



Request for City Council Committee Action From the Department of Public Works

Date: July 26, 2005
To: Honorable Sandra Colvin Roy, Chair Transportation & Public Works Committee
Referral to: Honorable Barbara Johnson, Chair Ways & Means/Budget Committee
Subject: **RFP for the Pump Station #4 Control System Design and PLC Software Development and Assistance for Electrical Engineering Services.**

Recommendation:

Authorize distribution of a Request For Proposals for consulting services to perform;
a) Instrumentation and control system design, b) software development and c) assistance for electrical engineering services for Pump Station #4 Rehabilitation project. Funds are available within the existing project budget (Water 7400/690/6954).

Previous Directives:

- No Previous Directives.

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Approved by:

Klara A. Fabry, P.E., City Engineer, Director of Public Works

Presenter: Galina Izraelev, P.E.

Financial Impact (Check those that apply)

No financial impact - or - Action is within current department budget.
(If checked, go directly to Background/Supporting Information)

Action requires an appropriation increase to the Capital Budget

Action requires an appropriation increase to the Operating Budget

Action provides increased revenue for appropriation increase

Action requires use of contingency or reserves

Other financial impact (Explain):

Request provided to the Budget Office when provided to the Committee Coordinator

Background/Supporting Information:

The Public Works Capital Improvement Project Plan includes Rehabilitation of Pump Station #4 project. Pump Station No.4 is over 100 years old. This Pump Station is the source of water supply for the new 78 million-gallon per day (mgd) Columbia Heights membrane Filtration Plant and thus must be able to meet current recommended standards and provide a reliable source of softened water to the Columbia Heights Plant.

Public Works is implementing an In-House Design and Business Management Strategies. Pump Station #4 Rehabilitation Project is the biggest current Energy Saving Project in Minnesota. The upgraded Pump Station will:

- a) Provide reliable service and necessary capacity (90mgd) for the new and existing Facilities,
- b) Enhance operations by about 50%,
- c) Reduce operational energy cost by about \$500,000.00 annually,
- d) Provide a tremendous energy conservation – savings of energy for about 1,000 homes annually,
- e) Reduce pollution and create better environment, achieving the goals of the City of Minneapolis Mayor's Directive for Energy Conservation.
- f) The initiated changes, including Design and Construction Management In-House vs. Contracting the Entire Project Out, will provide total savings for the City of Minneapolis and its taxpayers of about \$3 million dollars.

The new efficient design will bring the new Pumping and Piping Systems at Pump Station #4 to the current recommended guidelines. Existing field instrumentation will be replaced when the pumping system is replaced. The new control and monitoring system will be installed to communicate with the new efficient equipment and remote Water Division facilities. The electrical equipment should be modified to meet the current standards and security requirements.

The following is scope of services required from the consultant:

A. Instrumentation and Control System Design:

- The control system design should include updated process flow diagrams and instrumentation diagrams, developed from the existing electronic files.
- Updated and new control system elementary diagrams.
- Specifications for the PLC hardware and field instrumentation.

B. PLC Software Development and Services during startup and checkout:

- Develop the control system functional description from sequence of operations.
- Replace the existing PLC5 with a Control Logic series PLC.
- Develop PLC program to provide the control and telemetry defined by the functional description.
- Provide data in the PLC for acquisition by SCADA.
- Receive remote set points in the PLC from SCADA.
- Convert existing Panel View Panel Builder application to new Panel View RSView Machine Edition System.
- Work with City staff and the electrical contractor during startup and checkout to incorporate control changes as necessary.

C. Electrical Power System Upgrade:

- Review Variable Speed Drive Specifications developed by the City.
- Review Transformer Specifications developed by the City.
- Develop a sequence of operation for the automatic transfer scheme of the new 4,160 volt switchgear.

- Develop a cable tabulation of the new power and control circuits between the transformers, switchgear, variable speed drives, motors, field instrumentation, and control system components.
- Develop revised protective relay settings for the Power House switchgear.

Current Request

Public Works is soliciting proposals for engineering services for specialized support services for the design, construction, and start up of the Control System, Software Development and Assistance for Electrical System for the Rehabilitation of Pump Station #4.

This will follow the normal City review process, including review by the Permanent Review Committee.