

TASK ORDER TO-2-23
CITY OF KEY WEST
PHASE 1 SEWER COLLECTION SYSTEM MASTER PLAN DEVELOPMENT

This TASK ORDER TO-2-23 is issued under the terms and conditions of the MASTER AGREEMENT TO PROVIDE GENERAL ENGINEERING SERVICES TO THE CITY OF KEY WEST ("AGREEMENT") between the City of Key West ("CITY") and Jacobs Engineering Group Inc. ("CONSULTANT") executed on March 29, 2023, which are incorporated herein by this reference.

A. SCOPE OF SERVICES

Specific services which the CONSULTANT agrees to furnish are summarized on the "Scope of Services". This Task Order, when executed, shall be incorporated in and shall become an integral part of the AGREEMENT.

B. TIME OF COMPLETION

Start date for this project will be no later than ten days after execution of this authorization. The duration of TO-2-23 is estimated in twenty weeks.

C. COMPENSATION

Compensation for labor portion of Tasks 1 to 5 of TASK ORDER TO-2-23 STM, will be on a lump sum fee basis as stipulated in Article 5, Paragraph 5.1.1 of the AGREEMENT. Compensation for other direct charges will be on Cost Reimbursable-Per Diem basis as stipulated in Article 5, Paragraph 5.1.2 of the AGREEMENT. The estimated compensation is shown as Attachment A.

D. ACCEPTANCE

By signature, the parties each accept the provisions of this TASK ORDER TO-2-23 SWR, and authorize the CONSULTANT to proceed at the direction of the CITY's representative in accordance with the "SCOPE OF SERVICES."

For Jacobs Engineering Group Inc.

By:

 4/3/2023

Diana Francois, P.E.
Manager of Projects

Erik Jorgensen, P.E.
Senior Project Manager

For CITY OF KEY WEST

By:

Albert P. Childress
City Manager

Dated the ____ day of _____, 2023

ATTEST:

TASK ORDER TO-2-23

CITY OF KEY WEST

PHASE 1 SEWER COLLECTION SYSTEM MASTER PLAN DEVELOPMENT

SCOPE OF SERVICES

Background

The CITY operates and maintains a sewer collection system consisting of over 330,000 linear feet (LF) of gravity sewers, 85,000 LF of force mains, 1,388 manholes, and 27 sewage lift stations. Much of the CITY's sewer collection infrastructure has been in service for over 30 years. In-flow and infiltration (I/I) into the sewers of runoff from rainfall, groundwater, and sea water is evident from peak influent volumes observed at the Richard A. Heyman Environmental Protection Facility (RAHEPF) as well as high salinity levels. Sewer overflows have also been reported in the collection system suggesting either excess I/I or a lack of pumping capacity within the CITY's sewer collection system.

The Florida Department of Environmental Protection (FDEP) issued Consent Order 21-0581 in August of 2021 regarding reported sewer overflows requiring the CITY to take steps to assess and correct deficiencies within the sewer collection system. Specifically, the CO requires the CITY submit to FDEP an I/I Plan and a Lift Station Plan by September 30, 2023. These plans will require the CITY to assess the potential magnitude and sources of I/I as well as assess the capacity of the sewer collection system and to develop the corrective action measures to prevent sewer overflows. The study approach to develop the plans can be used to identify regions within the CITY's collection system contributing significant I/I to prioritize field assessment of sewer conditions and to prioritize repair and replacement of sewers to mitigate I/I on a cost-effectiveness basis.

The CONSULTANT understands the CITY desires to not only satisfy FDEP's submittal requirements but also to develop a Sewer Collection System Master Plan with a prioritized, sequenced series of capital projects spanning 5- and 10-year periods to project prudent investment of public funds to protect the CITY's investment in sewer infrastructure. This planning effort would encompass the CITY's desire to maintain adequate sewer infrastructure as well as mitigate potential I/I sources and contributing causes of high salinity in sewage.

CONSULTANT proposes to perform a phased approach to the development of a Sewer Collection System Master Plan. The first phase would focus on the study plan submittals required by FDEP. The I/I and Lift Station Plans will be developed and used to identify effort in future phases for condition assessment of the sewer collection system and hydraulic assessments of the sewer collection system network. Development of a sewer collection system model could be recommended at a later phase if optimizing lift station operation and/or modifications to the sewer collection system network are warranted. The phased approach affords the CITY the ability to provide input at each phase to tailor the efforts based on local priorities and interests.

