

PROFESSIONAL ENGINEERING SERVICES AGREEMENT

ENGINEER & CITY OF DULUTH

THIS AGREEMENT, effective as of the date of attestation by the City Clerk, is made by and between the City of Duluth, Minnesota hereinafter referred to as the "City" and:

Name: TRC Environmental Corporation
Address: 230 West Monroe Street; Suite 2300, Chicago, IL 60606

hereinafter referred to as the "Engineer", in consideration of the mutual promises contained herein.

Payments hereunder, in the estimated amount of Forty-four Thousand Three Hundred Seventy-Eight and no/100ths Dollars (\$44,378) shall be made from fund 110-121-1217-2145-5310; Resolution No. 17-0850R passed on December 4, 2017 and Requisition Number (insert).

The professional engineering services obtained by the City under this agreement concern the following described project hereinafter referred to as the "Project":

Project Name: Duluth Lakewalk and Shoreline Damage Assessment
Project Description: Professional Engineering Services for Damage Assessment and Reconstruction Recommendations; October 27, 2017 Storm Surge

The professional engineering services to be provided under this agreement consist of those phases A through H checked below. A more particular description of each phase is contained in Section II, "Basic Services", of the agreement.

<u>Phase</u>	<u>Description</u>
<u>X</u>	A. Study and Report Phase
<u>X</u>	B. Preliminary Survey Phase
<u>X</u>	C. Preliminary Design Phase
_____	D. Final Design Phase
_____	E. Bidding Phase
_____	F. Construction Survey and Layout Phase
_____	G. Construction Administration and Inspection Phase
_____	H. Additional Services

SECTION I. GENERAL

A. ENGINEER

The Engineer shall provide professional engineering services for the City in all phases of the Project to which this agreement applies, serve as the City's professional engineering representative for the Project as set forth below and shall give professional engineering consultation and advice to the City during the performance of services hereunder. All services provided hereunder shall be performed by the Engineer in accordance with generally accepted Engineering standards to the satisfaction of the City.

B. NOTICE TO PROCEED

The Engineer shall only begin performance of each Phase of work required hereunder upon receipt of a written Notice to Proceed by City representative with that Phase.

C. TIME

The Engineer shall begin work on each successive phase promptly after receipt of the Notice to Proceed and shall devote such personnel and materials to the Project so as to complete each phase in an expeditious manner within the time limits set forth in Section II. Time is of the essence to this agreement.

D. CITY'S REPRESENTATIVE

The City's representative to the Engineer shall be the City Engineer or his or her designees assigned in writing.

E. ENGINEERING GUIDELINES

All work performed as part of this project shall conform to the most current edition of the Engineering Guidelines for Professional Engineering Services and Developments as approved by the City Engineer and on file in the office of the City Engineer.

F. SUBCONSULTANTS

Engineer may contract for the services of sub-consultants to assist Engineer in the performance of the services to be provided by Engineer hereunder but the selection of any sub-consultant to perform such services shall be subject to the prior written approval of the City Engineer. Engineer shall remain responsible for all aspects of any services provided by such sub-consultants to City under this Agreement. City shall reimburse Engineer for sub-consultant services under the categories of services to be provided by Engineer under Phases A through H as applicable and within the amounts allocated for such services pursuant to Section V.D below.

SECTION II. BASIC SERVICES

A. STUDY AND REPORT PHASE

X Included in this agreement

Not included in this agreement

The Engineer shall:

1) City's Requirements

Review available data and consult with the City to clarify and define the City's requirements for the Project.

2) Advise Regarding Additional Data

Advise the City as to the necessity of the City's providing or obtaining from others data or services of the types described in Section III.C, in order to evaluate or complete the Project and, if directed by the City's representative, act on behalf of the City in obtaining other data or services.

3) Technical Analysis

Provide analysis of the City's needs, planning surveys, site evaluations, and comparative studies of prospective sites and solutions.

4) Economic Analysis

Provide a general economic analysis of various alternatives based on economic parameters and assumptions provided by the City.

5) Report Preparation

Prepare a report containing schematic layouts, sketches and conceptual design criteria with appropriate exhibits to indicate clearly the considerations involved and the alternative solutions available to the City and setting forth the Engineer's findings and recommendations with opinions of probable total costs for the Project, including construction cost, contingencies, allowances for charges of all professionals and consultants, allowances for the cost of land and rights-of-way, compensation for or damages to properties and interest and financing charges (all of which are hereinafter called "Project Costs").

6) Report Presentation

Furnish three copies of the report and present and review the report in person with the City as the City

Representative shall direct.

7) Supplementary Duties

The duties and responsibilities of Engineer during the Study and Report Phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

8) Completion Time

The Study and Report Phase shall be completed and report submitted by February 28, 2018.

B. PRELIMINARY SURVEY PHASE

Included in this agreement

Not included in this agreement

After written authorization by the City's representative to proceed with the preliminary survey phase, the Engineer shall:

1) General

Perform topographic survey as necessary to prepare the design and provide Construction Survey and Layout as described in Section II.F

2) Boundary Survey

Perform boundary survey if checked.

3) Document Presentation

Furnish a CADD file of the survey base map to the City. Files shall be in the software specified in the Engineering Guidelines for Professional Engineering Services and Developments described in Section I.E.

4) Supplementary Duties

The duties-responsibilities of the Engineer during the preliminary survey phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

5) Completion Time

The preliminary survey phase shall be completed and submitted by February 28, 2018.

C. PRELIMINARY DESIGN PHASE

Included in this agreement

Not included in this agreement

After written authorization by the City's Representative to proceed with the Preliminary Design Phase, the Engineer shall:

1) Preliminary Design Documents

Prepare preliminary design documents consisting of final design criteria, preliminary drawings and outline specifications.

2) Revised Project Costs

Based on the information contained in the preliminary design documents, submit a revised opinion of probable Project costs.

3) Preparation of Grants; Environmental Statements

Preparation of applications and supporting documents for governmental grants, loans or advances in connection with the Project, preparation or review of environmental assessments and impact statements; review and evaluation of the effect on the design requirements of the Project of any such statements and documentation prepared by others; and assistance in obtaining approvals of authorities having jurisdiction

over the anticipated environmental impact of the Project.

4) Renderings and Models

Providing renderings or models for the City's use.

5) Economic Analysis

Investigations involving detailed consideration of operations, maintenance and overhead expenses; providing value engineering during the course of design; the preparation of feasibility studies, cash flow and economic evaluations, rate schedules and appraisals; assistance in obtaining financing for the Project; evaluating processes available for licensing and assisting the City in obtaining licensing; detailed quantity surveys of material, equipment and labor; and audits of inventories required in connection with construction performed by the City.

6) Document Presentation

Furnish three copies of the above preliminary design documents and present and review such documents in person with the City as the City Engineer may direct.

7) Supplementary Duties

The duties and responsibilities of the Engineer during the Preliminary Design Phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

8) Completion Time

The Preliminary Design Phase shall be completed and report or plan submitted by February 28, 2018.

D. FINAL DESIGN PHASE

Included in this agreement

Not included in this agreement

1) Drawings and Specifications

On the basis of the accepted preliminary design documents and the revised opinion of probable Project costs, prepare for incorporation in the contract documents Construction Plans to show the character and extent of the Project and specifications.

2) Approvals of Governmental Entities

Furnish to the City such documents and design data as may be required for, and prepare the required documents so that the City may apply for approvals and permits of such governmental authorities as have jurisdiction over design criteria applicable to the Project, and assist in obtaining such approvals by participating in submissions to and negotiations with appropriate authorities.

3) Adjusted Project Costs

Advise the City of any adjustments to the latest opinion of probable Project costs, identify cause of change and furnish a revised opinion of probable Project cost based on the drawings and specifications.

4) Contract Document Preparation

Prepare for review and approval by the City, its Attorney and other advisors, contract agreement forms, general conditions and supplementary conditions and (where requested) bid forms, invitations to bid and instructions to bidder, including for federally funded Projects, all documentation, including wage determinations, in order to comply with Davis-Bacon Act or City code requirements, and assist in the preparation of other related contract documents. To the extent possible, the Engineer will follow the document format supplied by the City and use the standard terms and conditions supplied by the City in preparation of these documents.

5) Real Estate Acquisition: Legal Description

Based on preliminary design documents, furnish a legal description and recordable reproducible 8-1/2" X 11" plat of each parcel of real estate in which the City must acquire an interest in order to proceed with construction of the Project.

6) Document Presentation

Furnish three copies of the above documents and present and review them in person with the City.

7) Supplementary Duties

The duties and responsibilities of the Engineer during the Final Design Phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

8) Completion Time

The Final Design Phase shall be completed and contract documents submitted by n/a.

E. BIDDING PHASE

Included in this agreement

Not included in this agreement

The Engineer shall:

1) Assist in Bidding

Assist the City in obtaining bids for each separate City contract for construction, materials, equipment and services.

2) Advise Regarding Contractors and Subcontractors

Consult with and advise the City as to the acceptability of subcontractors and other persons and organizations proposed by the City's contractor(s) (hereinafter called "Contractor(s)" for those portions of the work as to which such acceptability is required by the bidding documents).

3) Consult Regarding Substitutes

Consult with and advise the City as to the acceptability of substitute materials and equipment proposed by the contractor(s) when substitution prior to the award of contracts is allowed by the bidding documents.

4) Evaluation of Bids

Assist the City in evaluating bids or proposals and in assembling and awarding contracts.

5) Supplementary Duties

The duties and responsibilities of the Engineer during the Bidding Phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

6) Completion Time

The bidding phase shall be completed by n/a.

F. CONSTRUCTION SURVEY AND LAYOUT PHASE

Included in this agreement

Not included in this agreement

1) General

This phase of work may or may not be performed in conjunction with Phase G, "Construction Administration and Inspection Phase" of this agreement. Inclusion of this phase in the agreement does not imply that services identified under Phase G are to be provided unless specifically indicated in this agreement.

2) Duties

The Engineer shall provide horizontal and vertical control line and grade to enable construction of the improvement as depicted in the Project plans. The number of control points to be established by the Engineer shall be sufficient to permit the construction contractor to construct the improvement within the construction tolerances established in the Project specifications. In addition, the number of control points shall be consistent with standard engineering practice.

3) Accuracy

The Engineer shall provide the horizontal and vertical control points within the same measurement tolerances as the construction tolerances established in the Project specifications. The Engineer shall be responsible for the accuracy of the control points which are established. The Engineer shall be responsible for costs which may result from errors in placement of control points. The Engineer shall be required to establish control points at Engineer's costs only one time. Control points which are lost, damaged, removed or otherwise moved by the Contractor or others shall be promptly replaced by the Engineer and costs for such replacement shall be computed on a time and materials basis, and reimbursed by the City. The Engineer shall take all reasonable and customary actions to protect the control points established by the Engineer.

4) Supplementary Duties

The duties and responsibilities of the Engineer during the construction survey and layout phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

5) Completion Time

The construction survey & layout phase shall be completed by (insert date).

