



**Request for Proposal  
 Front Street & Mud Island Interceptor Evaluation Addendum # 2 to  
 RFP No. 179821.78.0029  
 January 20, 2016**



The following information encompasses Addendum # 2 for the above referenced RFP. Bidders shall fully consider and acknowledge this Addendum in the preparation and submittal of its formal Proposal. Failure to do so may result in the rejection of the Proposal.

Section 1 – Additional Bidder Questions

Section 2 – Updates to the RFP

All other conditions and requirements remain unchanged

**Additional Bidder Questions**

**Q1:** Items 00011-6.01 thru 00011-6.17 are associated with the Deep Water Manhole Assessment table. Based on past project experience, there are several line items not included in the table that will be required to complete this work. These include but are not limited to:

- Project Manager **This is included in 6.02 Dive Team Personnel**
- Traffic Plan (TN, PE designed and stamped) **Will be added as Line Item "Traffic Control"**
- Traffic control (signs, lights, barricades, etc.) **Will be added as Line Item "Traffic Control"**
- Site Safety and Security **Will be added as Line Item "Traffic Control"**
- Jersey barriers (delivered, installed/removed and relocated to all target manholes) **Will be added as Line Item "Traffic Control"**
- Street and Manhole Excavation cost/per target manhole **Not Part of This job scope, this is included in Rehab Bid Package. The coordination is laid out in Addendum 2**
- Street and Manhole repair/site **Not Part of This job scope, this is included in Rehab Bid Package**
- Overhead electrical utility line management **Not Provided in job**
- Draft Report and Final report in Technical Memorandum form (Stamped by TN, PE) **Will be added as Line Item Technical Memorandum Report.**

These costs are significant. Would the Program Manager consider adding these line items to the fee table? If these tasks and services are to be considered "incidental to the work", they will greatly impact the daily/hourly cost as all of these required items will need to be distributed across the existing line items.

**SARP10:** Please see individual answers to question 1, in red. Also see attached revision of the two proposal pages referenced. The updated full document is available on the SARP10 website, under the "Projects" tab.

**Q2:** Mobilization and Demobilization has been defined under Item 00011 – 6.17. How will the additional cost of the Dive Team's "Internal Mobilization" from target manhole to new target manhole be compensated? A "Stand-by" rate could handle this cost. Will the Program Manager consider adding an additional line item for this labor intensive task? This Stand-by Rate could also compensate for mandatory/ mandated down time due to decisions made by the Program Manager and/or The City of Memphis.

**SARP10:** A standby rate will not be added.

**Q3:** Estimated Quantity: The Unit Price Proposal Form reflects Estimated Quantities for task items 00011-6.01 thru 000116.17. By what method will the Program Manager adjust these Estimated Quantities should, with a high probability; they exceed the estimated units (Each, HR, Day, LF, Set/Day, Ton, LS,)?

**SARP10:** Additional quantities will be compensated that exceed the estimated amount at the per unit rate.



**Request for Proposal**  
**Front Street & Mud Island Interceptor Evaluation Addendum # 2 to**  
**RFP No. 179821.78.0029**  
**January 20, 2016**



**Q4:** The RFP Title is “Front Street & Mud Island Interceptor Evaluation”. Please clarify what specific tasks/line items) from the Fee Table Questions (Table 00380.3.1 Unit Prices) will be performed on the manholes and lines located on Mud Island.

**SARP10:** The Evaluation of Mud Island Includes Level 2 MACP on 34 Manholes and Sonar/CCTV estimated 14,000 feet shown on page 13. Use the clickable link here:

[RFP No. 179821.78.0029 - Front Street & Mud Island Interceptor Evaluation - Maps](#) See Addendum 2.

**Q5:** Subpart 1.04 Please define deliverables of Inspection of the Sluice gate located in the Kansas Street manhole. The inspection of this sluice gate will be very challenging. There are several unknowns that the Dive Team may encounter. This may include but is not be limited to the following:

- Management of high-voltage overhead lines that will impact Man-Crane operations **See Question 1**
- Removing obstructions that may prevent the Dive Team from reaching the sluice gate. This could include steps, deteriorated gate control structures, and deteriorated partially connected or completely detached sluice gate. Underwater cutting task may be required to address these obstructions. **The as built drawing is included and Addendum 1 which includes the Jacobs Engineering Evaluation of the Front Street Manholes.**
- Would the Program Manager consider adding a “Contingency Fee for Inspection of Sluice Gate” line item to handle the costs for these unknowns? **See Section 5.15 and 3.01 sub J.**

**SARP10:** Please see individual answers to question 5, in red.

**Q6:** Subpart 1.07 – Please clarify; “clean debris and sediment from sewer shaft and interceptor enough to allow for inspection”. This volume will vary greatly depending on this definition. If the dive team is to perform penetration dives of up to 300 feet from each access manhole, this debris removal task could result in prolonged, complex cleaning operations that will require debris and sediment removal of many (unknown tons) to allow for or to complete inspection.

