



Hazen and Sawyer
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CITY OF COOPER CITY
EFFLUENT PUMP AND VFD REPLACEMENT
TASK ORDER No. 2021-04
SCOPE OF SERVICES
JANUARY 14, 2022

PROJECT BACKGROUND

Cooper City (CITY) operates its wastewater treatment plant (WWTP) with disposal of secondary effluent to both the City of Hollywood (for reuse as irrigation water) and to the onsite deep injection well. The CITY maintains this flexibility by operating a set of effluent pumps that are capable of transmitting to Hollywood or pumping down the onsite injection well. Under the most recent peak wet weather event, the CITY had difficulty maintaining pressure in the forcemain to Hollywood when the Town of Davie, who also pumps into the same forcemain, was pumping.

Under this project, the CITY requested that Hazen and Sawyer (CONSULTANT) develop specifications and drawings for the replacement of one of the effluent pumps. Additionally, the existing pump's two speed drive would be replaced with a variable frequency drive (VFD). CONSULTANT shall also assist the CITY in developing bid documents and provide bidding assistance and oversight, as needed during installation and start-up of the pump and VFD.

SCOPE OF SERVICES

The CITY has requested CONSULTANT provide these services as detailed in the following scope of work.

TASK 1 – DESIGN

CONSULTANT shall provide the following design services:

1. Develop drawings and performance based specifications for the replacement of one existing pump with a new VFD driven pump. Pump selection was completed under a previous assignment.
2. The design documents shall be prepared assuming the project will be bid and awarded to one contractor. The contractor shall be responsible for furnishing all equipment, materials and labor necessary for a complete and operable project.
3. CONSULTANT shall conduct a site visit to review existing conditions and obtain field data necessary for preparation of the design documents.
4. The existing MCC will be modified as illustrated in Figure 1 to create room for the VFD cabinet.



Figure 1: Photo of Existing MCCs

5. The VFD shall be designed as six pulse unit that will automatically adjust pump speed to achieve a setpoint discharge pressure as measured from an existing pressure transmitter. The setpoint pressure shall be designed to be easily changed by operations staff via a potentiometer and digital display on the front of the VFD panel.
6. Conduit from the VFD to the motor shall be designed to be supported overhead on a painted steel structural frame.
7. CONSULTANT shall develop a preliminary set of technical plans and specifications. CONSULTANT shall transmit to the CITY for review. CITY shall review and provide comments for incorporation.
8. Preliminary drawing list is as follows:

No. GENERAL

- 1 Cover Sheet
- 2 List of Drawings
- 3 Notes
- 4 Abbreviations, Symbols and Legend
- 5 Staging Plan and Project Scope Narrative

CIVIL

- 6 Overall Site Plan
- 7 Proposed Site Plan

MECHANICAL

- 8 Existing Condition Plan and Photo
- 9 Proposed Plan and Section
- 10 Mechanical Details

STRUCTURAL

- 11 Electrical Conduit Support Plan, Section and Details

ELECTRICAL

- 12 Legend, Symbols, and Abbreviations
- 13 General Electrical Notes
- 14 Single Line Diagram
- 15 Overall Electrical Site Plan
- 16 Enlarged Electrical Site Plan
- 17 MCC Room Demolition and Proposed Plans
- 18 Demolition Photos
- 19 MCC Elevation and VFD Elevation
- 20 Panel Schedules and Riser Diagrams
- 21 Elementary Control Schematic and Control One Line
- 22 Electrical Details Sheet 1
- 23 Electrical Details Sheet 2

- 9. CONSULTANT shall meet with the CITY to review the design and receive input.
- 10. CONSULTANT shall revise the set to incorporate CITY review comments and send final documents electronically for bidding.

