

MIDAS CREEK PROJECT

REQUEST FOR PROPOSAL

Statement of Purpose

South Jordan City has need of an analysis of the Midas Creek drainage. Salt Lake County prepared a creek study in 2002 that identified expected flows and obstructions with those flows. Since then, there have been many improvements to the channel. South Jordan would like a review of the previous study, an update of the model, validate or determine the expected flows, identify and prioritize current obstructions and provide recommendations for improvements.

Background Information

The organization that is sponsoring this project is South Jordan City. South Jordan City has a group of engineers that manage city infrastructure. Part of their responsibility is flood control and storm water management for South Jordan City.

Scope of Work

In 2002 a study was performed by Salt Lake County on Midas Creek, a stream that runs through South Jordan City. The study developed a hydrologic model for the Midas Creek watershed, determined the existing capacity of the channel, and made recommendations to improve the channel capacity. Since then, many channel improvements have been implemented.

The purpose of this project is to examine the 2002 study, verify the results, and recommend additional improvements. South Jordan City would like the hydrologic model to be verified. The original hydrologic modeling was done with the HEC-HMS model for a 100-year storm. Furthermore, they would like the hydrologic model to be updated to represent current and future development. The major development to be considered is the Daybreak development. The Daybreak development has committed to retaining 100% of the runoff. Furthermore, a detention pond is currently being implemented in the Midas Creek watershed. The detention pond will need to be implemented into the hydrologic model as well.

A site visit and examination of the structures will be required. While the improved structures should be examined to see if any additional channel deficiencies are occurring (I.E. debris build up), the main focus will be the structures that have been outlined as potential bottlenecks. The

capacity of some of the improved structures has already been determined by a group of students from the University of Utah.

After examining the improved and unimproved structures, determine the flooding hazards for a 100-year storm. It is recommended that HY-8 is used for the culvert analysis and that an inundation map is developed using HY-8's integrated interface in WMS. Also examine other deficiencies in the channel, such as channel size and debris build up. Develop an economic and environmental impact analysis of the flooding.

Lastly, design hydraulic structures and other channel improvements so that Midas Creek has the capacity to handle a 100-year storm. Produce a report that outlines the recommendations for Midas Creek.

The 2002 Salt lake County study will be available for examination. It is not yet clear if the hydrologic model for the 2002 study will be available for examination. Furthermore, the University of Utah study regarding the updated channel structure capacities will also be available.

Constraints for the project include:

- Some hydraulic structures are in difficult to reach locations.
- Limited gage data available for model calibration

Milestones

1. Site visit and examination of existing channel and structures
2. Determine the capacity of bottleneck structures and check the capacity of updated structures.
3. Develop a hydrologic model with and without the daybreak development. Incorporate the detention pond into the model.
4. Determine flooding hazards and develop a economic impact analysis of the flooding.
5. Determine the design recommendations to improvement the channel capacity.

Recommended Qualifications

- Complete or current enrollment of the following courses: Hydrology , Hydraulics, Hydraulic Structures, Watershed Modeling
- Familiar with the following models: HY-8, HEC-HMS, MODCLARK, HEC-RAS
- Experience with WMS

Requirement for Proposal Preparation

Turn in three copies of the proposal that should include:

- Cover letter
- 1 page or less executive summary
- No more than 2 pages statement of qualifications that outlines the background, experience, education, and organizational structure of the team. This section should include some discussion of how you plan to become a "high functioning" team in the course of completing the project. Any outside consultants (professors or others) that will help should also be included.
- No more than 2 pages work plan that outlines their approach to solving the problem, how their team will work together (including weekly work schedule that shows the hours each will work and the time block the team will be together).
- No more than 1 page (probably just a few lines) indicating necessary tools, data, equipment.
- No more than 1 page schedule indicating important milestones.
- No more than 1 page Engineering Design Budget that would be primarily their time and effort.
- In the appendix include a 1 page resume for each member of the team

Outcome and Performance Standards

You will provide this work "as is" meaning that there is no engineering stamp certifying the work. However, our ability to continue receiving help from outside sponsors will be contingent on the good work that you do. You represent the BYU Civil & Environmental Engineering Department and it is expected that you will interact in a professional manner at all times with your mentor and project sponsor, treating them with the utmost respect and consideration of their busy schedules.

While successful completion of the design project is fundamental to the outcome of the work, it is expected that you will also learn important team dynamics and leadership principles. This means that in the process of completing the project you are also seeking to help each member of your team grow and develop confidence in his/her engineering abilities.

Deliverables

- A final report with design alternatives for the project that include economic and environmental considerations
- A poster reflecting a summary of your design project
- A presentation summarizing your design project.

All deliverables will be due Friday April 1. During the week of April 4th both a presentation to sponsors and poster session for students, faculty and other interested people will be organized.

Term of Contract

Winter semester, six hours/week/student with at least 3 hours working together, project deadline.

Payments, Incentives, and Penalties

For your effort on the performance of this project you will receive a grade that is awarded according to the following breakdown:

10% Time Card (putting in the requisite time)

10% Project Notebook (demonstrating productivity in the hours spent)

20% Milestones met (each project will outline the expectations for milestones)

35% Final report

10% Poster/Presentation

10% Teamwork Portfolio and Peer evaluation

5% Cooperation

Contractual Terms and Conditions

There will be no monetary compensation with respect to the work completed, and all work is completed and delivered on a "best effort" basis.

Each member of your team will be asked to sign a [non-disclosure agreement](#) that simply states the work you do belongs to the project sponsor.

Evaluation and Award Process

Your team's proposal will be evaluated by a panel of three graduate students.

The scoring will follow the following:

Firm Resources/Ability/Experience 20

Key Project Personnel 20

Work Plan and Understanding of the Project 40

Technical Proposal and Presentation 20

Process Schedule

1. October 31 4:00 pm - Request for Proposals will be available online at <http://cecapstone.groups.et.byu.net/Winter2012.htm>
2. November 7 4:50 pm - Question and Answer period with respect to the proposal and submission procedures.
3. November 21 4:00 pm - Three copies of the proposal must be submitted at the beginning of class
4. November 21 4:00-5:30 pm - 5 minute interview (presentation) by your team of the proposal
5. November 30 - Award notification.
6. The review committee reserves the right to reject any proposal or presentation that is not submitted in a timely fashion or in accordance with the instructions given in this RFP.

Contacts

Include a complete list of persons with name, title, responsibilities, and the different ways to contact them for information on the RFP itself, or any question.

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