**SARP10:** Line item for tonnage per depth to account for this unknown.

**Q7:** Perform 3D Optical Manhole Inspection Scans on all manholes. The estimated quantity for 3D Manhole Scan is 11. Please clarify that this number is correct.

**SARP10:** The 3D Optical Manhole Inspection Scan is being removed from this job. See addendum 1

**Q8:** What is the location of these Sewer Mains? With the Front Street Interceptor being completely surcharged, where will this combination Sonar/CCTV Inspection be performed?

**SARP10:** The sonar/CCTV inspection is to be done on the Front Street & Mud Island Interceptor Evaluation.

Use the clickable link here: [RFP No. 179821.78.0029 - Front Street & Mud Island Interceptor Evaluation - Maps](#)

**Q9:** This Final Report delivery format is a complex engineering document that is usually outside the technical capabilities and scope of typical SSES and Dive Companies. The development of this document will impact the project cost. Will the Program Manager consider a separate line item for this task?

**SARP10:** See Question 1

**Q10:** 5.01 DIVE TEAM PERSONEL - Dive Team Personnel shall be measured on an hourly basis. Please define exactly when the Dive Team Personnel hours begin and end each day.

**SARP10:** See section 5.02 of specifications.

**Q11:** 5.03 DIVE TEAM EQUIPMENT - Dive Team Equipment shall be measured on a daily basis. Please define exact definition of “a daily basis”.

**SARP10:** Working days as specified by working hours included in Question 17, not to include Sunday night work.



**Request for Proposal**  
**Front Street & Mud Island Interceptor Evaluation Addendum # 2 to**  
**RFP No. 179821.78.0029**  
**January 20, 2016**



**Q12:** 6.09 Debris Disposal - In order to extract the debris for disposal, a combination of cleaning equipment, pumping equipment and the Dive Team personnel and equipment will all have to be utilized during this operation. Will the proponent be able to bill the Dive Team Personnel (6.02) and Dive Team Equipment (6.03) line items during this operation or will all of those cost have to be built into the per ton rate (6.09) during cleaning operations? Dive Team Operations fee table line 00011 – 6.10 states that “Consumables Charges at cost plus 10%”. Which one of these statements is correct?

**SARP10:** Costs are built in at the per-ton rate. Section 5.10 of specs has been corrected. See attachment.

**Q13:** Dive Personnel / Physical requirements for Divers - Does contractor have to be Corp certified and meet all USACE requirements, since this falls under Davis Bacon Act?

**SARP10:** Divers do not need to be Corp certified or meet USACE requirements.

**Q14:** Will dive physicals, school diplomas, current CPR & First Aid, Dan 02, have to be furnished?

**SARP10:** Yes

**Q15:** Competent Person- How long prior to the task does the designated competent person have to be submitted?

**SARP10:** Designated Competent Person form which will be provided to the contractor when selected should be turned in no less than 2 business days prior to work start. This allows time for review and submission of supporting documentation if safety deems it necessary. As was said in the meeting once contract is awarded the sooner paperwork is submitted to safety for review the better.

**Q16:** Cleaning - How much of the tunnel are you expecting to be cleaned in order to inspect the tunnel? Will it be completely cleaned, completed to the floor, or a certain percentage, 70%, 90%?

**SARP10:** Enough for a diver to traverse the Tunnel safely.

**Q17:** Working at night - It is understood the preference is for the divers to work at night.

What is the preferred schedule? 6:00pm – 6:00am?

**SARP10:** 7:00pm – 7:00am is preferred.

**Q18:** Penetration - You have estimated 7200' linear foot in penetration dives. Depending on the amount and consistency of the debris found in the interceptor, there could be more penetration dives required. If the estimated quantity of penetration dives exceeds 7200 linear feet, how will the contractor be compensated?

**SARP10:** Diver will be compensated only if previously approved by Program Manager for additional feet.

**Q19:** Will the video inspection of the Kansas Street manhole previously conducted, be available for our viewing prior to the bid submittal?

**SARP10:** No, see Addendum 1 for Jacobs Engineering report.

**Q20:** Will there be any reason to penetrate more than 300'? Should the contractor be prepared for this?

**SARP10:** No there is no desire currently to penetrate more than 300'.

**Q21:** Scope of Inspection defined - Provide a written scope of the inspection/deliverable that is expected.

**SARP10:** This shall be included in the TM.

**Q22:** Will the contractor be provided a copy of the 2010 Manhole Inspection Report?

**SARP10:** See Addendum 1

**Q23:** What pre-job safety orientation will be required, other than the JSA's & JHA's prior to the commencement of work on each site? What is the anticipated length of these orientations for time-planning purposes?