G. CONSTRUCTION ADMINISTRATION AND INSPECTION PHASE

 Included in this agreement

 X Not included in this agreement

1) General Duties

Consult with and advise the City and act as its representative as provided herein and in the General Conditions of the construction contract for the Project. This phase of the work may or may not be performed in conjunction with Phase F "Construction Survey and Layout Phase" of this agreement. Inclusion of this phase in the agreement does not imply that services identified under Phase F are to be provided unless specifically indicated in this agreement.

2) Construction Inspection and Reporting

Make visits to the site with sufficient frequency at the various stages of construction to observe as an experienced and qualified design professional the progress and quality of the executed work of the contractor(s) and to insure that such work is proceeding in accordance with the contract documents. During such visits and on the basis of on-site observations, the Engineer shall keep the City informed of the progress of the work, shall endeavor to guard the City against defects and deficiencies in such work and may disapprove or reject work failing to conform to the contract documents.

3) Warranty Inspection

Eleven months following construction completion, conduct an inspection to document any items to be repaired by the contractor under the conditions of the construction contract warranty. Submit work to be corrected to the Contractor and the City.

4) Review of Technical and Procedural Aspects

Review and approve (or take other appropriate action in respect to Shop Drawings), the results of tests and inspections and other data which each contractor is required to submit, determine the acceptability of substitute materials and equipment proposed by the contractor(s), and receive and review (for general content as required by the specifications) maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection which are to be assembled by the contractor(s).

5) Contract Documents

Receive from each contractor and review for compliance with contract documents all required document submissions including but not limited to performance and payment bonds, certificates of insurance report forms required by any City, State or Federal law or rule or regulation and submit the forms to the City for final approval.

6) Conferences and Meetings

Attend meetings with the contractor, such as preconstruction conferences, progress meetings, job conferences and other Project-related meetings, and prepare and circulate copies of the minutes thereof including to the City.

7) Records

- a) Maintain orderly files for correspondence, reports of job conferences, shop drawings and samples, reproductions of original contract documents, including all work directive changes, addenda, change orders, field orders, additional drawings issued subsequent to the execution of the contract, the Engineer's clarifications and interpretations of the contract documents, progress reports, and other Project-related documents.
- b) Keep a diary or log book, recording the contractor's hours on the job site, weather conditions, data relative to questions of work directive changes, change orders, or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail, as in the case of observing test procedures and send copies to the City. Take multiple photographs of the Work and keep a log and file of the photos. Specifically maintain records of acceptance and rejection of materials and workmanship.
- c) Record names, addresses and telephone numbers of all the contractors, subcontractors, and major suppliers of materials and equipment.

8) Reports

- a) Furnish the City periodic reports, as required, on progress of the work and of the contractor's compliance with the progress schedule and schedule of shop drawings and sample submittals.
- b) Consult with the City, in advance of scheduled major tests, inspections, or start of important phases of the Work.
- c) Draft proposed change orders and work directive changes, obtaining back-up material from the contractor, and make recommendations to the City regarding change orders, work directive changes and field orders.
- d) Report immediately to the City upon the occurrence of any accident.

9) Contract Interpretation, Review of Quality of Work

Issue all instruction of the City to the contractor(s); issue necessary interpretations and clarifications of the contract Documents and in connection therewith prepare change orders as required, subject to the City's approval; have authority, as the City's representative, to require special inspection or testing of the work; act as initial interpreter of the requirements of the contract documents and judge of the acceptability of the work there under and make decisions on all claims of the contractor(s) relating to the acceptability of the work or the interpretation of the requirements of the contract documents pertaining to the execution and progress of the work.

10) Change Orders and Revisions

Prepare change orders to reflect changes in the Project requested or approved by the City, evaluate substitutions proposed by the contractor(s) and make revisions to drawings and specifications occasioned thereby, and provide any additional services necessary as the result of significant delays, changes or price increases occurring as a direct or indirect result of material, equipment or energy shortages.

11) Review of Applications for Payment

Based on the Engineer's on-site observations as an experienced and qualified design professional and on review of applications for payment and the accompanying data and schedules, determine the amount owing to the contractor(s) and recommend in writing payments to the contractor(s) in such amounts; such recommendations of payment will constitute a representation to the City, based on such observations and review, that the work has progressed to the point indicated, that, to the best of the Engineer's knowledge, information and belief, the quality of such work is in accordance with the contract documents (subject to an evaluation of such work as a functioning Project upon substantial completion, to the results of any subsequent tests called for in the contract documents, and to any qualifications stated in his recommendation), and that payment of the amount recommended is due the contractor(s).

12) Determination of Substantial Completion

Conduct an inspection to determine if the Project is substantially complete and a final inspection to determine if the work has been completed in accordance with the contract documents and if each contractor has fulfilled all of his obligations there under so that the Engineer may recommend, in writing, final payment to each contractor and may give written notice to the City and the contractor(s) that the work is acceptable (subject to any conditions therein expressed).

13) Authority and Responsibility

The Engineer shall not guarantee the work of any contractor or subcontractor, shall have no supervision or control as to the work or persons doing the work, shall not have charge of the work, shall not be responsible for safety in, on, or about the job-site or have any control of the safety or adequacy of any equipment, building component, scaffolding, supports, forms or other work aids. If the Engineer determines that there are deficiencies in materials or workmanship on the Project, or otherwise deems it to be in the best interest of the City to do so, the Engineer shall be responsible to stop any contractor or subcontractor from performing work on the Project, until conditions giving rise to this need, therefore, are rectified.

14) Engineer Not Responsible for Acts of Contractor

The Engineer shall not be responsible for the supervision or control of the acts or omissions or construction means, methods or techniques of any contractor, or subcontractor, or any of the contractor(s)' or subcontractors' or employees or any other person (except the Engineer's own employees and agents) at the site or otherwise performing any of the contractor(s) work; however, nothing contained in this paragraph shall be construed to release the Engineer from liability for failure to properly perform duties undertaken by him in these contract documents or this agreement.

15) Preparation of Record Drawings

The Engineer shall prepare a set of record drawings in accordance with the Engineering Guidelines for Professional Engineering Services and Development described in Section I.E.

16) Manuals

The Engineer shall furnish operating and maintenance manuals; protracted or extensive assistance in the utilization of any equipment or system (such as initial start-up, testing, and adjusting and balancing); and training personnel for operation and maintenance.

17) Supplementary Duties

The duties and responsibilities of the Engineer during the construction administration and inspection phase shall also include any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

18) Completion Time

The construction administration and inspection phase shall be completed by (insert date).

H. ADDITIONAL SERVICES

Included in this agreement

Not included in this agreement

If authorized in writing by the City, the Engineer shall furnish or obtain other additional services of the following types which are not considered normal or customary basic services except to the extent specifically provided in Section II; these will be paid for by the City as indicated in Section V.

1) Significant Changes

Services resulting from significant changes in extent of the Project or its design including, but not limited to, changes in size, complexity, City's schedule or character of construction or method of financing; and revising previously accepted studies, reports, design documents or contract documents when such revisions are due to causes beyond the Engineer's control.

2) Alternate Bid Documents

Preparing documents for alternate bids requested by the City for contractor(s)' work which is not executed or documents for out-of-sequence work.

3) Services Resulting from Acts Beyond Engineer's Control

Additional or extended services during construction made necessary by (1) work damaged by fire or other cause during construction, (2) a significant amount of defective or neglected work of the contractor(s) as determined by the city representative, (3) prolongation of the contract time due to delays by the contractor, (4) acceleration of the progress schedule involving services beyond normal working hours, and (5) default by the contractor.

4) Services After Construction Phase

Services after completion of the construction phase excluding the warranty inspection.

5) Legal Proceedings

Preparing to serve or serving as a consultant or witness for the City in any litigation, public hearing or other legal or administrative proceeding involving the Project (except as agreed to under Basic Services).

6) Services Not Otherwise Provided

Additional services in connection with the Project, including services normally furnished by the City and services not otherwise provided for implicitly or by fair implication of this agreement.

7) Supplementary Duties

The following additional services have been identified and are included in the Additional Services Phase any additional duties and responsibilities to be provided pursuant to the Engineer's proposal attached as Exhibit B.

8) Completion Time

The time limit to complete additional services cannot be fully specified in this agreement because the full nature and full extent of additional services are unknown.

SECTION III. CITY'S RESPONSIBILITIES

A. FURNISH REQUIREMENTS AND LIMITATIONS

Provide all criteria and full information as to the City's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility and expendability, economic parameters and any budgetary limitations; and furnish copies of all design and construction standards which the City will require to be included in the Drawings and Specifications.

B. FURNISH INFORMATION

Assist the Engineer by placing at the Engineer's disposal all available information reasonably known to and in possession of the City.

C. REVIEW DOCUMENTS

Examine all studies, reports, sketches, drawings, specifications, proposals and other documents presented by the Engineer.

D. OBTAIN APPROVALS AND PERMITS

Furnish approvals and permits from all governmental authorities having jurisdiction over the Project and such approvals and consents from others as may be necessary for completion of the Project.

E. ACCOUNTING, LEGAL AND INSURANCE SERVICE

Provide such accounting, independent cost estimating and insurance counseling services as may be required for the Project, such auditing service as the City may require to ascertain how or for what purpose any contractor has used the monies paid to him under the construction contract, and such inspection services as the City may require to ascertain that the contractor(s) are complying with any law, rule or regulation applicable to their performance of the work except as otherwise provided in Section II.

F. NOTIFY THE ENGINEER OF DEFECTS OR DEVELOPMENT

Give prompt written notice to the Engineer whenever the City observes or otherwise becomes aware of any development that affects the scope or timing of the Engineer's services, or any defect in the work of the

contractor(s).

G. COSTS OF THE CITY'S RESPONSIBILITIES

Bear all costs incident to compliance with the requirements of this Section III.

SECTION IV. GENERAL CONSIDERATIONS

A. SUCCESSORS AND ASSIGNS

The City and the Engineer each binds their respective partners, successors, executors, administrators and assigns to the other party of this agreement and to the partners, successors, executors, administrators, and assigns of such other party, in respect to all covenants of this agreement; the Engineer shall not assign, sublet, or transfer their respective interests in this agreement without the written consent of the City. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of any public body which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than the City and the Engineer.

B. OWNERSHIP OF DOCUMENTS

All drawings, specifications, reports, records, and other work product developed by the Engineer in connection with this Project shall remain the property of the City whether the Project is completed or not. Reuse of any of the work product of the Engineer by the City on extensions of this Project or any other Project without written permission of the Engineer shall be at the City's risk and the City agrees to defend, indemnify and hold harmless the Engineer from all damages and costs including attorney fees arising out of such reuse by the City or others acting through the City.

C. ESTIMATES OF COST (COST OPINION)

Estimates of construction cost provided are to be made on the basis of the Engineer's experience, qualifications and the best of their professional judgment, but the Engineer does not guarantee the accuracy of such estimates as compared to the contractor's bids or the Project construction cost.

