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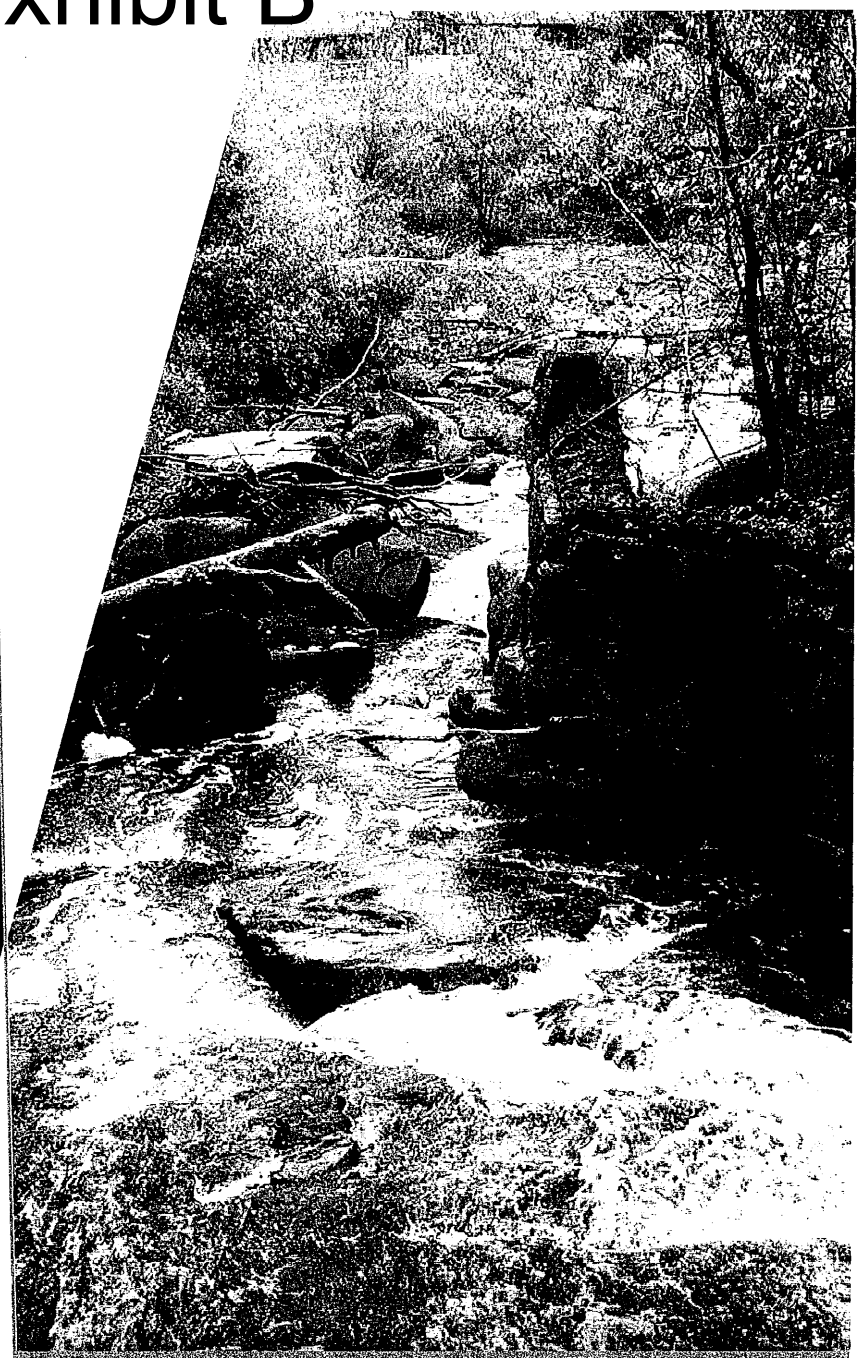

Stream Engineering Design and Construction Engineering Proposal: Kingsbury Creek at Lake Superior Zoo

