

**TASK ORDER 1-19 SWR**

**FEASIBILITY INVESTIGATION FOR THE TRENCHLESS INSTALLATION OF WASTEWATER PIPELINES ACROSS FLEMING CHANNEL**

This TASK ORDER 1-19 SWR is issued under the terms and conditions of the MASTER AGREEMENT TO FURNISH GENERAL ENGINEERING SERVICES TO THE CITY OF KEY WEST ("AGREEMENT") between the City of Key West ("CITY") and CH2M Engineers, Inc. ("CONSULTANT") executed on November 03, 2017, which is incorporated herein by this reference.

**A. SCOPE OF SERVICES**

Specific services which the CONSULTANT agrees to furnish are summarized on the attached statement entitled TASK ORDER 1-19 SWR, "SCOPE OF SERVICES." The "Scope of Services" defines the work effort anticipated for the Task order.

This Task Order, when executed, shall be incorporated in and shall become an integral part of the November 03, 2017, Master Agreement.

**B. TIME OF COMPLETION**

Work under this Task order will begin immediately following acceptance and completed expeditiously subject to coordination with the City of Key West staff.

**C. COMPENSATION**

Compensation for the labor portions of TASK ORDER 1-19 SWR, Task A will be on a lump sum fee basis as stipulated in Article 5, Paragraph 5.1.1 of the AGREEMENT. Compensation for Geotechnical Subconsultant, and all expenses will be on a Cost Reimbursable-Per Diem basis as stipulated in Article 5, Paragraph 5.1.2 of the AGREEMENT. The estimated compensation is shown on the attached statement entitled TASK ORDER 1-19 SWR COMPENSATION.

**D. ACCEPTANCE**

By signature, the parties each accept the provisions of this TASK ORDER 1-19 SWR, and authorize the CONSULTANT to proceed at the direction of the CITY's representative in accordance with the "SCOPE OF SERVICES." Start date for this project will be no later than ten (10) days after execution of this authorization.

For CH2M HILL Engineers, Inc.

For CITY OF KEY WEST

By: \_\_\_\_\_  
Sirpa H. Hall  
Sr. Business Vice President

By: \_\_\_\_\_  
Jim Scholl  
City Manager

\_\_\_\_\_  
Sean McCoy, P.E.  
Key West Project Manager

Dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

ATTEST: \_\_\_\_\_

**TASK ORDER 1-19 SWR**  
**FEASIBILITY INVESTIGATION FOR THE TRENCHLESS INSTALLATION OF WASTEWATER PIPELINES ACROSS**  
**FLEMING CHANNEL**

**SCOPE OF SERVICES**

**Project Description**

The City of Key West owns and operates the Richard A. Heyman Environmental Protection Facility (WWTP). Currently, wastewater lines supplying the WWTP are installed on a utility bridge spanning approximately 460 feet, across the channel from Trumbo Point to Fleming Key. These welded steel pipelines with traditional flange and bolt connections were originally completed in May 1996, and now, approaching 22 years in service, require significant rehabilitation and/or replacement to address corrosion issues.

As Irma has recently reminded us, it's not if, but rather when, we are going to be impacted by a major hurricane. A bridge failure would halt the City's ability to treat wastewater and would severely impact any corresponding recovery efforts. Rehabilitating the existing pipelines in their current location, while addressing corrosion issues, would not deal with the possibility of a bridge failure. Therefore, in an effort to "Storm Harden" City Infrastructure, and to ensure to the best of our ability, the continued service of critical city utilities, the CITY proposes to retain the CONSULTANT to provide preliminary design for the Trenchless Installation of City Utilities beneath Fleming Channel.

**Purpose**

The CITY has requested that the CONSULTANT provide engineering services for feasibility investigations of a Trenchless Installation of City Wastewater Utilities across Fleming Channel. Specifically:

- Wastewater Influent Pipeline
  - The original WWTP was served by a single 36" influent pipe, and a single 36" effluent pipe. Upon completion of the WWTP Deep well and abandonment of the WW Ocean Outfall, the effluent pipeline was no longer needed, and piping modifications were made so that this pipe could be used as an influent pipeline to the treatment plant. This modification allowed some redundancy in the system, and provided options to OMI collections staff, concerning how WW flow is directed to the treatment plant. During feasibility design, the CONSULTANT shall evaluate both the operational benefits and cost comparisons of maintaining two influent pipelines to retain this redundancy or install a single influent line.
- Utility Connections:
  - Wastewater influent shall be connected on either side of Fleming Key Bridge. WW influent lines will require one valve vault south of the bridge to combine the existing pipelines and a vault on the north side of the bridge to reconnect to the two influent pipelines.