D. INSURANCE

- 1) Engineer shall provide the following minimum amounts of insurance from insurance companies authorized to do business in the state of Minnesota unless Engineer shall have successfully demonstrated to the City Attorney, in the reasonable exercise of his or her discretion that such insurance is not reasonably available in the market. If the Engineer demonstrates to the reasonable satisfaction of the City Attorney that such insurance requires hereunder is not reasonably available in the market, the City Attorney may approve an alternative form of insurance which is reasonably available in the market which he or she deems to provide the highest level of insurance protection to the city which is reasonably available.
 - a) Workers' compensation insurance in accordance with the laws of the State of Minnesota.
 - b) Public Liability Insurance and Automobile Liability Insurance with limits not less than **\$1,500,000** Single Limit, and twice the limits provided when a claim arises out of the release or threatened release of a hazardous substance; shall be in a company approved by the city of Duluth; and shall provide for the following: Liability for Premises, Operations, Completed Operations, Independent Contractors, and Contractual Liability.
 - c) Professional Liability Insurance in an amount not less than **\$1,500,000** Single Limit; provided further that in the event the professional malpractice insurance is in the form of "claims made," insurance, Engineer hereby commits to provide at least 60 days' notice prior to any change to the Professional Liability Insurance policy or coverage ; and in event of any change, Engineer agrees to provide the City with either evidence of new insurance coverage conforming to the provisions of this paragraph which will provide unbroken protection to the City, or, in the alternative, to purchase at its cost, extended coverage under the old policy for the period the state of repose runs; the protection to be provided by said "claims made" insurance shall remain in place until the running of the statute of repose for claims related to this Agreement.
 - d) **City of Duluth shall be named as Additional Insured** under the Public Liability and Automobile Liability, or as an alternate, Engineer may provide Owners-Contractors Protective policy, naming himself and City of Duluth. Engineer shall also provide evidence of Statutory Minnesota Workers' Compensation Insurance. Engineer to provide Certificate of

Insurance evidencing such coverage with notice to City of cancellation in accordance with the provisions of the underlying insurance policy included. The City of Duluth does not represent or guarantee that these types or limits of coverage are adequate to protect the Engineer's interests and liabilities.

- e) If a certificate of insurance is provided, the form of the certificate shall contain an unconditional requirement that the insurer notify the City without fail not less than the notice provisions contained in the underlying insurance policy or policies. In addition, Engineer commits to provide to City notice to City at least 30 days prior to any change of the policy or coverages.
- 2) The insurance required herein shall be maintained in full force and effect during the life of this Agreement and shall protect Engineer, its employees, agents and representatives from claims and damages including but not limited to personal injury and death and any act or failure to act by Engineer, its employees, agents and representatives in the performance of work covered by this Agreement.
- 3) Certificates showing that Engineer is carrying the above described insurance in the specified amounts shall be furnished to the City prior to the execution of this Agreement and a certificate showing continued maintenance of such insurance shall be on file with the City during the term of this Agreement.
- 4) The City shall be named as an additional insured on each liability policy other than the professional liability and the workers' compensation policies of the Engineer.
- 5) The certificates shall provide that the policies shall not be cancelled during the life of this Agreement without advanced notice being given to the City at least equal to that provided for in the underlying policy of insurance.
- 6) Except as provided for in Section IV D.1.d) above, Engineer hereby commits to provide notice to City at least 30 days in advance of any change in the insurance provided pursuant to this Section IV or in advance of that provided for in the underlying insurance policy or policies whichever is longer. For the purposes of Section IV. D of this Agreement, the term, "changed", shall include cancellation of a policy of insurance provided hereunder and any modification of such policy which reduces the amount of any coverage provided thereunder below the amounts required to be provided hereunder or otherwise reduces the protections provided under such policy to City.

E. HOLD HARMLESS

The Engineer agrees that it shall defend, indemnify and hold harmless the City of Duluth and its officers, agents, servants and employees from any and all claims including claims for contribution or indemnity, demands, suits, judgments, costs and expenses asserted by any person or persons including agents or employees of the City of Duluth or the Engineer by reason of death or injury to person or persons or the loss or damage to property arising out of, or by reason of, any act, omission, operation or work of the Engineer or its employees while engaged in the execution or performance of services under this Agreement except to the extent that such indemnification is specifically prohibited by Minnesota Statutes Chapter 337 or Section 604.21. Engineer shall not be required to indemnify City for claims of liability arising out of the sole negligent or intentional acts or omission of the City but shall be specifically required to and agrees to defend and indemnify City in all cases where claims of liability against the City arise out of acts or omissions which are passive or derivative of the negligent or intentional acts or omissions of Engineer, including but not limited to, the failure of the City to supervise, the failure to warn, the failure to prevent such acts or omission by Engineer and any other such source of liability. On ten days' written notice from the City of Duluth, the Engineer shall appear and defend all lawsuits against the City of Duluth growing out of such injuries or damages.

F. TERMINATION

- 1) This agreement may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligation under this agreement through no fault of the terminating party; provided that no such termination may be affected unless the other party is given not less than fifteen (15) calendar days' prior written notice (delivered by certified mail, return receipt requested) of intent to terminate.
- 2) This agreement may be terminated in whole or in part in writing by the City for its convenience; provided that the Engineer is given (1) not less than fifteen (15) calendar days' prior written notice (delivered by certified mail, return receipt requested) of intent to terminate and (2) an opportunity for

consultation with the City prior to termination.

3) Upon receipt of a notice of intent to terminate from the City pursuant to this agreement, the Engineer shall (1) promptly discontinue all services affected (unless the notice directs otherwise), and (2) make available to the City at any reasonable time at a location specified by the City all data, drawings, specifications, reports, estimates, summaries, and such other information and materials as may have accumulated by the Engineer in performing this agreement, whether completed or in process.

4) Upon termination pursuant to this agreement, the City may take over the work and prosecute the same to completion by agreement with another party or otherwise.

G. LAWS, RULES AND REGULATIONS

The Engineer agrees to observe and comply with all laws, ordinances, rules and regulations of the United States of America, State of Minnesota, the City of Duluth and their respective agencies and instrumentalities which are applicable to the work and services to be performed hereunder.

H. INDEPENDENT CONTRACTOR STATUS

Nothing contained in this agreement shall be construed to make the Engineer an employee or partner of the City. The Engineer shall at all times hereunder be construed to be an independent contractor.

I. FEDERAL FUNDING

If Federal Funds (i.e. HUD, FEMA, Revenue Sharing) are utilized as a source of Project funding, the Engineer shall abide by the terms of all Federal requirements in the performance of duties hereunder.

J. AMENDMENT OF AGREEMENT

This agreement shall be amended or supplemented only in writing and executed by both parties hereto.

SECTION V. PAYMENT

A. BASIS OF BILLING

City shall pay the Engineer an amount based on hourly rates not to exceed \$44,378.00 for all services rendered under Section II Phases A through H, including any and all Project-related expenses such as travel, reproduction of reports and drawings, tolls, mileage, etc. For the purposes of this agreement, the principals and employees of the Engineer and their hourly rates are set forth in Exhibit A.

B. PAYMENT FOR WORK COMPLETED

1) Monthly progress payments may be requested by the Engineer for work satisfactorily completed and shall be made by the City to the Engineer as soon as practicable upon submission of statements requesting payment by the Engineer to the City. When such progress payments are made, the City may withhold up to five percent (5%) of the vouchered amount until satisfactory completion by the Engineer of all work and services within a phase called for under this agreement. When the City determines that the work under this agreement for any specified phase hereunder is substantially complete, it shall release to the Engineer any retainage held for that phase.

2) No payment request made pursuant to subparagraph 1 of this Section V shall exceed the estimated maximum total amount and value of the total work and services to be performed by the Engineer under this agreement without the prior authorization of the City. These estimates have been prepared by the Engineer and supplemented or accompanied by such supporting data as may be required by the City.

3) Upon satisfactory completion of the work performed hereunder, and prior to final payment under this agreement, and as a condition precedent thereto, the Engineer shall execute and deliver to the City a release of all claims against the City arising under or by virtue of this agreement.

4) In the event of termination by City under Section IV.F., upon the completion of any phase of the Basic Services, progress payments due Engineer for services rendered through such phase shall constitute total payment for such services. In the event of such termination by City during any phase of the Basic Services, Engineer also will be reimbursed for the charges of independent professional associates and consultants employed by Engineer to render Basic Services, and paid for services rendered during that phase on the

basis of hourly rates defined in Exhibit A of this agreement for services rendered during that phase to date of termination by Engineer's principals and employees engaged directly on the Project. In the event of any such termination, Engineer will be paid for all unpaid additional services plus all termination expenses. Termination expenses mean additional expenses directly attributable to termination, which, if termination is at City's convenience, shall include an amount computed as a percentage of total compensation for basic services earned by Engineer to the date of termination as follows: 10% of the difference between the amount which the Engineer has earned computed as described in paragraphs A and B of this section and the maximum payment amount described in paragraph D of this section. The above applies only if termination is for reasons other than the fault of the Engineer.

C. STANDARD PAYMENT

The Engineer shall complete all services described in Section II.A through G including all attachments to Section II for an amount including all Project-related expenses for the estimated amounts shown hereunder:

<u>Section II</u>	<u>Description</u>	<u>Estimated Compensation</u>
A.	Study and Report Phase	\$ 19,518.00
B.	Preliminary Survey Phase	\$ 16,680.00
C.	Preliminary Design Phase	\$ 8,180.00
D.	Final Design Phase	\$ 0
E.	Bidding Phase	\$ 0
F.	Construction Survey and Layout Phase	\$ 0
G.	Construction Administration and Inspection Phase	\$ 0
TOTAL		\$ 44,378.00

The maximum compensation for all phases A through G shall not exceed **Forty-four Thousand Three Hundred Seventy-eight and no/100ths Dollars.**

D. PAYMENT FOR ADDITIONAL SERVICES

City shall pay the Engineer for all additional services rendered under Section II.H an amount based on hourly rates shown in Exhibit A for services rendered by principals and employees assigned to the Project. The maximum payment described in Section V.C shall not apply to additional services.

The Engineer and City agree that the full extent of additional services may be unknown. Those additional services which have been identified are described in Section II.H, and that payment for those additional services is estimated to be \$ 0.

This agreement is made between the City and the Engineer entered into on the last date below written. In witness, the parties have executed this agreement.

E. TOTAL NOT TO EXCEED:

All payments under this Contract are not to exceed \$44,378.00, payable under fund 110-121-1217-2145-5310.

SECTION VI. SPECIAL PROVISIONS

The following exhibits are attached to and made part of this agreement:

- 1) Exhibit A, Engineer's Hourly Rates
- 2) Exhibit B, Engineer's Proposal

In the event of a conflict between the agreement and any Exhibit, the terms of the Agreement will be controlling.

SECTION VII. COUNTERPARTS

This Agreement may be executed in two or more counterparts, each of which shall be deemed to be an original as against any party whose signature appears thereon, but all of which together shall constitute but one and the same instrument. Signatures to this Agreement transmitted by facsimile, by electronic mail in "portable document format"

(“.pdf”), or by any other electronic means which preserves the original graphic and pictorial appearance of the Agreement, shall have the same effect as physical delivery of the paper document bearing the original signature.

IN WITNESS WHEREOF, the parties have hereunto set their hands on the date of attestation shown below.