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Work Plan

Statement of Understanding

In fall 2014, Cardno was selected by the City to complete the design, permitting and construction oversight for a streambank stabilization project on Kingsbury Creek at the Lake Superior Zoo. Work began on the project in December 2014; however, the project was cancelled in April 2015 due to the need to resolve the future direction of infrastructure, services, and public use within the Zoo and the adjacent Fairmont Park area. Prior to the cancellation of the project, Cardno completed the following activities:

- A topographical survey of the project area (defined as the bridge upstream of the falls down to the bridge upstream of the former pond location).
- A cultural resource investigation of the eligibility of the retaining walls along the stream for the National Register of Historic Places (NRHP), which included other potentially eligible structures within the project area. Our findings were summarized in a Determination of Eligibility (DOE) report, which was provided to the City in April 2015.
- The physical characteristics of the stream channel, including longitudinal profile and cross sections were measured.
- A conceptual design was developed based on the situation where the Zoo was going to function in its current state at the time.
- A kickoff meeting and conceptual design review meeting were held with representatives from the City, the Lake Superior Zoo, and the Minnesota Department of Natural Resources (MNDNR).

The future direction of the Lake Superior Zoo and the adjacent areas has been resolved and the City wants to re-initiate a project to stabilize the banks along Kingsbury Creek. Although funding at this point has not be identified, the Federal Emergency Management Agency (FEMA) funding that was initially designated for the project is no longer available.

We understand that the project goals remain the same: to stabilize the eroding banks along Kingsbury Creek in a manner that provides greater stream function and aligns with the proposed future uses of the area. Certain infrastructure elements such as the existing bridges across Kingsbury Creek will remain in place. Other features such as the location of the existing pathways and riparian uses may change under the new direction of this area.

Selected Consultant's Role and Responsibilities on the Project

Cardno will complete the design, permitting, and development of construction engineering documents for Kingsbury Creek at the Lake Superior Zoo. We will utilize as much information developed from the initial project, including the topographic survey, completed field work, the DOE report, and the conceptual design to develop the final designs and construction documents. Deliverable to the City will included a signed construction plan sets with material quantities and specifications to support the development of construction bid packages. Cardno will also provide construction oversight services during project implementation, as included in the original project scope.

Design Approach

Cardno will develop an approach that addresses, to the extent possible, the issues causing bank erosion, obtains regulatory approval, addresses stakeholder's interest (where applicable), and falls within the allotted construction budget. The use of native vegetation and natural materials should be components of the stabilization design and approach. We have significant experience in utilizing a combination of native

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their concurrence. We assume no additional field work or documentation will be required to obtain MN SHPO concurrence. In the event that additional information is required, such as a video similar to the one produced for Miller Creek at Lincoln Park, we would consider that a change in scope.

We also assume that a Letter of Map Revision (LOMR) will not be required as part of this project and that the hydraulic analysis completed for the Grand Avenue bridge reconstruction will be made available for our use during the design and permitting process. To support additional floodplain impact analysis, we often use tools within RiverMORPH to demonstrate the impact (or lack of) to flood elevations by comparing existing and proposed conditions. This level of analysis can be completed within the budget provided.

Construction Oversight

The first component of a successful project is designing and acquiring the regulatory authorization for implementation. The second is making sure the project is constructed correctly and providing guidance, as necessary, to the contractor. We propose one staff member would remain on-site during construction at all times (estimated at 3 weeks). This construction overseer is intended to provide technical support to the contractor and administrative support to the City. In addition, we will provide technical support during the bid process to help the City evaluate bids or select contractors. We will attend one pre-construction meeting to layout the site for the contractor and answer any questions that they might have.

Based on the current project timetable (see schedule below) construction of the project will not likely occur until summer 2017. The permitting process typically takes a minimum of 60 days to complete. Because Kingsbury Creek is a designated trout stream, a likely condition in the MNDNR public waters permit will prohibit construction in the stream between September 15 and June 30. In other words, to potentially construct the project this year, factoring in lead time for project bidding and contracting, permit applications would need to be submitted by April 1.

Key Deliverables and Work Schedule

Outlined below is a proposed work schedule with major tasks, subtasks, and key deliverables

Cardno proposes the following schedule, which assumes the contract award and notice to proceed are issued by March 15, 2016.