CH2M will prepare a Preliminary Design Report for the Trenchless Installation of City Wastewater pipeline(s) as described above across Fleming Channel. This Task Order describes the CONSULTANT's Scope of Services. Specific activities to be performed under this Task Order include:

- Develop Preliminary Design Report containing Geotechnical Investigation of Subsurface Conditions, recommendation of Tunneling installation method, schematic design drawings, and Class V construction cost estimate.

## Scope of Services

### Task A – Preliminary Design

This task includes activities related to the investigation and feasible design of the Trenchless Installation of utilities to Fleming Key. CONSULTANT will conduct a project kickoff meeting between City Staff and CONSULTANT's Project Manager, with CONSULTANT's trenchless technologist, and design manager participating via conference. The purpose of this meeting will be to discuss: components of the project design, risk associated with trenchless construction methods, coordination of impacted agencies, and to set delivery schedules for design milestones. Following the kick-off meeting, project design will begin, with logical review milestones for the CITY.

#### *Subtask A.1 – Preliminary Design Report*

The CONSULTANT will prepare a Preliminary Design Report (PDR) for the CITY. The CONSULTANT will conduct a review meeting with the CITY prior to conclusion of this task. The comments received from this meeting will be incorporated into the Final Preliminary Design Report.

Specific work performed in this task to develop a Preliminary Design Report are outlined below:

- Preliminary design concept.
- Siting location approval of authorities having jurisdiction
- Fleming Key current and future requirements for wastewater, and development.
- Collection of geotechnical data and evaluation
  - Complete a desk top survey of available geotechnical data
  - Development of Scope of Work for Geotechnical Sub-Contractor, hired by the CONSULTANT, that includes; land and barge based drilling, soil sampling, field testing, laboratory testing, and reporting.
    - An Allowance of \$50,000 has been included in Attachment A, COMPENSATION to complete this work
  - Coordination of geotechnical investigation and limited field observation.
    - assumes one day onsite observation by Trenchless Design Lead
  - Review Draft Boring Logs and Assign Laboratory Testing [completed by others]
  - Review Draft Geotechnical Data Report (GDR) [completed by others]

- Trenchless Method Evaluation:
  - Evaluation of feasible trenchless alternatives.
  - Identification of risks associated with various techniques, site requirements, and unit costs.
- Schematic Design:
  - Results and analyses from Trenchless Method Evaluation will be used to develop preliminary design drawings, (estimated 12 to 15 sheets) including as a minimum, plan and profile at a sufficient scale to show workshafts, initial support, geotechnical instrumentation, design data, catalog cut sheets, carrier pipe details, vaults locations, layout, and preliminary sections.
  - Table of Contents for Technical Specifications, dependent on the analyses from the Trenchless Method Evaluation but could include; Microtunneling, Baseline of Geotechnical Subsurface Conditions, Shaft Excavation and Support, Geotechnical Instrumentation, Carrier Pipe Installation, Grouting (Contact and Backfill), and Control of Water.
- Construction Cost Estimate
  - Using the schematic design, a Class V Probable Construction Cost Estimate will be developed.
- Presentation of PDR to US Navy and US Coast Guard representatives.
  - Project Manager will meet with local US Navy and US Coast Guard representatives to present the PDR.

## **Deliverables**

- Draft and Final Kick-off Meeting Agenda and Minutes. (Submitted digitally).
- Trenchless Evaluation Technical Memorandum, draft and final (submitted digitally).
- Schematic Design with construction cost estimate. (submitted digitally)
- Draft Preliminary Design Report. (submitted digitally)
  - PDR will include
    - Geotechnical Data
    - Trenchless Evaluation TM
    - Evaluation of Current and Future Wastewater needs
    - Schematic Design Drawings
    - Construction Cost Estimate
- Review meeting minutes. (submitted digitally)

- Four (4) hard copies, and one (1) pdf copy of the Final Preliminary Design Report.
- Meeting Summary minutes from USN and USCG meeting. (submitted digitally)