CITY OF DULUTH-Client

By: _____
Mayor

Attest:

By: _____
City Clerk

Date: _____

Countersigned:

City Auditor

Approved as to Form:

City Attorney

**TRC ENVIRONMENTAL
CORPORATION**

By: _____

Its: _____
Title of Representative

Date: _____



230 W. Monroe Street
Suite 2300
Chicago, IL 60606

312.578.0870 PHONE
312.578.0877 FAX

www.trcsolutions.com

November 17, 2017

City of Duluth
ATTN: Purchasing Division
City Hall, Room 100
411 West 1st Street
Duluth, MN 55802

Subject: Cost Proposal for Professional Engineering Services – Duluth Lakewalk & Shoreline Storm Damage Assessment, RFP Number 17-15AA
TRC Proposal No. 290622.9990.0000

Attn: City of Duluth Representatives

We are pleased to submit this detailed cost proposal for Professional Engineering Services, Duluth Lakewalk & Shoreline Storm Damage Assessment, RFP Number 17-15AA. Our team uses the following hourly rates:

- Principal Engineer (Dan Veriotti, Scott Weyandt): \$150/hr
- Civil Engineer (Tyler Wickesberg): \$125/hr
- Staff Engineer (John Bell): \$88/hr
- Ben Yahr (Resolution Studio): \$99/hr

The detailed break-down of hours by staff and task are shown in the attached cost sheet and Table 1 in this document.

We appreciate the opportunity to submit this proposal and welcome the possibility to work with you. You can reach us via the phone number/email address provided below.

Sincerely,

TRC Environmental Corporation

Dan Veriotti, MSc, PE
Office Practice Lead
Phone: 312.800.5916
dveriotti@trcsolutions.com



230 W. Monroe Street
Suite 2300
Chicago, IL 60606

312.578.0870 PHONE
312.578.0877 FAX

www.trcsolutions.com

November 17, 2017

City of Duluth
ATTN: Purchasing Division
City Hall, Room 100
411 West 1st Street
Duluth, MN 55802

Subject: Proposal for Professional Engineering Services – Duluth Lakewalk & Shoreline Storm Damage Assessment
RFP Number 17-15AA
TRC Proposal No. 290622.9990.0000

Attn: City of Duluth Representatives

We are pleased to submit this proposal for Professional Engineering Services, Duluth Lakewalk & Shoreline Storm Damage Assessment, RFP Number 17-15AA. We are well aware of the critical importance of immediately responding to the October 26/27 storm and planning for emergency repairs.

Toward that end, we have assembled a “customized” team of Great Lakes experts in the disciplines relevant to this important project, including Coastal, Civil, and Geotechnical Engineers. Individually and collectively, we are committed to meeting and exceeding your expectations by providing the timely and on-budget delivery of an outstanding report that responds to all aspects of the RFP.

The TRC Team will be led by Dan Veriotti, MSc, PE (Project Manager, Senior Coastal Engineer), and Scott Weyandt, MSc, PE (Principal, Civil and Geotechnical Engineer). Dan directs the TRC Chicago office practice, is a specialized Coastal Engineer with over 22 years of experience, and is a former employee of AECOM and Baird, where he conducted numerous similar studies. Scott has over 30 years of experience and has done a tremendous amount of work in the project area (including coastal engineering), and is locally located in Superior, Wisconsin.

We appreciate the opportunity to submit this proposal and welcome the possibility to work with you. You can reach us via the phone number/email address provided below.

Sincerely,

TRC Environmental Corporation

A handwritten signature in blue ink, appearing to read 'D. Veriotti', is written over a horizontal line.

Dan Veriotti, MSc, PE
Office Practice Lead
Phone: 312.800.5916
dveriotti@trcsolutions.com

Proposal for Professional Engineering Services – Duluth Lakewalk and Shoreline Storm Damage Assessment

RFP Number 17-15AA | November 17, 2017



Prepared by:
TRC Environmental Corporation
230 W. Monroe Street, Suite 2300
Chicago, IL 60606



Prepared for:
City of Duluth
ATTN: Purchasing Division
City Hall, Room 100
411 West 1st Street
Duluth, MN 55802



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List of TRC Appendices

Appendix A: Proposal Cover Sheet and Signed Addenda

1.0 Project Understanding and Objectives

A. Overview

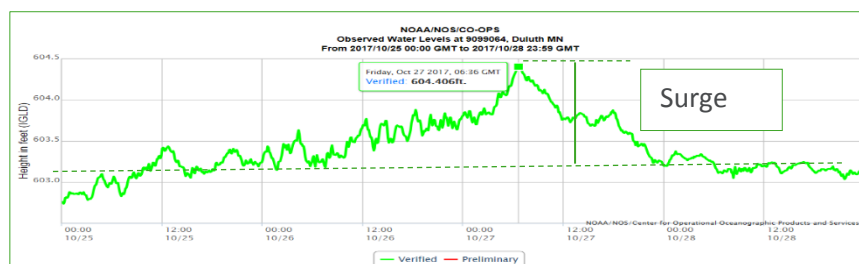
The TRC Team is pleased to respond to the City of Duluth’s Request for Proposal (RFP) titled, “Professional Engineering Services, Duluth Lakewalk & Shoreline Storm Damage Assessment.” We look forward to the opportunity to apply our decades of Great Lakes-specific expertise to collect site data, evaluate priorities, and make recommendations for coastal structure rehabilitation, with construction cost estimates.

TRC was founded in 1969 and has over 4,100 employees, with 15 Great Lakes offices (over 300 personnel), one office in Minnesota, and a local Principal Engineer in Superior, Wisconsin. We are in the process of finalizing a Coastal Monitoring Study for Racine Harbor, Wisconsin, with a similar scope of work, and have conducted numerous coastal studies and design projects on Lake Superior.

B. Project Understanding

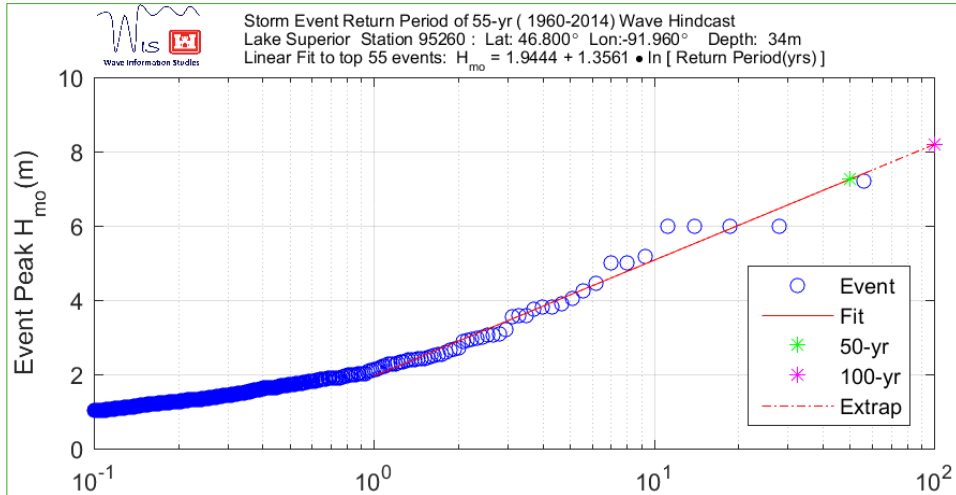
During October 26 and 27, a significant storm occurred on Lake Superior, with a chronological summary as follows:

- Winds at the Airport: October 26, 11 pm: sustained NE winds of 29 mph, increasing to NE, 49 mph at midnight, October 27. The winds remained sustained from the NE, over 40 mph to 4 am. During the morning of October 27, the winds remained strong from the NE direction, followed by a direction switch to NNE, then N (maximum sustained 30 mph), and then NNW (subsiding to 10 mph at 9 pm). The destructive force of the NE storm therefore occurred between 11 pm on October 26 and noon on October 27.
- Lake Levels at NOAA Duluth Gauge: the lake levels rose from an average of 603.1 feet IGLD85 on October 25 to a maximum of 604.4 ft on October 27 (approximately 1:30 am), before subsiding to 603.1 on October 28. The storm induced surge was therefore 1.3 feet (temporary net increase on the recorded still water level due to the storm).



- The Lake Superior Low Water Datum (LWD) is 601.1 ft IGLD85; during the storm, the water level rose from 603.1 to 604.4, or from +2.0 LWD to +3.3 LWD. The water levels are expressed as a percent probability of occurrence (a 100-Year level has an annual probability of occurrence of 1%). The 10-Year level for Duluth is approximately +2.6 feet LWD, the 20-Year is +2.8 feet LWD, while the 100-Year is +3.15 feet LWD. *The October storm maximum water level therefore exceeded the 100-Year level.*

- Lake Superior Waves: NOAA Station 45029 (located approximately 16 miles offshore of the harbor, in deep water, 160 feet at LWD): recorded significant waves of 15.4 feet at 3 am, and 15.7 feet at 5 am on October 27, with a NE direction. Based on wave hindcast data at station 95259 (approximately 2 miles offshore from Duluth, in 82 feet of water at LWD), the significant 10-Year wave height is 16.4 feet, the 20-Year is 19.7 feet, while the 100-Year is 26.2 feet.



The waves undergo transformations as they approach near-shore shallower water; they will break in shallow water (waves are “depth limited”, typically when the ratio water depth to wave height is approximately 0.8 (in other words, in 10 feet of water depth during the storm water level and superimposed surge, an 8-foot wave height is possible at the breaking point); however, this is valid for gently sloped shorelines, with ratios of 1.0 common for steep offshore slopes (which is applicable to most of the Minnesota Lake Superior open shoreline), where in 10 feet of water depth, a 10-foot wave height is possible. The stone revetments and sea walls are subject to significant wave loading forces and overtopping, which will produce erosion and structure damage. The Great Lakes coastal structures are typically designed using a combination of (10, 20) and (20, 10), or the most conservative estimate of the near-shore waves produced by the offshore wave height and the water level for the 10-Year and 20-Year, respectively. *Considering a maximum significant wave height of 15.7 feet (4.8m), it corresponds to approximately the 10-Year offshore wave height. The October 26/27 storm is therefore representative to a (10,100), wave height and water level combination, which exceeds the typical set of design conditions for the Great Lakes structures.*

The storm impacts were recorded at various locations, within the following five main areas:

- Open coast from the Lakewalk to McQuade Small Craft Harbor, approximately 11 miles (including bank and shoreline erosion, damages to breakwater, the pumping station, storm sewer outfalls, boardwalk, paved walkway);
- Canal Park and Lakewalk, approximately 0.5 miles (displaced stone revetment, debris, damaged boardwalk, SSP damage, bank erosion, damage to boardwalk and outfalls);
- Park Point, approximately 6 miles (residential property damage, severe beach erosion);

- Entertainment Convention Center and Lake Superior Aquarium, approximately 0.25 miles (shoreline debris, concrete gangways damage, possible underwater failure), impacted by the surge and diffracted Harbor entrance waves; and
- Mississippi Railroad, approximately 1,200 feet of track embankment damage (Blackmere Curve, Slag Point, Skimmer Pond, Causeway), impacted by the surge and waves created in the St. Louis River by the sustained NE winds.

The damages are likely due to wave horizontal forces displacing the revetment stone material, uplift (vertical) impacting access structures, and significant overtopping flows impacting the access roads and Lakewalk.

C. Project Goals

The project's main goals are to:

- Refine the initial City assessment and detail the severity of damages produced by the storm during October 26 and 27, in each project segment;
- Prioritize the areas for repairs, based on identified site conditions and risks; more importantly, develop solutions that will protect the shoreline, infrastructure, and public safety in close collaboration with the City; and
- Provide documentation in justification of grant applications for funding.