The CONSULTANT has performed a preliminary review of the CITY's collection system and identified nine lift stations (Lift Stations A, B, C, D, E, F, G, R, and S) that aggregate sewerage from the collection system service area and can be used to perform the first phase of services. The first phase of services focuses assessing the

contribution of I/I and lift station performance to develop plans required to be submitted to the FDEP. The plan documents will assist the CITY in defining future phases of work such as sewer condition assessment and identify whether a critical need justifies the development of a sewer system model. The initial planning effort will identify and assist with prioritizing where condition assessments should be performed. Typically, Closed Caption Television Video (CCTV) inspection of sewers will provide the identification of the types of rehabilitation needed for sewers as well as the location of repairs. Prior to proceeding from the development of the I/I Plan and the Lift Station Plan to implementing CCTV inspection of the sewer collection system, the CONSULTANT recommends acoustical testing of sewers in priority areas be performed ahead of CCTV inspection to further prioritize field investigation efforts. The acoustical testing of sewers and CCTV inspection of sewers will be proposed in a subsequent phase of work once this first phase of work defines the areas of concern.

This proposed scope of work addresses the first phase of the development of a Sewer Collection System Master Plan by developing the I/I and Lift Station Plans required to be submitted by FDEP and would prioritize areas within the the CITY's service area for subsequent phases to investigate.

Task 1: Project Kick-off Meeting, Data Collection and Site Visit

Under this task, CONSULTANT will perform the following:

1. An in-person kickoff meeting will be performed to review information and data needs with the CITY as well as to coordinate planned field activities. The kickoff meeting visit will be extended to perform a field visit of relevant installations and to conduct a separate kick-off meeting with the US Navy representatives (described below). CONSULTANT attendees participating in the kickoff meeting will include a Project Manager and a technical lead staff person. Anticipated data needs:
 - a. Shapefiles from the CITY providing the sewer collection system and parcel lot lines
 - b. Lift station as-builts and pump information
 - c. Historical pump run time data for the previous 18-months
 - d. Daily influent volume data for the CITY's RAHEPF
 - e. A list of reported sewer overflows including data, location, and observations
 - f. Observations of salinity levels within the collection system as available.
 - g. Known collection system deficiencies
 - h. Weather data
2. On the same visit as the kick-off meeting, CONSULTANT will conduct a site visit to inspect key lift stations and perform a tour of sewer overflow priority areas. Key activities for this task include:
 - a. Visits to key lift stations and inspection of facilities.
 - b. Tour of sewer overflow priority areas
3. CONSULTANT will conduct an in-person kick-off meeting with representatives of the US Navy to present information regarding the project and coordination activities expected from the US Navy. This meeting would be coordinated with the visit for the kick-off meeting and site visit of facilities. Key activities for this task include:
 - a. Presentation to US Navy representatives of planned activities and data needs.
 - b. Tour of applicable US Navy facilities during the same site visit as the kick-off meeting with US Navy
4. Following the kick-off meetings and facility tours, CONSULTANT will prepare a field study plan identifying key lift stations to characterize flow within the sewer collection system. The data obtained from the field study

plan will become the basis for developing the I/I Plan and Lift Station Plan. Key elements of the study plan include:

- a. A list of key lift stations to perform pump drawdown tests as well as a listing of major features associated with each of the key lift stations for investigation purposes
- b. A schedule for performing the pump drawdown tests
- c. A summary of historical data available for each of the key lift stations
- d. Additional data recommended to be collected and proposed schedule data collection
- e. A draft field study plan will be submitted to the CITY and reviewed during a virtual meeting to obtain input from the CITY regarding finalizing the plan prior to implementing field data collection activities

Deliverables (electronically, in pdf format)

- Minutes summarizing Kickoff meetings with CITY and US Navy
- Information/Data Request Memorandum to the CITY
- Site visit to tour lift stations and priority areas within the sewer collection system
- Presentation of planned activities to US Navy representatives
- Meeting with City staff to review site visit observations
- Field study plan including a virtual meeting to finalize the field study plan

Task 2: Implementation of Field Study Plan

Under this task, CONSULTANT will perform the following:

1. CONSULTANT will mobilize a field crew to perform pump drawdown tests on key lift stations according to the field study plan accepted by CITY. For the purposes of this proposal, up to 9 of the CITY's 27 lift stations are assumed to key lift stations.
2. CONSULTANT will summarize the information collected from the field investigation effort and characterize the pumping capacity from each lift station as well as consider how the discharge from multiple lift stations could impact pumping capacity.