### **Assumptions**

The following assumptions were used in the development of this Task order

- Work under this Task Order will be completed in calendar year 2019.
- The design will be based on the federal, state, and local codes and standards in effect at the start of the project. Any changes in these codes may necessitate a change in scope.
- Submittals listed above shall be in an approved digital format unless specifically shown as otherwise.
- Legal, easement, or plat surveys are not included in the scope of work. If additional property is required, it shall be the responsibility of the City to obtain.
- Existing system Record Drawings will be used when available. CH2M will reasonably rely upon the accuracy and completeness of the information/data provided by the City or other third parties.
- Completion of the geotechnical site investigation to include land and barge based borings and bathymetric survey.
- CH2M recommends completing a geotechnical baseline report (GBR) as part of this project, however this task is not included in the scope of work. Completion of a Geotechnical Baseline Summary Specification, which is included in the scope of work, is sufficient if microtunneling is the selected trenchless installation method. It should be noted that completion of a GBR is an industry standard and should be considered irrespective of the trenchless method selected.
- In soils, foundation, groundwater, and other subsurface investigations, the actual characteristics may vary significantly between successive test points and sample intervals and at locations other than where observations, exploration, and investigations have been made. Because of the inherent uncertainties in subsurface evaluations, changed or unanticipated underground conditions may occur that could affect total project cost and/or execution. These conditions and cost/execution effects are not the responsibility of CH2M.
- Fleming Bridge is owned by the USN, and an FDOT Utility Permit will not be required.
- Permission from the US Navy and US Coast Guard will be granted without any additional requirements other than the PDR.

### **Obligations of the CITY**

To assist meeting schedule and budget estimates contained in this proposal, the CITY will provide the following:

- Prompt review and comment on all deliverables (within 10 working days of receipt).
- Facilitate access to any required facilities
- Attendance of key personnel at meeting as requested

- Existing geotechnical / subsurface data near the project area
- Existing environmental data from the project area
- Permit application fees

#### **Additional Services**

The CONSULTANT will, as directed, provide additional services that are related to the project but not included within this Scope of Services. These and other services can be provided, if desired by the CITY, as an amendment to the Task Order. Work will begin for the Additional Services after receipt of a written notice to proceed from the CITY. Additional services may include, but are not limited to, the following:

- Final Design
- Permitting
- Bid Phase Services
- Services During Construction

#### **Completion Dates**

The below schedule is an estimate of Consultants time to reach each milestone. Preliminary Design Report submittal relies on timely mobilization and completion of Geotechnical Investigation.

Design

- Preliminary Design Report: 24 Weeks assuming timely mobilization by geotechnical Consultant

#### **Compensation**

The estimated compensation for TASK ORDER 1-19 SWR, is shown as Attachment A, entitled TASK ORDER 1-19 SWR, COMPENSATION.

## Attachment A: COMPENSATION

TO 1-19 SWR COMPENSATION														
Title	Engineer 8	Engineer 7	Engineer 6	Engineer 5	Engineer 4	Technician 3	Technician 4	Technician 6	Spec Processor	Clerical / Office	Subtask Labor Total	Expenses	Travel	Task/Line Item Subtotal
FY 2019 Rate	\$241.68	\$223.18	\$204.68	\$187.34	\$161.90	\$91.35	\$105.24	\$129.51	\$82.10	\$74.01				
<b>TASK A - Design</b>														
<b>A.1 - Preliminary Design Report</b>														
Meetings / Coordination	8	4	20	12	8						\$10,463.04			\$10,463.04
Geotechnical Desk Top Study			8		16						\$4,227.84			\$4,227.84
Geotechnical Sub-Contractor	2		8		8						\$3,416.00	\$50,000		\$53,416.00
Coordination of Geotechnical Investigation			2	6							\$1,533.40			\$1,533.40
Site Visit During Field Investigation			16	4							\$4,024.24	\$175	\$1,650	\$5,849.24
Review Draft Boring Logs and Assign Laboratory Testing			8		8						\$2,932.64			\$2,932.64
Review Draft Geotechnical Data Report (GDR)			8	1							\$1,824.78			\$1,824.78
Trenchless Method Evaluation	2		32		40						\$13,509.12			\$13,509.12
Trenchless Drawings (Plan, Profile, Detail Sheet)	2		24		16		48				\$13,037.60			\$13,037.60
Trenchless Specifications TOC	2		2		4				8		\$2,197.12			\$2,197.12
Schematic Design Documents		18	17	34	68	7	4	42	8	6	\$32,476.25	\$100		\$32,576.25
Client Review Meeting		4	0	4	0						\$1,642.08			\$1,642.08
Finalize Preliminary Design Report		32	14	68	128	6	56	48		6	\$56,571.68			\$56,571.68
														Subtotal Labor Tasks A \$147,856
														Subtotal Expenses Tasks A \$51,925.00
														TO 1-19 Total \$199,780.79