2.0 TRC Resources and Capabilities

A. Resources and Capabilities

With hundreds of regionally based professionals, the TRC Team offers a comprehensive range of services for this study, including:

- **Coastal and Civil Engineering** (experience with site investigations and assessments, data collection and analysis, coastal processes-water levels, wind waves, sediment transport, conceptual and final design of proposed structure improvements, and Opinion of Probable Construction Costs);
- **Geotechnical Engineers** (assessment of damages to infrastructure, data collection and analysis, development of infrastructure repair alternatives with Opinion of Probable Construction Costs);
- **Site Survey** (bathymetric and topographic surveys, specialized drone survey, and creation of a Digital Elevation Model-DEM);
- **Report Preparation** (summarizing the identified immediate priorities for structure and infrastructure repairs); and
- **Recommending State and Federal Funding Sources** (to support proposed improvements) and detailed studies in support of final design and construction administration.

TRC is an ENR Top 500 Design Firm (#23) and has a wealth of experience with water and coastal resources, botany, forestry, fisheries and aquatic habitat studies, ecology, and prairie management, and has

conducted hundreds of projects on thousands of acres in the Midwest States. TRC has an office in Eagan, Minnesota; our Superior, Wisconsin, location is in close proximity to the site.

TRC specialized staff have expertise in:

- Civil and Coastal Engineering
- Immediate Response to Coastal Emergency
- Aquatic, Estuarine, and Riparian Stream Habitat Assessment
- Hydrologic and Hydraulic Studies
- Site Inventories
- Threatened, Endangered, and Rare Plant Surveys
- Restoration Project Permitting
- Restoration Monitoring and Reporting
- Restoration Design (Plans, Specifications)
- Project Implementation and Construction Oversight

Resolution Studio, LLC, our proposed subcontractor, provides site investigations, design and project support for shoreline and waterfront, open space planning, and ecological restoration throughout the Great Lakes Region. The company brings new approaches, technology, and techniques, such as unmanned aerial vehicles to the survey and design process, to improve efficiency, client service, and the environmental components of projects. Drone technology is particularly valuable for site investigation and construction administration projects, and will result in cost-savings over conventional breakwater surveys. Resolution Studio specializes in the production of civil and coastal engineering design and bid documents, and is well versed in UAV services; CADD, GIS, and 3D visualization; photorealistic rendering software for design analysis; and communication. Resolution Studio is licensed by the FAA (Part 107), certified and insured to operate drones in the USA, and a small business registered with the Small Business Administration.

High resolution oblique images and video can be presented for site analysis, marketing, or construction documentation—on demand, during any season. More importantly, these images can be processed into digital orthophotos with resolution as high as one inch, and elevation data can be derived with a resolution as high as two inches.

Digital elevation models post-processed from aerial data can augment, if not replace, traditional survey data. This technology is especially valuable capturing topographic data in hard-to-reach areas, such as coastal structures, bluffs, shorelines, and streambanks; or in built environments that require high precision elevation data for drainage, such as urban plazas or infrastructure investigations. We propose the use of the aerial survey for the coastal areas damaged by significant storms; the collected survey data supports the development of repairs, quantity take offs, and construction cost estimates.

B. Relevant Projects

The following projects were selected as references (contact names, addresses, and telephone numbers are provided in Section 5), with additional projects and details to be provided upon request.

Racine Harbor Monitoring Study – Racine Harbor, Racine, WI

Racine County commissioned TRC to conduct a comprehensive Coastal evaluation of all Harbor structures, and provide recommendation for improvements/repairs with construction cost estimates. The Harbor breakwaters are frequently subject to significant wave heights over 10 feet; rehabilitation is needed periodically, due to wave overtopping and ice loading forces. The North breakwater is provided with a concrete cap, in severely deteriorated condition, and needs replacement. The breakwater was originally constructed as a timber crib filled with stone and a reinforced concrete cap. This far exceeded its useful design life and needs replacement. Various other repairs are needed, due to individual armor stone displacements, and settling of the concrete cap (South breakwater). A study was conducted to identify opportunities to improve the water quality and terrestrial and aquatic habitat, and create a stormwater management plan.



The project included data collection (bathymetric and topographic survey, aerial survey-drone for the parking lots and access roads), site assessment/evaluation and detailed observations with measurements of South Breakwater, North Breakwater, Yacht Club structures, Reef Point Marina structures, boat launch basin structures, data analysis, computer volumetric calculations for sedimentation and erosion, structure settlement, conceptual design of identified improvements, preliminary construction cost estimates, and recommendations for improvements and priorities, identifying applicable Coastal Grants.

Dan Veriotti, PE, is the TRC project manager and principal Coastal Engineer for this study.

Relevance to Duluth Shoreline Study

Site assessment, coastal evaluation, rubblemound and vertical structures, recommendations for rehabilitation with construction cost estimates for Coastal grant funding.



Coastal Assessment-Shoreline Erosion – Open Shoreline, MN

A significant Lake Superior storm occurred in November, 2014, which produced shoreline erosion and wave scour in the project area approximately 88 miles north of Duluth, damaging a water intake pipe. A coastal study was conducted to analyze and summarize the recorded water levels (static and induced surge), wind direction and speed, deep water significant wave height and period, and hourly data. A coastal analysis was performed to transform the deep water waves to the near-shore and characterize the wave scour potential.

The water levels and offshore waves were defined as percent occurrence (10-, 20-, 100-Year) to define the design conditions responsible for the significant erosion and wave scour. Design drawings, construction daily records, and soils information were reviewed.

Design recommendations were provided for repairs with construction cost estimates.

Dan Veriotti, PE, was the principal Coastal Engineer for this study, while at AECOM.

Relevance to Duluth Shoreline Study

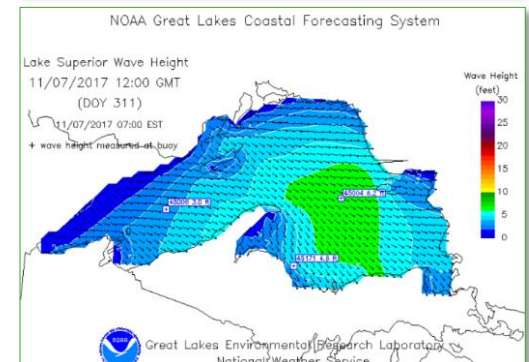
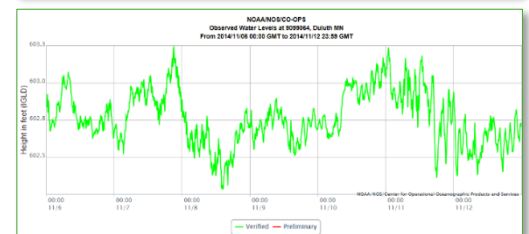
Coastal erosion, water levels, waves, recommendations for rehabilitation with construction cost estimates.

Forest Park Monitoring – Lake Forest, IL

While at WF Baird, Dan Veriotti was the Project Manager and Lead Principal Coastal Investigator assessing the condition of the harbor structures, and to provide recommendations for future operational maintenance and rehabilitation priorities over 10 and 20 years.

A comprehensive site investigation and data collection program was conducted, which included the following:

- Topographic and bathymetric surveys;
- Detailed photographs, high-resolution aerial imagery;
- Visual inspection of armor stone quality-breakwaters and revetment; and
- Beach sediment samples, near-shore jet probes.



Based on collected historic and new data, beach cell profiles were created to determine the slope morphological changes; the breakwater profiles were also created to identify any changes (stones displaced by wave/ice action). A volumetric analysis was performed to calculate the net changes in the beach cells (cubic yards per year) of sediment lost or accreted. The armor stone was inspected for quality/splitting/fracturing.

A preliminary coastal analysis was conducted to determine the impact of beach slope changes on the wave run-up; a detailed aerial analysis revealed beach morphological changes, individual breakwater stone movements, and established reference points for future surveys and monitoring.

Based on the results of data analysis, short- and long-term budget recommendation were made for:

- Breakwater rehabilitation;
- Revetment rehabilitation; and
- Beach maintenance (nourishment).

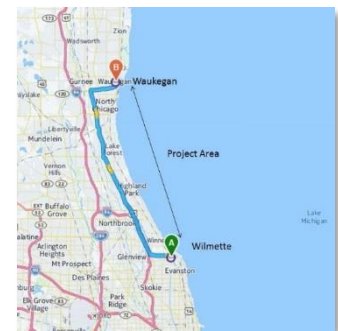


Relevance to Duluth Shoreline Study

Site assessment of coastal structures and shoreline, surveys, identifying short- and long-term priorities for rehabilitation with construction cost estimates.

Illinois Interim IV Erosion Mitigation Study – Waukegan to Wilmette, IL

The United States Army Corps of Engineers (USACE) commissioned a study to account for innovative and effective measures to protect 22 miles of shoreline between Wilmette and Waukegan Harbor in Illinois. The project included a comprehensive data collection, analysis of coastal conditions (wind waves, water levels, sediment transport, ice), alternative formulation, and economic analysis to compare various shore protection alternatives against the current conditions.



A detailed site assessment and inventory for the shoreline conditions were conducted, followed by comprehensive computer modeling for a 50-Year timeframe, coupled with a Monte Carlo analysis to account for risk and uncertainty, and included generated water levels in a 50,000-Year time series created by the International Joint Commission (Stochastic Modeling and Simulation of the Great Lakes-St. Lawrence River System). Various plans were developed and evaluated/screened based on their benefits and estimated costs. The site assessment documented the type of shoreline, condition of structures, estimated remaining useful life, and identified priorities for repairs.



The project economics team calculated the economic damages of the existing conditions and the net economic benefits of the selected plan over the selected 50-Year timeframe.

Dan Veriotti, PE, was the principal Coastal Engineer for this study.

Relevance to Duluth Shoreline Study

Assessment of coastal structures, identifying short- and long-term priorities with construction cost estimates.



Rosewood Beach Restoration – Highland Park, IL

The United States Army Corps of Engineers (USACE) commissioned detailed coastal and geotechnical analyses for design of a shoreline and beach restoration project at the Rosewood Park in Highland Park, Illinois. The created stable beach cells provide both aquatic- and land-based habitat, with no adverse impacts on the adjacent shorelines and properties. Over 60,000 CYDS of sand were placed along 1,500 feet of shoreline. This section of shoreline was eroding and subject to significant waves, and was not able to protect the existing park and natural resources.



The coastal analysis included water levels, wind waves, and sediment transport numerical analysis.

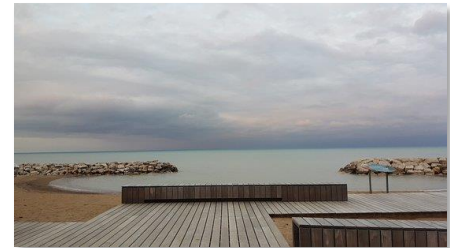
The enhanced beach provides ample recreational uses, along with rubblemound (stone) material for fish habitat, upland plantings (dune grasses), and a restored natural ravine channel discharging into Lake Michigan. One challenging aspect of the project was to understand the severe Lake Michigan wave climate and design a series of stable beach cells.