Deliverables (electronically, in pdf format)

- Summary of lift station pump draw down tests.
- Documentation of lift station characteristics including lift station wet size, number and size of pumps, pumping capacity, discharge network configuration, and typical operation conditions (based on available information).

Task 3: Development of I/I Plan

Under this task, CONSULTANT will perform the following:

1. Review of historical lift station pumping records (if available) or collect lift station operating information to characterize I/I contributions to sewerage flow. Salinity data will be reviewed to assess localized areas for high salinity water contributions. This effort will be performed using the identified services area(s) for each lift station using CITY provided GIS information on land-use (parcel maps) and population statistics to characterize the population served within each lift station sewer-shed.
2. Develop and I/I Plan investigation effort to reduce I/I into the collection system using the EPA Quick Guide for Estimating Infiltration and Inflow (dated June 2014). The I/I Plan objective will be to reduce annual dry

weather (ADW) sewage flow to less than 120 gallons per person per day (gppd) and to reduce infiltration rate in gallons per day per inch of diameter per mile of pipe (gpd/idm) to less than 1,500.0 gpd/idm, and reduce the average wet weather flow (WWF) divided by the population served to less than 275 gallons per person per day (gppd) as outlined within the consent order issued by FDEP.

3. Based on the effort to develop the I/I Plan, each lift station sewer shed will be characterized for I/I contributions and prioritized for condition assessment. The sewer collection system network for each priority area will be assessed for condition assessment approach. Some areas and locations may benefit from acoustical testing to screen for sewer leaks and to follow-up obvious areas in the collection system where leaks are highly probable with CCTV investigation. This effort will produce a field investigation plan for condition assessment of sewers.
4. CONSULTANT will submit a draft I/I Plan to CITY and after a virtual review meeting for both the I/I Plan and Lift Station, CONSULTANT will submit a final I/I Plan within two weeks.

Deliverables (electronically, in pdf format)

- Review and characterization of lift station operation data pertinent to the development of the I/I Plan and Lift Station Plan. A summary of the data will be submitted generated by this effort will be a submittal.
- Development of an I/I Plan meeting FDEP requirements for submittal.
- Prioritized field investigation plans for field investigation of sewer condition assessment.
- Draft and final I/I Plan submittals
- Virtual review meeting combined for both I/I and Lift Stations Plans.

Task 4: Development of a Lift Station Plan

Under this task, CONSULTANT will perform the following:

1. CONSULTANT will review the interconnection of lift stations as well as pumping capacity and estimated sewerage flow to assess adequacy of current lift station capacities.
2. CONSULTANT will prepare a Lift Station Plan summarizing the information evaluated and identifying improvements to lift stations to address deficiencies in meeting the standard expected by FDEP. On possibility is that development of a sewer system model could instruct CITY regarding how to optimize current lift station assets to minimize recommended lift station improvements. If so, development of a sewer system model will be discussed with CITY and proposed to be performed in a subsequent phase of work authorized separately.
3. CONSULTANT will submit a draft Lift Station Plan to CITY and after a virtual review meeting for both the I/I Plan and Lift Station, CONSULTANT will submit a final Lift Station Plan within two weeks.

Deliverables (electronically, in pdf format)

- Sewer system lift station network map.
- A Lift Station Plan meeting the requirements of the FDEP submittal.
- Draft and final Lift Station Plan submittals
- Virtual review meeting combined for both I/I and Lift Stations Plans.

Task 5: Additional Onsite Meetings with Adjacent Agencies

Under this task, CONSULTANT will perform the following:

1. CONSULTANT will schedule, coordinate, prepare presentation materials, and be present in person for up to three meetings with CITY or adjacent jurisdictions having a part or interest in the study efforts.

Deliverables (electronically, in pdf format)

1. Attendance in-person by CONSULTANT PM and content expert at up to three meetings including scheduling, coordination, presentation preparation, meeting facilitation, and meeting minute preparation.