TASK 2 – BID ASSISTANCE

CONSULTANT shall provide the following services during bidding on an as-requested basis by the CITY:

- Attend pre-bid meeting with prospective bidders;
- Assist with preparation of addenda as appropriate to interpret or clarify contract documents (limited to technical content only);

CITY's responsibilities during bidding include the following:

- Prepare front end documents;
- Reproduce, advertise and distribute bid documents;

- Maintain a list of bidders;
- Issue addenda to bidders;
- Verify references for apparent low bidder and make a recommendation to Procurement Department; and
- Communications with suppliers and project management

TASK 3 – SHOP DRAWING REVIEW

CONSULTANT shall review the following shop drawing:

- Effluent pump
- Motor
- VFD
- Conduit and wire
- Support framing for the conduit
- One additional review (in the event that a submittal is returned to the contractor for corrections)

CONSULTANT shall transmit comments on the submittals electronically to CITY within 21 days of receipt of submittal. All other submittals will be reviewed by the CITY.

TASK 4 – INSTALLATION OVERSIGHT ASSISTANCE

CITY will oversee construction of the project. CONSULTANT shall be available on an as-needed basis to provide review and/or onsite assistance up to the limits of this task.

TASK 5 – ADDITIONAL OPTIONAL SERVICES

CONSULTANT shall provide assistance to the CITY on an as-needed basis up to the limits of this task. Services provided under this task shall be related to this scope of services but not defined here-in.

ASSUMPTIONS

The following assumptions were made in preparation of the level of effort associated with the described scope:

1. The CITY will design, permit and construct relocation of the existing air conditioner at the VFD room (if necessary). Based on discussions with WTP staff, relocation of the air conditioner is likely not needed.
2. It is assumed that the proposed pump fits within the existing “pump can” and existing concrete base.
3. It is assumed that the proposed pump discharge flange will align with the existing discharge piping and valves. The design will require the contractor to propose modifications to the existing piping if required to accommodate the proposed pump.
4. It is assumed that there is sufficient available power supply for the proposed pump.
5. CITY has provided available existing record drawings.

6. CITY will prepare front end contract language for incorporation into the bid package.
7. Permitting requirements and communications with regulatory agencies will be the responsibility of the CITY.
8. The CITY will pay for all permitting and testing fees.
9. CITY will perform all bid review and award services.
10. CITY is receiving funding for this project through the American Rescue Plan Act Coronavirus Local Fiscal Recovery Fund agreement. Special paperwork by the CONSULTANT does not appear to be required.
11. The replacement of the pump and VFD are assumed to be routine maintenance items and will not require permits from the Building Department or other entities. If permits are required, CITY will prepare permit applications.
12. The hydraulic analysis was completed under previous task order with the CITY. CONSULTANT will prepare the specifications and drawings on the previously identified pump selection (which matches the pumps used by the Town of Davie) and not repeat the hydraulic analysis. The specifications will be prepared for one named manufacturer or approved equal.

SCHEDULE

The schedule for the major work tasks is summarized below.

Task	Description	Duration for task/subtask (days)	Calendar Days From Notice To Proceed
1	Design	60	60
2	Bid Assistance	As needed	As needed
3	Shop Drawing Review	As needed	As needed
4	Installation Oversight Assistance	As needed	As needed
5	Additional Optional Services	Up to 365	Up to 365


* Assumes 60 days for bid and award.

COMPENSATION

Compensation shall be made to CONSULTANT for a total amount of \$107,287 as summarized below.

Task	Description	Compensation Type	Estimated Fee
1	Design	Lump Sum	\$84,783
2	Bid Assistance	Lump Sum	\$4,844
3	Shop Drawing Review	Lump Sum	\$9,002
4	Installation Oversight Assistance	Time and Materials	\$3,658
5	Additional Optional Services	Time and Materials	\$5,000
		Reimbursables	\$0
TOTAL			\$107,287

SUBMITTED BY:
Hazen and Sawyer

BY: 
Janeen M. Wietgreffe, Associate Vice President
Dated this 14th day of January, 2022

APPROVED BY:
City of Cooper City

BY: _____
Joseph Napoli, City Manager
Dated this ___ day of _____, 2022