Dan Veriotti, PE, was the project manager and principal Coastal Engineer for this study. The project was constructed in 2014.

Relevance to Duluth Shoreline Study

Site assessment, coastal analysis, design alternatives with construction cost estimates.

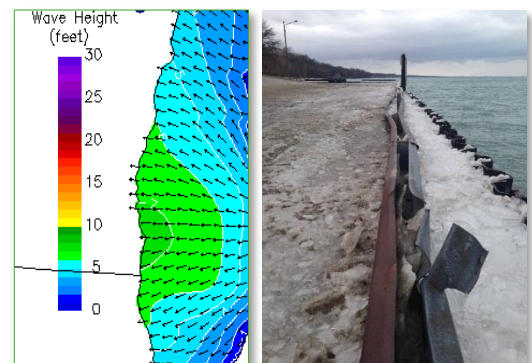


Highland Park Shoreline Assessment – Highland Park, IL

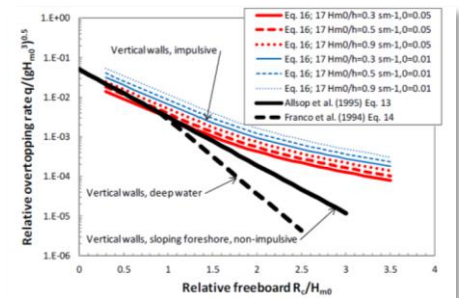
The City of Highland Park commissioned a series of projects to address the severe deterioration of the recreational area at Central Park in Highland Park, Illinois. The SSP bulkhead and reinforced concrete cap also protect the Water Treatment Plant. The concrete cap experienced significant deterioration and settlement due to wave overtopping and ice loads. The project included the following:



- Coastal assessment (documentation of existing conditions);
- Coastal analysis: water levels, deep water waves, transformation to the near-shore area, wave overtopping calculations, drain time, and flood ponding
- Concrete coring to obtain stone base and sub-base data; and
- Underwater investigation to observe the condition of the SSP wall and toe.



Voids were recorded under the existing concrete cap. Design alternatives were formulated, including concrete stabilization (injecting materials such as pumpable precision non-shrink cementitious concrete grout fill or high-density polyurethane beneath the existing cap), removing the cap, providing new compacted stone, and a new reinforced cap or use concrete with fiber reinforcing; modification to the SSP would allow better drainage, along with new grading for the concrete cap.



Based on the estimated construction and the estimated design life of each alternative, removing the existing cap and providing new compacted stone and a new cap were selected, with new concrete grading and drainage of the wave overtopping flows.

Final design drawings were prepared, and the project was implemented in 2016.

Dan Veriotti, PE, was the Project Manager and Principal Coastal Engineer for this project.

Relevance to Duluth Shoreline Study

Assessment of coastal structures, identifying short- and long-term priorities with construction cost estimates, preparation of design alternatives.

Wisconsin Point Shoreline Repairs, FEMA Disaster Declaration 2016 – Superior, WI

In July of 2016, more than 8 inches of rain fell in many locations of northern Wisconsin causing significant damage and prompting the establishment of disaster relief for Douglas, Bayfield, Ashland, and Iron Counties. Areas damaged included the bayside of Wisconsin Point where wind driven waves scoured the unprotected shoreline on the south side of Wisconsin Point. This area is not exposed to open reaches of Lake Superior, but, in this case, the wind direction out of the southwest and the significant reach combined to create a condition in which wave action, high water levels, and soil saturation caused erosion and roadway failures at numerous locations along Wisconsin Point road where the road is directly adjacent to the shoreline.



An initial on-site review and subsequent discussions with FEMA, Wisconsin DNR, and USACE brought consensus that repairs to repair and protect the roadway would incorporate a living shoreline into any hard armoring that was proposed. The design included a large stone wave break set 1-2 feet above water elevation, followed by a flat vegetated section 10-15 wide behind the wave break, and a geogrid reinforced slope to the edge of the roadway. This work was completed in the summer of 2017 with vegetative planting to be installed in 2018. Monitoring of the performance and vegetative establishment will be ongoing.



Concept development, agency coordination, permitting support, detailed design, specifications, estimates, and construction support were provided.

Scott Weyandt, PE, was the Principal Engineer for this project.



Relevance to Duluth Shoreline Study

Coastal erosion, water levels, waves, recommendations for rehabilitation with construction cost estimates.

3.0 TRC Personnel

The TRC team will be led by Dan Veriotti, MSc, PE (Senior Coastal Engineer), and Scott Weyandt, MSc, PE (Lead Principal Engineer). Dan and Scott will conduct and direct the site assessment and collection of data in support of identifying repairs and priorities with construction cost estimates. They will be supported by Ben Yahr, registered landscape architect, for the aerial survey and creating repair alternatives in Civil3D. The TRC team will be assisted by geotechnical and civil staff professionals listed below.

Dan Veriotti is a specialized Coastal Engineer registered in Illinois, Wisconsin, Pennsylvania, Indiana, Michigan, and Ohio, with over 22 years of dedicated professional coastal career to the Great Lakes, including Lake Superior. Dan is in the process of becoming registered in Minnesota (submitted application, expected PE Board approval on December 7, 2017). He has two Master of Science Degrees from the University of Michigan (Coastal Engineering and Water Resources-Coastal Hydraulics). Prior to joining TRC, Dan had a lead principal role with W.F. Baird and Associates (Chicago Office manager) and URS (a legacy AECOM company). Under the Joint Venture URS-Baird, Dan served as Project Manager and lead Principal Engineer for numerous coastal projects under contract with USACE (Buffalo, Detroit, Chicago) and EPA, and closely worked with Ben Yahr, Resolution Studio.

Over the years, Dan also managed and led the following types of projects:

- Coastal assessments: site investigations, data collection, surveys (Shoreline Erosion Assessment-MN; Racine Harbor, WI; Illinois Erosion Study-IL; Kinnickinnic River-Milwaukee, Pentwater, White Lake Harbors-MI; Sunset Harbor-IL; Northerly Island-IL);
- Coastal structure monitoring studies (City of St. Joseph-MI, Lake Forest-IL, Shades Beach Harbor-PA, Townline Harbor-OH, Lake Ontario Assessment Study-NY, Boyne City Harbor-MI);
- Water level, wind waves, sediment transport (Chicago North Lake Shore Drive-IL, Rosewood Beach-IL, Pictured Rocks National Lakeshore-MI, Power Facility-IN, Outfall Study-IL);
- Design of shore protection structures (Hammond Beach-IN, Highland Park-IL, Water Intake-IN, Muskegon-MI, Highland Park-IL);
- Harbor and marina improvements (Cleveland North Coast Harbor-OH, Grand Haven-MI, 31st Street Harbor-IL, Port of Chicago-IL, Port Inland-MI, St. Joseph Harbor-MI, Port Clinton-OH);
- Marina and dredging projects: Engineer of Record for dozens of sites in MI, IL, OH; and
- Construction administration for marine projects, on dozens of Great Lakes sites.

Scott Weyandt is a specialized Civil/Water Resources and Geotechnical Engineer with over 30 years of experience, registered in Minnesota and Wisconsin. He has a Master of Science Degree from Michigan Technological University in Water Resources and Geotechnical. Scott has been providing engineering services for City of Superior, Wisconsin, for many years.

Over the years, Scott managed and led the following types of projects:

- Coastal assessments: site investigations, data collection, surveys (Wisconsin Point, Superior-multiple projects);
- Shoreline stabilization (Wisconsin Point-Crete IL);
- Geotechnical analysis (Billings Drive-Superior, WI);
- FEMA coordination (hazard assessment-Superior, WI);
- Municipal infrastructure design and repairs (Belknap, Tower Ave., East 5th Street, Billings Drive-Superior, WI); and
- Development of standard design details and specifications (Superior, WI).

Ben Yahr, PLA, ASLA, is a Landscape Architect with Resolution Studio, with over 12 years of experience providing design support for waterfront projects throughout the Great Lakes Region. Ben thrives on bringing new approaches, technology, and techniques such as drones to the design process to improve efficiency of projects. Drone technology is particularly valuable for site investigation and assessing storm damages, especially in areas with difficult site access. Ben is well versed in UAV services; CADD, GIS, and 3D visualization; photorealistic rendering software for design analysis; and communication. Ben will assist with survey data collection, post-processing, creating a Digital Elevation Model, and cross-sections.

John Bell, EIT, is a Civil Engineer specializing in creating site plans in of AutoCAD and AutoCAD Civil 3D. He is proficient with ArcGIS, and creating plans for bank stabilization, quantities, and preparation of cost estimates. John will assist with document and report preparation.

Tyler Wickesberg is a Civil Engineer registered in Minnesota with over 14 years of experience. He specializes in municipal infrastructure design. Tyler will assist with conceptual design for infrastructure repairs and construction cost estimates.

4.0 Proposed Work Plan

The project will have three main proposed tasks, as follows:

- Task 1: Site Assessment
- Task 2: Repair Alternatives
- Task 3: Preliminary Estimates of Probable Construction Costs

4.1 Task 1: Site Assessment

A data review (from available published materials, supplied by the Owner and our in-house materials) will be conducted. These documents may include:

- Original design, as-built, various rehabilitation design for: shoreline revetment, lakefront bulkheads, breakwaters, pathways, walkways, Steel Sheet Piling (SSP), beach nourishment, outfalls, track embankments;
- Bathymetric and topographic surveys—historic and most recent;
- Soils sampling and geotechnical analysis;
- Previous monitoring reports;
- Available aerials with adequate resolution (1 foot or less);
- Utilities maps; and
- City site assessment data (GPS, maps, notes, pictures).

A site visit will be conducted by a Senior Coastal Engineer and Lead Principal Engineers to identify the storm damages at each location identified by the City personnel, located within the main 5 (five) project areas:

- Open coast from the Lakewalk to McQuade Harbor, approximately 11 miles (including bank and shoreline erosion, damages to the harbor breakwater, pumping station, storm sewer outfalls, boardwalk, and paved walkway);
- Canal Park and Lakewalk, approximately 0.5 miles (displaced stone revetment, debris, damaged boardwalk, SSP damage, bank erosion, and damage to boardwalk and outfalls);
- Minnesota Point, approximately 6 miles (residential property damage and severe beach erosion);
- Entertainment Convention Center and Lake Superior Aquarium, approximately 0.25 miles (shoreline debris, concrete gangways damage, and possibly underwater failure), impacted by the surge and diffracted Harbor entrance waves; and
- Mississippi Railroad, approximately 1,200 feet of track embankment damage (Blackmere Curve, Slag Point, Skimmer Pond, and Causeway), impacted by the surge and waves created in the St. Louis River by the sustained NE winds.

It is expected that various damages will be documented, due to the wave forces (stone displacements, outfall armoring, access structures), or significant overtopping (walkway/boardwalk, debris). TRC already performed a preliminary coastal evaluation of the recorded waves and water levels during the October 26 and 27, 2017, storm. Scott Weyandt, PE, performed a preliminary site inspection on November 6-10, 2017. We propose to further detail our analysis and findings, as follows.