Assumptions

1. The proposed scope of work will be authorized by May 10, 2023 allowing CONSULTANT time to complete the I/I and Lift Station Plan by September 30, 2023 for submittal to FDEP.
2. Sewer lift station pump operation records are available and sufficient to characterize wet and dry weather flow conditions for key lift stations needed for the study effort. If historical records are not available or are insufficient, pump run time records will need to be collected over a period of several months encapsulating both dry and wet weather conditions. The CONSULTANT can perform this effort under a separate authorization.
3. Review of Third-Party Design - Any review by Jacobs of design prepared by a third- party shall be for general conformance with the design intent, drawings and specifications but not a complete review of all design details and calculations. The Designer and their design professionals shall remain responsible for the accuracy and completeness of their design and construction documents. Jacobs does not assume any liability for work product(s) prepared by third parties, including but not limited to design and related work and makes no representation or warranty regarding same. Jacobs will reasonably rely upon the accuracy, and completeness of the information/data provided by the Client or other third parties.

Exclusions

The following items are not included in this scope of work:

1. The CONSULTANT will perform work in a diligent manner and will deliver work product including an I/I Plan and Lift Station Plan based on the schedule herein. CONSULTANT will not be responsible for delays out of the control of CONSULTANT.

Estimated Project Budget and Duration

CONSULTANT proposes a total fee of \$ 154,934.50 to be billed on a Lump Sum basis for Tasks 1 to 5 for labor in the amount of \$134,542.00. Other direct charges up to an amount of \$20,392.50 will be invoiced on a time and materials (T&M) basis as stipulated in Article 5, Paragraph 5.1.2 of the AGREEMENT.

The total project duration is estimated at 20 weeks. A proposed schedule is provided in Table 1 below. CONSULTANT will complete the I/I Plan and Lift Station Plan within 20 weeks or by September 30, 2023. This assumes that CONSULTANT will receive a Notice-to-Proceed May 10, 2023.

We are available to begin work on this effort immediately upon a CITY issued Notice-to-Proceed.

Table 1 - Schedule

Activities	Duration	Time from NTP
Task 1.1, 1.2, & 1.3 - Kickoff Meetings, Data Collection, Site Visit (in-person)	3 weeks	3 weeks
Task 1.4 – Field Study Plan, virtual meeting with CITY	1 weeks	4 weeks
Task 2 – Field Study Plan Implementation	4 weeks	8 weeks
Task 3 – I/I Plan Draft Submittal	9 weeks	17 weeks
Task 4 – Lift Station Plan Draft Submittal	9 weeks	17 weeks
In-person review meeting for I/I and Lift Station Plans	2 weeks	19 weeks
I/I and Lift Station Plan Final Submittal	1 weeks	20 weeks
Task 5 – Additional Onsite Meetings with Adjacent Agencies (*)	TBD	

(*) Schedule will be coordinated with CITY for up to three in-person meetings with US Navy, FDEP, or CITY.

Attachment A: COMPENSATION

LOE Estimate City of Key West Phase 1 Sewer Collection System Master Plan										
	Senior Project Manager	Principal Technologist	Senior Technologist	Technolgist	Staff Engineer II	Staff Engineer I	GIS Specialist	Administrative Assistant	Total Hours	Fee
	Eng 7	Eng 7	Eng 5	Eng 4	Eng 2	Eng 1	Tech 4	Administrative Assistant		
Tasks \ Rates	\$ 259.00	\$259.00	\$209.00	\$183.00	\$ 145.00	\$117.00	\$ 120.00	\$ 109.00		
Task 1 - Project Kickoff Meeting, Data Collection, and Site Visit	44	2	52	48	16	0	4	4	170	\$ 34,802.00
Task 2 - Implementation of Field Study Plan	0	0	60	0	60	0	0	2	122	\$ 21,458.00
Task 3 - I/I Plan Preparation/Submittal	12	3	20	40	40	32	8	4	159	\$ 26,325.00
Task 4 - Lift Station Plan Preparation/Submittal	12	3	20	40	40	32	8	4	159	\$ 26,325.00
Task 5 - Additional Onsite Meetings with Adjacent Agencies	36	0	36	48	0	0	0	0	120	\$ 25,632.00
Total Hours LS	104	8	188	176	156	64	20	14	730	
Fee Labor	\$ 26,936.00	\$ 2,072.00	\$ 39,292.00	\$ 32,208.00	\$ 22,620.00	\$ 7,488.00	\$ 2,400.00	\$ 1,526.00		\$ 134,542.00
Total Labor										\$ 134,542.00
Reimbursables expenses:										\$ 20,392.50
Total Fee										\$ 154,934.50