**SARP10:** Once contract is awarded contractor employees must attend program orientation which is approx. 90 min. At each set up there will be a JSA meeting with the crew covering the shifts work, this typically takes around 15 minutes depending on the amount of questions the crew has.



**Request for Proposal**  
**Front Street & Mud Island Interceptor Evaluation Addendum # 2 to**  
**RFP No. 179821.78.0029**  
**January 20, 2016**



**Q24:** How will address and provide extensions for weather, or loss of time due to no fault of the Contractor/ Sub-Contractor, Sub-Sub Contractors, due to any modifications or possible changes requested/created by the City of Memphis or Black & Veatch?

**SARP10:** See Exhibit A in specifications for weather related questions. SARP10 will compensate the Contractor/ Sub-Contractor, Sub-Sub Contractors if any changes requested/created by the City of Memphis or Black & Veatch on a negotiated rate.

**Q25:** Per the Pre-Proposal meeting it was stated that shoring will be required by OSHA. Please confirm that this is the only standard that will be required.

**SARP10:** All program work is regulated by OSHA and the Loss Control Manual, in the event of a conflict the strictest regulation takes precedence and should be followed. FYI all Memphis soil is treated as Type C in the SARP10 Program. The safety presentation in the pre-proposal meeting was a general overview, it by no means covers all regulations. Contractors are required to know the OSHA standards for their work as well as the Loss Control Manual which contractor agrees to follow by contract.

**Q26:** When will the pre-construction meeting be held to verify everything meets your requirements and that our team will successfully interface with the teams that are going to work together? The teams include Black & Veatch, Overland Contractors, and all Contractors and Sub Contractors.

**SARP10:** See Section 00180.17 Selection Schedule.

**Q27:** The mobe/demobe, installation and removal of these safety structures is complex and expensive. Will the Program Manager consider adding a separate usage line item for these barriers?

**SARP10:** This is included in traffic control. SARP10 will compensate for 1 mobilization/demobilization of barriers per manhole.

**Q28:** If traffic control does not impede the traffic flow can it be left untouched during evaluation?

**SARP10:** Yes it can remain if traffic is not impeded.

**Q29:** Will there be a line item for standby time?

**SARP10:** See Question 2

**Q30:** Can evaluation/cleaning be conducted at two sites simultaneously on Front Street?

**SARP10:** This is solely the discretion of the Contractor.

**Q31:** Can the manhole top be left off until evaluation/rehabilitation is complete?

**SARP10:** Yes, as long as the steel plate is installed during non-working hours, crowd control remains and caution tape is located around site.

**Q32:** Will the City of Memphis provide water from fire hydrants for the divers' decontamination and heavy cleaning operations on the Front Street Interceptor?

**SARP10:** The contractor is required to make arrangements with MLGW for use of water from fire hydrants.

**Q33:** It will be our Team approach to utilize two Dive Crews on this project. Please clarify the following; In reference to: Dive Team Personnel Hours - Should we include both Dive Teams Personnel Hours into the Dive Team Personnel (6.02) unit rate? Or, Should we divide the Dive Team Personnel Hours as a Per Team/Hour unit rate? If so, will you add a new line item for this option?

**SARP10:** You should include both Dive Teams Personnel Hours into the Dive Team Personnel (6.02) unit rate.

**Q34:** Should we include both Dive Teams Equipment Day fee into the single Dive Team Equipment Day rate unit? Or, should we divide the Dive Team Equipment day rate as a Per Team Equipment/Day unit rate? If so, will you add a new line item for this option?

**SARP10:** You should include both Dive Teams Equipment Day fee into the single Dive Team Equipment Day rate unit.



**Request for Proposal  
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RFP No. 179821.78.0029  
January 20, 2016**



