remain as-is as it will still function as an area drain for the surrounding residential yards.

Storm sewer work at the intersection of St. Marie Street and Vermilion Road will consist of removal and replacement and will be coordinated with the repair of the bridge at Tischer's Creek. The existing outfall damaged by the June 2012 flood event will be removed and replaced.

Storm sewer main on Vermilion Road will be lined and catch basin structures and leads will be removed and replaced.

Based on comparing the existing and proposed typical sections for each street, the project will result in a net decrease in impervious surfaces. The project drains to Tischer Creek, a designated trout stream, and the special waters provisions of the general stormwater permit for temporary erosion and sediment controls during construction will apply. Permanent stormwater treatment is not required under the terms of the general stormwater permit and the City has indicated that no permanent stormwater treatment devices are to be provided as part of the project.

As a State Aid project the drainage plans, estimated quantities and hydraulic report will be submitted to State Aid for review and approval and to determine the appropriate funding splits between local and state aid funds.

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
LHB	<ul style="list-style-type: none">• Participate in coordination meeting with City staff to review 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.
City	<ul style="list-style-type: none">• 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)	<ul style="list-style-type: none">• Meeting minutes/summaries and design criteria summary.

Task 2 Preliminary Site Investigation and Supplementary Survey	
LHB	<ul style="list-style-type: none"> • Research City utility records including water and sewer service cards; archived plans; and other available information to supplement mapping. • Aerial Survey. (LHB Subconsultant) • Provide supplementary field survey to aerial mapping to validate aerial mapping. • Provide supplementary survey to collect utility information for water, sanitary and storm including manhole reports; photographs of existing structures; elevations; pipe diameters and material type. • Perform property and survey monument research to establish property ownership and lot line information; locate right-of-way; and provide control points for alignment and elevation. • Perform Gopher State One Call design locate to collect private utility facilities information. • Geotechnical site investigation. (LHB Subconsultant)
City	<ul style="list-style-type: none"> • Provide any existing reports, surveys and record drawings and access to City archive information.
Deliverable(s)	<ul style="list-style-type: none"> • Preliminary mapping with underground utility mapping; right-of-way; and property ownership information. • Geotechnical report and recommendations.

Task 3 Preliminary Engineering Design and Public Information Meetings	
LHB	<ul style="list-style-type: none"> • Complete 30% design -- set horizontal and vertical geometry; run preliminary cross section to assess grading impacts and driveway/entrance connections; evaluate feasibility of proposed utility improvements. • Perform hydrologic and hydraulic analysis; design and prepare preliminary storm system layout; and analyze sag conditions. • Public Information Meeting -- prepare and mail notices; prepare meeting exhibits and presentation; facilitate discussion with residents; and prepare meeting minutes. • Initiate utility coordination for facilities within project construction limits.
City	<ul style="list-style-type: none"> • Attend and lend input at public meeting as desired. • Provide feedback and comment on 30% design.
Deliverable(s)	<ul style="list-style-type: none"> • 30% Design Submittal • Meeting minutes/summaries.

Task 4 Construction Plans, Special Provisions and Cost Estimating	
LHB	<ul style="list-style-type: none"> • 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. • Prepare and submit complete hydraulics letter, drainage calculations and plan submittal to MnDOT State Aid Hydraulics. • Meet with any affected private utilities and determine right of way or temporary easement needs, if any.
City	<ul style="list-style-type: none"> • Review and provide feedback on 60% design plans as desired. • Review and provide feedback on 90% plans. • Attend and lend input at utility coordination meetings as required.
Deliverable(s)	<ul style="list-style-type: none"> • 60% Design Submittal. • 60% Engineer’s Estimate of Cost. • State Aid Hydraulics Submittal. • 90% Design Submittal to City. • 95% Design Submittal to MnDOT State Aid including State Aid checklists and forms. • 100% Design Submittal. • Bid-ready Special Provisions. • Final Engineer’s Estimate of Cost.

Task 5 Permitting	
LHB	<ul style="list-style-type: none"> • Prepare and submit permit applications for all appropriate regulatory agencies. • Prepare project SWPPP.
City	<ul style="list-style-type: none"> • Sign permit application forms. • Review SWPPP.
Deliverable(s)	<ul style="list-style-type: none"> • Complete permit applications. • Final SWPPP

Task 6 Bidding Assistance	
LHB	<ul style="list-style-type: none"> • Answer City and Contractor questions during bidding. • Attend bid opening.
City	<ul style="list-style-type: none"> • Advertising, bidding and letting management.
Deliverable(s)	<ul style="list-style-type: none"> • Clarifications or addenda as required.

Task 7 Design Project Management	
LHB	<ul style="list-style-type: none"> • Prepare and distribute project correspondence. • Monitor project budget. • Quality Control and Assurance. • Communication with City staff and the public.
City	<ul style="list-style-type: none"> • Timely project coordination, comments and review/feedback to questions during design.
Deliverable(s)	<ul style="list-style-type: none"> • Project correspondence.

Task 8 Construction Project Management	
LHB	<ul style="list-style-type: none"> • Prepare and distribute project correspondence. • Monitor project budget. • Communication with City staff and the public.
City	<ul style="list-style-type: none"> • Assist with communication with City Staff and the public.
Deliverable(s)	<ul style="list-style-type: none"> • Project correspondence.