Table 1. Proposed Project Schedule

Task/Subtask	Key Deliverable(s)	Estimated Completion Date
Design		**March 2016 – Early September 2016**
Review of conceptual design	Project kickoff meeting with the City and project partners.	Mid-March
Conceptual design (60%)	A plan set that can be used to inform the City, project partners, regulators, and the public on the scope and scale of proposed work. A review meeting with the City and project partners.	Early May
Draft design (90%)	A construction plan set requiring only minor edits to be finalized. Can be used for permit applications. A review meeting with the City and project partners.	Early July

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Task/Subtask	Key Deliverable(s)	Estimated Completion Date
Final design (100%)	A final plan set signed by an engineer licensed in Minnesota.	Early August
Engineering construction documents	Material quantities and specifications by project site. A construction cost estimate.	Early September
Permitting		**Early May 2016 – Late September 2016**
Early coordination with regulatory agencies	Meeting/communication with agencies	Early May
SHPO coordination	Early coordination with SHPO	Early May
Develop project permit applications	Permit applications	Mid-June
	Letter to SHPO	Mid-June
Project Management		**Mid-July 2014 – Late March 2015**
General project coordination and weekly updates	Emails with project updates	Weekly or as determined by client
Construction Oversight		**Early May 2017 – August 2017**
Bid and pre-construction support	Technical support during bid process	Early May
	Pre-construction meeting with contractor	Late July
On-site construction oversight	On-site supervision and construction reporting	July - August

City-Provided Services

Cardno assumes that the City will support the project by providing the following services:

- The City will provide access to City data including GIS, CAD, previous reports or photos pertaining to the project areas, and street, utility, survey, and property boundary drawings.
- The City will assign an Engineer to lead the development of the construction bid packages including contract documents. Cardno plan sets and engineering documents will support the bid package(s).
- The City will be an active, engaged project team member and will help to facilitate discussions among Cardno and the project partners and provide guidance when helping to resolve issues or address concerns among the project partners and the public.

Project Costs/Fees

Cardno will design, apply for permits, complete the construction engineering documents, and provide construction oversight at the Kingsbury Creek for a Not to Exceed total project cost of **$53,400.**

Table 2 provides a summary based on the tasks described above. Additional detail is available upon request.

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Table 2. Cost Estimates for Design, Permitting, and Construction Oversight for Kingsbury Creek At The Lake Superior Zoo.

Task	Cost
Design and construction documents	$27,600
Permitting	$5,600
Construction oversight	$20,200
Total	**$53,400**

Cost Assumptions

We assumed the following items during the development of our proposal:

- Our cost proposal does not include any permit application fees. The City will be responsible for any fees, which will be paid directly to the appropriate permitting program.
- SHPO coordination and the process of obtaining concurrence with the SHPO that the walls are not eligible for the NRHP includes providing early coordination with the SHPO and consulting parties. Preparation of a Memorandum of Agreement or Memorandum of Understanding and the preparation of the Minnesota Historic Property Record for any affected walls is not included.
- As previously discussed, any LOMR required for the project will be covered under the bridge replacement work occurring downstream of this project. Our costs assume a certain level of effort to demonstrate during the permitting process whether a design may require a LOMR. We provide a cost estimate in the Additional Services section of our proposal if a City-preferred design triggers the LOMR process or if the LOMR process would be independent of the bridge project.
- We assume the construction process will take 3 weeks. Our cost estimate includes our presence on-site for 8 hours/day for the 3 week period.

Additional Services

- Letter of Map Revision (LOMR): The LOMR process can be expensive and last several months to a year for more complicated project sites. As previously discussed, our goal will be to minimize the potential for this step through our designs and supporting evidence to show no change is required. Costs provided include modeling, which can be used to demonstrate that flood flows are not significantly impacted by designs. In the event that this documentation does not suffice, and a LOMR for Kingsbury Creek is required and unavoidable, an additional fee of up to $20,000 would be required to complete the process. We would work with the City to determine how this cost could be reduced.