

TASK ORDER No 9 - DESIGN SERVICES
RICHARD A. HEYMAN ENVIRONMENTAL PROTECTION FACILITY
RAS AND WAS PUMPS REPLACEMENT
CITY OF KEY WEST

BACKGROUND

The City of Key West (CITY) has decided to replace the existing return activated sludge (RAS) and waste activated sludge (WAS) pumps at the Richard A. Heyman Environmental Protection Facility (RAHEPF). There are currently four, 25-hp RAS pumps and two 2-hp WAS pumps. The CITY desires to renew the equipment at the facility due to the age of the pumps (nearly 30-years in operations).

INTRODUCTION

Black & Veatch (CONSULTANT) has been requested by the CITY to provide detailed design services to implement the RAS/WAS pumps replacement project. The scope of services includes the following components:

- Replace four (4) RAS pumps, motors and variable frequency drives (VFDs) including above grade piping, pipe supports, valves, and other appurtenances. CONSULTANT will review existing Operations and Maintenance (O&M) manuals to confirm pump sizing. The limits of pipe replacement will be limited to suction and discharge piping connecting to the common header. Work includes the demolition of pumps / motors, immediate piping, valves, appurtenances, controls and VFDs.
- Replace two (2) WAS pumps with constant speed motors including above grade piping, pipe supports, valves, and other appurtenances. CONSULTANT will review existing O&M manuals to confirm pump sizing. The limits of pipe replacement will be limited to suction and discharge piping connecting to the common header. Work includes the demolition of pumps / motors, immediate piping, valves, appurtenances and controls. The existing WAS pumps do not have VFDs. They will continue to be constant speed driven.
- Equipment pads at the existing RAS/WAS pump station will be replaced/repared as needed. Patching/repair of the existing housekeeping pad is also assumed.
- Electrical and controls for the RAS/ WAS pumping station will be connected to the existing equipment. Electric power will be supplied from the existing MCC in the existing electrical room. The new RAS VFDs and PLC will be located inside the existing electrical room. New cabling will be provided from the pumps to the drives.

During the detailed design phase, CONSULTANT will develop construction documents for bidding that includes the demolition and replacement of the items listed above.

SCOPE OF SERVICES

TASK SERIES 100 – DESIGN SERVICES

Task 101 – Project Coordination

Project coordination will encompass efforts required for project set-up, resource management, scheduling, invoicing, trend management, and other requirements needed to effectively and efficiently complete the tasks described in this scope of services. Also, this task includes administration and management of project:

- Prepare project management documents including budget, drafting standards, and quality assurance and quality control.
- Monitor schedule and budget.
- Review progress with CITY on a regular basis.
- Discuss issues with the CITY as they are noted.

Task 102 – Project Kickoff

CONSULTANT will conduct a project initiation meeting (virtual) to discuss project requirements, project schedule and review pertinent available data. CONSULTANT will prepare meeting minutes and will issue to the meeting attendees.

Task Series 102 Deliverables

The following deliverables are included in Task Series 102:

- Project kickoff agenda and meeting minutes (via electronic delivery).

Task 103 – Site Visit

CONSULTANT will participate in a site visit with OMI and the CITY staff to tour the project location to verify existing conditions, verify existing instrumentation and control requirements, electrical installation, and define the limits of the demolition/replacement. Due to the age of the record documents, it is anticipated that pictures will be utilized in the drawings to define better the scope of the work to the potential bidders. It is anticipated two engineers will participate in the site visit.

Task Series 103 Deliverables

The following deliverables are included in Task Series 103:

- Site visit report (via electronic delivery).

Task 104 – 60% Detailed Design

A. CONSULTANT will develop the design to 60% level. The following components will be included in the 60% submittal:

- (1) Evaluation of existing VDFs
 - (2) Verification of hydraulics of RAS pumps and WAS pumps
 - (3) Drawings
 - a. Civil Site plan
 - b. Demolition plans
 - c. Mechanical plans, sections & details
 - d. Electrical and Instrumentation Diagrams
 - (4) Specifications, including front and back end documents
 - (5) Internal quality control review and refinement before delivery to the CITY
 - (6) Quality assurance and quality control plan and log
 - (7) Equipment cost table
 - (8) Project schedule update
 - (9) Project trend register update (if applicable)
- B. CONSULTANT will provide two (2) hard copy sets and one (1) electronic set of the 60% Design Documents drawings and specifications to the CITY for review.
- C. CONSULTANT will conduct a project review workshop with the CITY to review the 60% detailed design drawings and specifications. Based on discussions during the workshop, CONSULTANT will refine the drawings and specifications, and incorporate the applicable comments into the next submittal.

Task Series 104 Deliverables

The following deliverables are included in Task Series 104:

- Drawings and Specifications.
- Workshop meeting minutes.

Task 105 - 100% Detailed Design – Issued for Construction Set

The 100% Final Set design shall commence only after the CITY has accepted the 60% Design deliverables. Design progress activities are as follows:

- (1) Final review set of CAD drawings
- (2) Final review set of specifications and construction contract documents

- (3) Equipment cost table – Update
 - (4) Internal quality control review and refinement before delivery to the CITY
 - (5) Quality assurance and quality control plan and log update.
 - (6) Project schedule update
 - (7) Project trend register update.
- A. CONSULTANT will provide two (2) hard copy sets and one (1) electronic copy of the 100% Final Set documents to the CITY for review.
 - B. CONSULTANT will conduct a project review workshop with the CITY to review the 100% Design Set documents. Based on discussions during the workshop, CONSULTANT will refine the documents, if necessary.
 - C. CONSULTANT will revise the documents to prepare the Design Documents for Construction as necessary to reflect any decisions taken at this level. CONSULTANT will provide the CITY with three (3) signed/sealed hard copy sets and one (1) electronic copy of the Issued for Construction Set Documents.

ASSUMPTIONS

- 1. Electrical upgrades related to increased electrical loads that would modify the existing service are not included.
- 2. The control system block diagram will not be updated. The existing PIDs with annotations will be used for the replacement of the existing instrumentation.
- 3. Drawings will include notes for the Contractor to field-verify existing conditions and coordinate the instrumentation and control design with other drawings showing new equipment.
- 4. No Bid and Pre-Award Services are included under this scope of work. These services may be provided as additional services if desired by the City.
- 5. Construction inspection services are not included under this scope of work. Inspections services can be provided as additional services if desired by the CITY.

BUDGET

Tasks 100 as described in this scope of work document would have the following lump sum fees:

TASK SERIES	LUMP SUM FEES
Task 101 – Project Coordination	\$9,152
Task 102 – Project Kickoff	\$2,252

TASK SERIES	LUMP SUM FEES
Task 103 – Site Visit	\$3,192
Task 104 – 60% Detailed Design	\$42,639
Task 105 – 100% Detailed Design	\$33,628
Direct Costs	\$1,950
LUMP SUM TOTAL	\$92,813

CITY OF KEY WEST

BLACK & VEATCH CORPORATION

By: _____

By: _____

By: _____

By: Rafael E. Frias III, P.E

(Print Name)

(Print Name)

Title: _____

Title: Associate Vice President

Date: _____

Date: _____