Task 9 On Site Observation	
LHB	<ul style="list-style-type: none"> • Monitor the Contractor's performance and quality/ conformance of materials utilized. • Lead construction meetings including preconstruction and weekly construction meetings between the Contractor, Owner(s), Engineer, and other interested parties such as utility owners, permitting agencies and area residents. • Observe all aspects of the construction. • Provide experienced personnel on-site with required Mn/DOT training and certification to assure the work is monitored properly and that funding requirements are met.
City	<ul style="list-style-type: none"> • Participation in pre-construction and weekly meetings. • Provide input and feedback on construction issues.
Deliverable(s)	<ul style="list-style-type: none"> • Meeting minutes.

Task 10		Construction Staking
LHB	<ul style="list-style-type: none"> Establish project benchmarks and working points. Detailed field survey staking of necessary control and grades to facilitate construction of the project. Creation of staking data files. Staking of roadway subcuts, roadway alignment, roadway surface blue tops and curb stakes, and utility locations. 	
City	<ul style="list-style-type: none"> Utility locate services. Facilitate coordination with City survey staff. 	
Deliverable(s)	<ul style="list-style-type: none"> Survey files and data, as required. 	

Task 11		Construction Documentation
LHB	<ul style="list-style-type: none"> Prepare and distribute project correspondence. Documentation and record keeping of construction conformance, construction progress and payment processing. Daily and Weekly Diaries. Quantity Measurements and Computations. Preparation and updating of Quantity Item Record Accounts. Review and processing of Materials Testing Reports. Preparation of Work Orders, Change Orders, Supplemental Agreements and Pay Estimates. Final Record Drawings and completion of the One-Year Warranty Inspection. 	
City	<ul style="list-style-type: none"> Review and approve contract changes, partial estimates and final estimate. Participate in final inspection and walk-through. 	
Deliverable(s)	<ul style="list-style-type: none"> Project documentation. Material data and testing reports. Project Record Drawings. 	

COST PROPOSAL

A cost proposal and summary of hours for the design and construction phases based on our project understanding and proposed work plan are attached.

LHB obtained competitive proposals from separate aerial survey firms to provide the base mapping in accordance with City standard requirements. LHB also obtained competitive proposals from (3) geotechnical firms to provide geotechnical investigation and construction materials testing. LHB reviewed the proposals and has selected the lowest cost responsive proposal to include in the overall estimate for design and construction services.

Please review and comment. We are available to review and reconsider any items within this proposal at your convenience.

November 8, 2012

We appreciate the opportunity to work on this project and look forward to delivering a successful project.

LHB

A handwritten signature in black ink, appearing to read "BRAD SCOTT". The signature is stylized with a large, sweeping initial "B" and a horizontal line extending to the right.

Brad Scott, Civil Project Manager

Attachments:

1. Cost Proposal (1 page)
2. Work Plan & Summary of Hours by Task – Design (2 page)
3. Work Plan & Summary of Hours by Task – Construction (1 page)
4. Aerial Survey RFP (4 pages) and Fugro Horizons Proposal (5 pages)
5. Geotechnical Investigation and Construction Materials Testing RFP (10 pages) and Bruan Intertec Proposal (19 pages)

c: File #120451

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COST PROPOSAL

Project Name
Client
Preparer

Hawthorne-Vermilion-St. Marie
City of Duluth
bps/jdl

Project Number 120451
Date November 8, 2012

Work Task	Description	Project Principal	Project Manager	Utility Engineer	Hydraulics Engineer	Lead Technician	Asst. Technician	Landscapist Architect	Licensed Surveyor	Survey Tech	Survey Tech	Admin Asst.	Total Labor (\$)
		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1	Initial Site Visits and Consultation	2	26	0	0	4	4	0	4	0	0	0	4,554
2	Preliminary Site Investigations and Supplementary Survey	0	7	22	6	56	0	0	56	170	0	8	29,052
3	Preliminary Engineering Design and Public Information Meetings	10	49	23	45	40	76	16	0	0	0	15	24,271
4	Construction Plans, Special Provisions and Cost Estimating	17	188	93	129	458	278	6	4	1	0	12	103,620
5	Permitting	0	1	0	12	0	0	0	0	0	0	2	1,258
6	Bidding Assistance	2	8	1	2	0	8	0	0	0	0	6	2,350
7	Design - Project Management	13	32	12	0	0	0	0	0	0	0	1	7,299
8	Construction - Project Management	10	34			0	0		0			0	5,598
9	On-Site Observation	14	94			749	100		0			16	79,805
10	Construction Staking		0			0	0		12	279	190		31,694
11	Construction Documentation	7	53			162	8						20,791
TOTALS		75	492	151	194	1469	474	22	76	450	190	60	310,292
OTHER DIRECT COSTS (ODC)													
Description	Cost												
Travel	\$ 800												
Mail / Delivery	\$ 35												
Printing	\$ 348												
Supplies	\$ 40												
Survey Equipment	\$ 300												
Construction (See Task 12)	\$ 10,205												
Total ODC	\$ 11,728												
SUMMARY													
												LHB Labor Cost	\$ 310,292
												Other Direct Costs	\$ 11,728
												Total LHB Est Cost	\$ 322,020
												Subconsultant Costs	
												Fugro -- Aerial Survey	\$ 9,625
												Braun -- Geotechnical Investigation	\$ 6,200
												Braun -- Mats. Testing	\$ 18,474
												Total Est Costs	\$ 356,318