



GREELEY AND HANSEN

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April 29, 2009

Mr. Pete Casey
Director
Department of Public Works
15655 Ravinia Avenue
Orland Park, IL 60462

Subject: Replacement of the Engine-Generator in the Main Pump Station
Proposal for Professional Engineering Services
Final Design and Assistance During Bidding

Dear Mr. Casey,

We are pleased to have this opportunity to offer this proposal for engineering services for design and bid assistance services to be provided for replacement of the 550 KW generator located at the Main Pump Station with a new 750 KW diesel fueled generator set. The improvements required are generally described as follows:

1. **750 KW Generator Set** – The existing generator set is to be replaced with a 750 KW generator set. A generator of this capacity will be able to start and run two 300 HP pumps as well as ancillary station loads. The generator set will be diesel fueled and will include an integral 1,320 gallon fuel storage tank. The tank will be of the double walled self-contained type. An alarm will be included for leakage detection of the primary storage tank.
2. **Structural Review** – No changes are anticipated with regard to the structural aspects of the pump station. Based on loads provided by Caterpillar equipment, the existing floor area has adequate capacity to accommodate the increased weight of the new generator set, fuel tank and fuel.
3. **Electrical Modifications** – Existing conduit and wiring are adequate for a 750 KW generator set. Some rework of the existing electrical power arrangements may be required to accommodate connection to the generator itself, as the point of connection will likely be different with the new, larger generator set. The existing breakers are of large enough frame size to accommodate the 750 KW generator. The breaker trip settings will need to be adjusted.

Electrical modifications will also include:

- Generator emergency shut-down switch to be located in the pump station outside of the generator room.
- Power and control wiring associated with fire suppression system improvements including alarm and power/control wiring for the air compressor required for a dry type sprinkler system. Upon fire detection, the generator will be shut-down, the exhaust fans turned off and the dampers on the outside louvers closed.
- Utility supply power quality monitor to be located in the MCC.

4. **Instrumentation and Controls** – The existing arrangements for exercising the generator set will continue to be used. No changes are anticipated with regard to generator exercising and loading.
5. **Engine Cooling System** – The existing arrangement whereby water from the station discharge header is used to cool the generator (via on-board heat exchangers) will be continue to be used. Caterpillar water requirements are within the capacity of the existing water supply system. The drain line is also of sufficient size to allow the water cooling system to continue to be used.
6. **Engine Room Ventilation** – No changes are expected with respect to generator room ventilation.
7. **Engine Exhaust Arrangements** – Engine exhaust arrangements will be modified as required to accommodate the larger engine.
8. **Fire Containment and Suppression** – The existing sprinkler system will be expanded to include the generator room. Due to the potential for freezing conditions that may be anticipated in this room during extended generator operation in colder months, a dry pipe system will be used. This will require the provision of a compressor to maintain sprinkler supply pipe pressure. The system will be tied into the existing fire alarm system. The pedestrian door to the generator room will be replaced with a new door having a two-hour fire rating.
9. **Removal of Existing Engine-Generator Set** – The construction contractor will be required to remove and dispose of the existing set.

We propose to provide engineering design and assistance during bidding for the Village for the lump sum amount of \$25,000. The Village's standard "front-end" contract documents will be used. The work required will be depicted utilizing small sized drawings prepared in the field by Ray David. Engine-generator technical proposals from equipment suppliers will be utilized for the engine-generator portion of the specs. Other specifications will developed as needed to support the scope described above. We anticipate the services will be completed within six to eight weeks of notice to proceed.

We understand that the Village will provide the necessary authorization to proceed with these services.

Yours very truly,

GREELEY AND HANSEN LLC


Kenneth V. Johnson, P.E.
Principal