The project will begin with a kick-off meeting to confirm the project scope, methodology, and schedule and communications protocol. Dan Veriotti and Scott Weyandt will attend the meeting. The reviewed available documents will be discussed to identify any data gaps. Following the meeting, a site investigation will be conducted in each one of the five main project areas, with the following:

- Detailed site photographs;
- Aerial survey (topographic information and high-resolution imaging);
- Type, quantity, and quality (split/fractured) of stone materials, as well measurements for the 3 sides to identify the typical size ranges (tons) for the armor layer; we will recommend a few random sections, where selected measurements will be conducted; this will supplement and validate the aerial survey data (capable of sub-inch accuracy); and
- Sketches of utilities/outfalls, damaged areas, and notes will be created.

The main goal of the site investigation is to determine typical cross-sections (representative for each shoreline reach), that will assist with the repair alternatives. The project-specific design conditions, such as structure useful life and risk (defined as the acceptable level of structure damage due to storms that exceeded the selected design conditions), will be discussed in a project memorandum.

Great Lakes coastal protection structures typically use 25- to 50-Year design life engineering calculations. A set of design conditions (water level and offshore wave) is selected in the design process. While there is no guarantee that the coastal structure will last for 25 or 50 years, annual maintenance (average 2% of the initial construction cost) is recommended for period maintenance. There are numerous cases where the Great Lakes structures (with proper maintenance) well exceed 50 years.

It is important to note that a storm event that exceeds the design conditions may occur in any given year. A more conservative set of design conditions may be selected, which will result in high structure performance during the extreme storm event. Intuitively, the construction cost substantially increases in this case. Therefore, in order to determine appropriate design criteria, risk of failure must be assessed on a level that accurately represents the coastal environment and the consequences of a structure failure, and also allows for project implementation within reasonable risk tolerances. The risk of acceptable risk will be defined and communicated to the City. There are published guidelines (such as the PIANC-International Navigation Association) where safety classes are selected for the coastal structures, and equations are used to correlate risk with a storm return period. To provide an example, considering a low risk of 40% for a stone breakwater with a structure life of 50 years, the corresponding storm event is the 100-Year.

The Minnesota shoreline of Lake Superior is generally characterized by stone outcroppings and limited natural sediment supply; the wave breaking at the toe of a structure is limited by the water depth and can produce scour (deepening of the near-shore area). However, this is not applicable due to the existing hard bottom substrate.

We will perform a preliminary coastal analysis for the water levels (with superimposed storm surge) and offshore waves (from parametric hindcast) that we can summarize as frequency of occurrence (10-Year, 20-Year, 100-Year). For each of the storm conditions represented by offshore waves and water level (10, 20), (20, 10), and (10, 100), and typical existing cross-sections, we will perform the following:

- We will transform the offshore waves to the near-shore (toe of existing shoreline revetments) with standard desktop models (based on Goda's method);
- The required armor stone sizes (median stone size D50 and the range in tons);
- The wave runup and overtopping rates using Ven der Mere and Ward methodology; based on established criteria for land-based structures due to overtopping, an allowable rate of 50 and 200 L/s/m (0.54 cft/ft and 2.16 cfs/ft) is assumed to be an acceptable range; most breakwater designs accommodate up to 1 cfs/ft;
- The overtopping rates will be compared against standard recommended USACE thresholds for reducing upland erosion risk;
- The stone density in lbs/cft will be representative for locally available armor stone (Minnesota and Wisconsin); and
- Discuss the design conditions (10/20, 20/10, 10/100) or the event defined by the risk assessment.

For the Mississippi Railroad location, we will apply the USACE Coastal Engineer shallow water formulas (over the St. Louis River longest N and NE fetches) for sustained wind speeds over 40 mph and determine the maximum wave height at the 100-Year Lake Superior level. It is noted that the lower St. Louis River is under the backwater influence of Lake Superior (in other words, the lake level dictates the lake level, with river flow temporary reversal occurring during storm surges).

We will be able to summarize the existing stone material sizes and compare against the requirements from the coastal calculations. It is possible we will find that the existing revetment crest is too low for the

extreme high water level (100-Year) produced by the October storm, which results in significant overtopping rates (expressed in cubic feet per second/lineal foot of the structure).

Our investigation will focus on (1) identifying the most severe damaged areas (erosion, displaced materials, damaged walkways/lakewalk, and beaches); (2) classifying the areas at risk (that will likely produce more damage if left as-is); and (3) prioritizing based on a series of factors (to be selected in coordination with the City), such as proximity to public areas, residential, existing utilities, stormwater conveyance capacity impact, level of acceptable risk, etc.

A report will be prepared for the analysis performed and the site investigation results.

4.2 Task 2: Project Scope

Based on the results of site investigation and coastal analysis, we will create conceptual design alternatives for each identified damaged area. *We will formulate two possible sets of alternatives: (1) near-term repairs (representative to “in-kind, in-place”, and close to the existing conditions before the October storm) and (2) long-term repairs (which may account for more extreme storms at higher water levels, with more stringent requirements on the material sizes to be used). We will discuss these with the City and will proceed accordingly. Our team will focus on creating typical cross-sections for each main project area, re-using (to the practical extent possible) the existing, and new locally available materials.*

It is expected these alternatives may include the following:

- **Revetment Stone Grading and Surface Preparation.** A good percentage of the existing stone will be re-used and placed back on the slope. We will make recommendations for the smaller materials to be removed (broken concrete, various debris, small split stone).
- **Revetment and Breakwater New Armor Stone.** It is possible that one or two more layers of armor stone will be required. Some areas will likely be acceptable with one layer of armor stone, while others will need two. It is important to note that the new armor stone layers will not be continuous; we expect that the large armor stone material will be placed at the required locations along the revetment, as identified in Task 1.
- **Outfalls.** We envision that new outfall armoring will be required. If a portion of the pipe was damaged or it is obstructed by stone materials, we will make recommendations as needed to replace a section, or to remove the stones.
- **Utilities.** If any buried utilities other than storm sewer are present, we will provide recommendations for repairs.
- **Concrete and Boardwalk Surfaces.** We will make recommendations as needed for new reinforced concrete and wood boardwalk, with appropriate reinforcing and anchoring system. Compacted fill, concrete stabilization measures, and reinforced slopes will be included.
- **Shoreline.** Placing sand as nourishment (mechanical or hydraulic means) will be evaluated for different fill slopes and gradations. We will also evaluate the feasibility of sand retaining structures (such as groins) or backshore revetments as a second line of defense for the properties located close to the water’s edge.

We will provide recommendations for the repairs, which will be presented in plan view maps. If appropriate, we will include the preferred construction methods and feasibility of implementing each alternative, challenges regarding the regulatory permitting, and how to minimize the impact of construction activities.

Conceptual cross-sections will be developed, material requirements identified, and quantities will be calculated. We have included 1 (one) coordination meeting with the City to be scheduled during this task.

4.3 Task 3: Preliminary Construction Cost Estimates

Preliminary quantities and construction cost estimates will be developed; the unit prices will be derived from our in-house database and recent regional bids and will include production, transportation, and placement of materials. We will assume land- or water-based construction, depending on the different project areas and work required.

For rubblemound breakwaters, there will be three main categories: stone production at quarry, transportation of materials, and stone placement. For a typical average unit price of \$75/ton, the stone production will be approximately \$32, the transportation \$23/ton, and the placement \$20. These will be important in the prices for the existing materials reuse.

We have included 1 (one) coordination meeting with the City to be scheduled during this task.

The project deliverable includes a project report detailing our site findings, coastal analysis, alternatives considered, recommendations for implementation, and the construction cost estimates. We will also make recommendations for the applicable Coastal grants for funding.

5.0 References and Proposed Schedule

- 1. Project: Racine Harbor Monitoring Study**
Racine County Department of Public Works & Development Services
14200 Washington Avenue, Sturtevant, WI 53177
Mr. Nathan Plunkett, Racine County Engineer
T: 262.886.8442
E: nathan.plunkett@racinecounty.com
- 2. Project: Superior, Wisconsin, Shoreline Projects**
City of Superior Department of Public Works
1316 N 14th St #210, Superior, WI 54880
Mr. Todd Janigo, Director
T: 715.395.7373
E: harkera@ci.superior.wi.us

3. Project: Highland Park Assessment and Bulkhead Repairs

City of Highland Park Department of Public Works
 1150 Half Day Rd, Highland Park, IL 60035
 Mr. Manny Gomez, PE
 T: 847-926-1145
 E: egomez@cityhpil.com

4. Project: Rosewood Beach Restoration

USACE Chicago
 Mrs. Kriston Buczak
 T: 312-846-5330
 E: kirston.a.buczak@usace.army.mil

Park District of Highland Park
 Mrs. Liza McElroy
 T: 847-579-3108
 E: lmcElroy@pdhp.org

The following represents a draft proposed schedule, assuming a contract award on December 4, 2017. We believe we can complete all of the requested services by February 28, 2018, weather permitting. We can also accommodate an accelerated schedule based on our staff availability, and will coordinate with the City of Duluth as needed to expedite the completion of the main tasks presented below.

Task	Dec (2017)				Jan (2018)				Feb (2018)			
	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4	WK1	WK2	WK3	WK4
Project: Kick-Off Meeting		•										
Task 1: Site Data Collection, Coastal Analysis		•	•	•								
Task 2: Project Scope				•	•	•	•	•				
Task 3: Construction Cost Estimates									•	•	•	•
Coordination Meetings						•					•	

Deliverable 1: Task 1 Coastal memorandum, January 2-5, 2018

Deliverable 2: Task 2 coordination meeting, January 29-February 2, 2018

Deliverable 3: Task 3 coordination meeting, February 12-16, 2018


Deliverable 4: Final project report, February 28, 2018



Appendix A
Proposal Cover Sheet and Signed Addenda

EXHIBIT A

PROPOSAL COVER SHEET
CITY OF DULUTH
RFP# 17-15AA
PROFESSIONAL ENGINEERING SERVICES
DULUTH LAKEWALK & SHORELINE STORM DAMAGE ASSESSMENT

PROPOSER INFORMATION	
Proposer Name	TRC
Mailing Address	230 W. MONROE ST. # 2300 CHICAGO, IL 60606
Contact Person	DAN VERIOTTI, PE
Contact Person's Phone Number	312.800.5916 ; 312.203.4125 (O) (C)
Contact Person's E-Mail Address	dverioti@trcsolutions.com
Federal ID Number	06-0861618
Authorized Signature	
Title	OFFICE PRACTICE LEAD



CITY OF DULUTH
PURCHASING DIVISION
Room 100 City Hall
411 West First Street
Duluth, Minnesota 55802-1199
218/730-5340
purchasing@duluthmn.gov

Addendum #1
File # 17-15AA

Prof Engineering Services – Duluth Lakewalk and Shoreline Damage Assessment

This addendum serves to notify all bidders of the following changes to the solicitation documents:

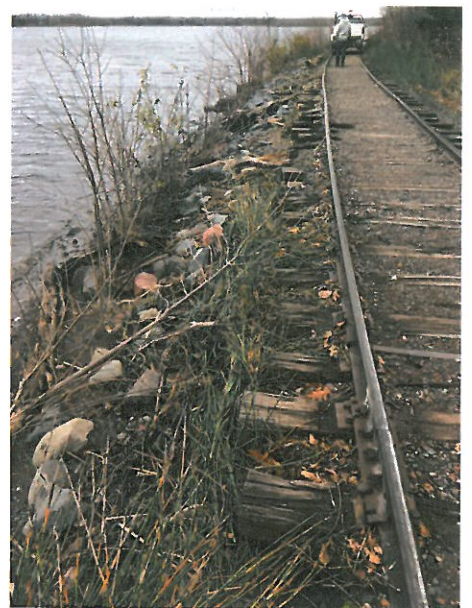
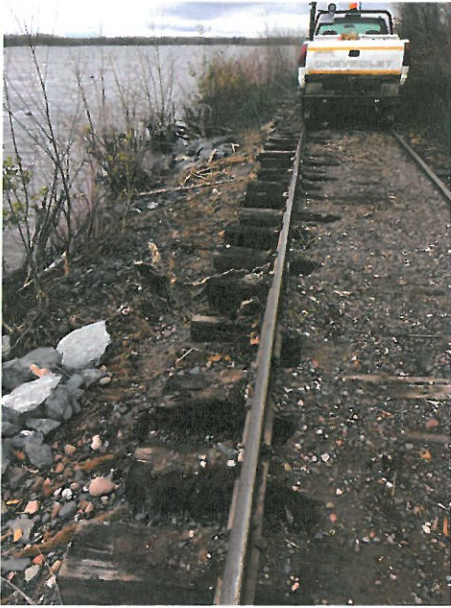
Damage assessment, recommendations and cost estimates for affected portions of the Lake Superior & Mississippi Railroad shall be considered within the scope of this project. Initial assessments indicate approximately 1200 linear feet of damage to the embankment and track along sections of Blackmere Curve, Slag Point, Skimmer Pond and the Causeway. Pictures are attached.

Please acknowledge receipt of this Addendum by returning a copy with your proposal.

Posted: November 6, 2017

Received / Reviewed


11/15/2017



Photos of Blackmere Curve.



Slag Point



Skimmer Pond



Causeway



CITY OF DULUTH
PURCHASING DIVISION
Room 100 City Hall
411 West First Street
Duluth, Minnesota 55802-1199
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purchasing@duluthmn.gov

**Addendum #2
File # 17-15AA
REQUEST FOR PROPOSALS
PROFESSIONAL ENGINEERING SERVICES
DULUTH LAKEWALK & SHORELINE STORM DAMAGE ASSESSMENT**

This addendum serves to notify all bidders of the following changes to the solicitation documents:

Answers to submitted questions are attached.

Please acknowledge receipt of this Addendum by returning a copy with your proposal.

Posted: 11/14/17

*Received / Reviewed
11/15/2017
JK*

Q & A - RFP 17-15AA - Duluth Lakewalk & Shoreline Storm Damage Assessment

1. Task 1 outlines making an assessment of the damage and a detailed report for use by the City in applying for grant monies (State Aid) to make repairs. Is there a specific format/application/etc...that will need to be followed for this report?

There is no specific format that needs to be followed.

2. Under Task 2, the RFP mentions developing project scopes of work for each area. I would like to confirm that "project scopes of work" refers to outlining a general engineered solution for each of the sites and writing a description of these. I am reading the RFP to say that an engineered solution with soil sampling and detailed design is not what is expected at this time (i.e. those recommendations would be in the report, but actual borings/analysis would be done with any design and development of biddable documents for each of the sites). This is to remain a high-level engineering exercise to guide the repair process going forward.

That is correct, the city is looking for "high-level" recommendations. The awarded firm may need to mock up some schematic conceptals for fixes, but design development is a separate phase.

3. Please clarify the limits of the shoreline assessment. Eighteen waypoints are included in Exhibit B, however Park Point to McQuade Small Craft Harbor is referenced in the first paragraph of Part IV. Is the intent of have the entire Lake Superior shoreline from near the Wisconsin border to McQuade Harbor assessed?

Yes, it is our intent that this assessment cover the entire area from the end of Minnesota Point to McQuade Harbor.

4. Park Point is assumed to include the Lake Superior shoreline for the entire island (i.e. Minnesota Point Shoreline). Is this correct?

Yes.

5. Are there any known underwater areas that require dive inspection?

There are 2 to 3 related known under water failure areas or suspected under water failure areas - one by aquarium and the other just past Endion at sea Wall gap (shown in pictures)

6. Are pipe televising services required?

The majority of the storm sewer pipes that outlet to the lake are large enough in size that televising should not be required.

7. What class of cost estimate is requested?

We're not sure what is meant by "class of estimate", but what we need and expect are estimates that are solid enough for the city to make repair and rebuild decisions based on the funding sources that we have available. We realize that these estimates are preliminary.

8. Are there any updates of immediate actions that the City has conducted since the RFP was issued?

The city has performed additional clean up to re-open the Lakewalk and Brighton Beach.

9. Can you please indicate if (at least) limited topographic survey to the water's edge should be included in the scope? Per Task 3 of the proposal, engineering cost estimates need to be developed for the repairs. Some survey data would be needed in order to compute the quantities.

Yes, a limited topographic survey would be appropriate.

Proposal for Professional Engineering Services – Duluth Lakewalk and Shoreline Storm Damage Assessment

RFP Number 17-15AA | November 17, 2017



Prepared by:
TRC Environmental Corporation
230 W. Monroe Street, Suite 2300
Chicago, IL 60606



Prepared for:
City of Duluth
ATTN: Purchasing Division
City Hall, Room 100
411 West 1st Street
Duluth, MN 55802



1.0 Professional Fees

The TRC Team is providing the following the proposed fee breakdown, as summarized in the table below, and the attached spreadsheet. *This fee includes all the labor, data collection, and subcontractor fees, for a total not to exceed \$44,378.00.*

Table 1. Proposed Fee Breakdown by Task

Summary	Total	Task 1	Task 2	Task 3
		Site Assessment	Repair Alternatives	Cost Estimates
TRC Labor	\$35,666	\$15,954	\$14,304	\$5,408
TRC Communications Fee	\$0	\$0	\$0	\$0
TRC Expenses	\$0	\$0	\$0	\$0
TRC Labor and Expenses	\$35,666	\$15,954	\$14,304	\$5,408
Equipment Procurement	\$0	\$0	\$0	\$0
Laboratory	\$0	\$0	\$0	\$0
Subcontractors	\$8,712	\$3,564	\$2,376	\$2,772
Total	\$44,378	\$19,518	\$16,680	\$8,180

2.0 Assumptions and Alternate Services

The following is a list of assumptions used in developing the scope of work:

- Detailed studies (such as Coastal and Geotechnical) are not required;
- Typical cross-sections can be generated for the shoreline in the each of the main project areas;
- Full, continuous aerial survey coverage is not required;
- The underwater condition of the structures will not be investigated in this phase; the site assessment will focus on the conditions above water;
- Detailed topographic and bathymetric survey are not required; and
- There is sufficient information available from the City, surveys by others, and NOAA charts regarding the existing water depths in the project areas.

The following is a list of alternate services and fees, if required by the City:

- Full site aerial survey coverage, data processing, and imagery: \$1,000/mile
- Underwater investigation (two locations): \$10,000 to \$15,000 depending on the time of the year when it is performed;
- Coordination meetings/conference calls (other than the ones included in the base scope): \$150/hr.



City of Duluth RFP For Professional Engineering Services Duluth Lakewalk & Shoreline Storm Damage Assessment
16-Nov-17

Veriotti
PM, Coastal

Weyandt
Principal Civil

Wickesberg
Civil

Bell
Staff Eng.

Yahr
Resolution

Line	I: SITE ASSESSMENT	TRC														Traveling Direct Costs	Subs Survey/Field Getech	Total Labor Hours	Expenses	Total Labor Cost Plus Expenses				
		Labor Hours	Labor Rate \$ 150.00	Labor Hours	Labor Rate \$ 150.00	Labor Hours	Labor Rate \$ 125.00	Labor Hours	Labor Rate \$ 88.00	Labor Hours	Labor Rate \$ 99.00	Labor Hours	Labor Rate	Labor Hours	Labor Rate						Direct Costs			
1	Data Review	4	\$ 600.00	4	\$ 600.00	2	\$ 250.00	4	\$ 352.00		\$ -		\$ -		\$ -		\$ -	14	\$ -	\$ 1,802.00				
	Site Assessment	22	\$ 3,300.00	22	\$ 3,300.00		\$ -	0	\$ -		\$ -		\$ -		\$ -		\$ -	44	\$ -	\$ 6,600.00				
	Coastal Analysis	30	\$ 4,500.00		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	30	\$ -	\$ 4,500.00				
	Aerial Site Survey	2	\$ 300.00		\$ -		\$ -		\$ -	36	\$ 3,564.00		\$ -		\$ -		\$ -	38	\$ -	\$ 3,864.00				
	Report	8	\$ 1,200.00	8	\$ 1,200.00		\$ -	4	\$ 352.00		\$ -		\$ -		\$ -		\$ -	20	\$ -	\$ 2,752.00				
	Sub-Total	66	\$ 9,900.00	34	\$ 5,100.00	2	\$ 250.00	8	\$ 704.00	36	\$ 3,564.00	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	146	\$ -	\$ 19,518.00			
II: REPAIR ALTERNATIVES																								
2	Project Scoping	20	\$ 3,000.00	20	\$ 3,000.00	8	\$ 1,000.00	8	\$ 704.00	24	\$ 2,376.00		\$ -		\$ -		\$ -	80	\$ -	\$ 10,080.00				
	Report	20	\$ 3,000.00	20	\$ 3,000.00		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ 6,000.00				
	Coord. Meeting		\$ -	4	\$ 600.00		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ 600.00				
			\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -				
	Sub-Total	40	\$ 6,000.00	44	\$ 6,600.00	8	\$ 1,000.00	8	\$ 704.00	24	\$ 2,376.00	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	80	\$ -	\$ 16,680.00			
III: CONSTRUCTION COST ESTIMATES																								
3	Construction Cost Estimates	8	\$ 1,200.00	8	\$ 1,200.00	8	\$ 1,000.00	16	\$ 1,408.00	28	\$ 2,772.00		\$ -		\$ -		\$ -	68	\$ -	\$ 7,580.00				
	Coord. Meeting		\$ -	4	\$ 600.00		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	4	\$ -	\$ 600.00				
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	Sub-Total	8	\$ 1,200.00	12	\$ 1,800.00	8	\$ 1,000.00	16	\$ 1,408.00	28	\$ 2,772.00	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	72	\$ -	\$ 8,180.00			
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	Sub-Total	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -			
5			\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -				
			\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -				
			\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -				
	Sub-Total	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -	\$ -	-	\$ -	\$ -			
PROJECT TOTAL (Add lines 1-13)		114	\$ 17,100.00	90	\$ 13,500.00	18	\$ 2,250.00	32	\$ 2,816.00	88	\$ 8,712.00	0	\$ -	0	\$ -	\$ -	\$ -	298	\$ -	\$ 44,378.00				
		Labor TRC Total		342	\$ 44,378.00																			
																	TOTAL MAN-HOURS		342.00					
																	Project Total		\$ 44,378.00	\$ 44,378.00				
																	RESOLUTION		\$8,712	19.63%				