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**Updates to the RFP**

**Table 00380.3.1 - Unit Price Proposal Form**

<b>Bidder should refer to Section 00280, Instructions to Bidders, when completing this Proposal Form. Bidder shall complete this form entirely and return it with Bidder's Proposal.</b>					
<b>Proposal Submitted by</b> (Company Name)					
<b>00380.3 Proposal Pricing Information</b>					
<b>00380.3.1 Unit Pricing</b>					
<p>Bidder proposes to complete the RFP Work based on firm, fixed, unit prices (US dollars), which prices multiplied by the final Work quantities would represent the full consideration to Bidder for its complete and satisfactory performance of the Work in compliance with all the terms and conditions of the RFP Documents. The Unit Prices in this Table include the cost of all the work which is required or implied by the RFP documents or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work item of its kind. Further, any and all alterations, modifications, and adjustments to the work item, which is reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the work item kind, will be performed without additional compensation.</p> <p>In the event of a Purchaser-approved change in the scope of Work for which a unit price from this Table is not applicable, as determined by the Purchaser, the Service Contractor shall provide a new unit price for review and acceptance by the Purchaser. Service Contractor shall provide all information requested by the Purchaser to substantiate the value of the new unit price.</p>					
<b>00380.3.1.1 Unit Prices</b>				<b>Bidder Response Columns</b>	
Item Number	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Extension Price
<b>DEEP WATER DIVE FOR SSES OF MANHOLES, PIPES AND TUNNELS WITH SONAR INSPECTION</b>					
<b>Manholes</b>					
00011-6.01	Removal of All Manhole Steps	Each	240	\$ -	\$ -
<del>00011-6.18</del>	<del>MACP Level 2 Condition Assessment</del>	<del>Each</del>	<del>34</del>		
<b>Dive Team Operations</b>					
00011-6.02	Dive Team Personnel	HR	<u>240</u>	\$ -	\$ -
00011-6.03	Dive Team Equipment	Day	20	\$ -	\$ -
00011-6.04	Penetration Pay	LF	7,200	\$ -	\$ -
00011-6.05	Cutting and Grinding Equipment	Set/Day	5	\$ -	\$ -
00011-6.06	Dive Team Cleaning Tools to Remove Grease	HR	72	\$ -	\$ -
00011-6.07	Dive Team Overtime (Over 12 hours & Weekends)	HR	72	\$ -	\$ -
00011-6.08	Dive Team Clear Box with Video Recorder	HR	72	\$ -	\$ -
00011-6.09	Debris Disposal				
	<30 Feet	Ton	10	\$ -	\$ -
	30-50 Feet	Ton	10	\$ -	\$ -
	50-70 Feet	Ton	10	\$ -	\$ -
	>70 Feet	Ton	10	\$ -	\$ -
00011-6.10	Consumables Charged at cost plus 10%	LS	1	\$ -	\$ -
00011-6.11	Man Rated Crane Mobilization	LS	1	\$ -	\$ -
00011-6.12	Man Rate Crane Operator & Rental	HR	60	\$ -	\$ -
00011-6.13	Penetration Equipment Prep and Delivery	LS	1	\$ -	\$ -
<del>00011-6.14</del>	<del>3D-Optical Manhole Inspection Scans</del>	<del>Each</del>	<del>11</del>	\$ -	\$ -
00011-6.15	Sluice Gate Inspection	LS	1	\$ -	\$ -
<del>00011-6.19</del>	<del>Traffic Control</del>	<del>Each</del>	<del>4</del>		
<del>00011-6.20</del>	<del>Technical Memorandum Report</del>	<del>LS</del>	<del>1</del>		

Item Number	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Extension Price
<b>Sonar/CCTV Inspection</b>					
00011-6.16	Sonar/CCTV In spection	LF	14,000	\$ -	\$ -
<b>Miscellaneous</b>					
00011 - 6.17	Mobilization and Demobilization (not to exceed 8% of the total of all other bid items or \$50,000)	LS	1	\$ -	\$ -
<b>Deep Water Manhole Assessment Subtotal Estimated Unit Price Value</b>					\$ -



**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

**PART 1 – SCOPE**

- 1.01 This Work shall consist of **MACP level 2** condition of manhole and **PACP** sanitary sewer interceptor Evaluation, ~~perform 3D Optical Manhole Inspection Scans at designated manholes.~~ Sonar/CCTV surveys to digitally inspect and record conditions of existing sanitary sewer mains and connections in larger diameter sanitary sewer pipe. Larger diameter sewer pipes to be inspected are located in both improved streets, arterial and primary roads, backyards and unimproved easements. Slight cleaning of the sanitary sewer may be required prior to Sonar/CCTV inspection.
- 1.02 The Work covered by this section includes furnishing all labor, competent **PACP/MACP** certified technicians, equipment, tools, accessories, and materials required to Sonar/CCTV inspect the designated sanitary sewer lines.
- 1.03 **PACP/MACP** compliant inspections, logs, data, and photos shall be delivered to the Program Manager (from hereon Program Manager shall be interpreted as “Program Manager or his designee”) on external hard drives which shall become property of the Program Manager. Data files shall be formatted to facilitate upload into a **PACP/MACP** compliant exchange database or internet uploads formats to an FTP site approved by the Program Manager.
- 1.04 Inspect the Sluice Gate at end of tunnel.
- 1.05 Penetrate Manholes that are up to 100 feet in depth with dives up to 50 feet in depth.
- 1.06 The Diver shall penetrate the Sanitary Sewer Interceptor up to 300 feet laterally per segment.
- 1.07 Clean enough debris and sediment from sewerage shaft and interceptor to allow for inspection.
- 1.08 Grind or cut any protruding objects on the surface of the shaft that may cause obstructions to diver or dive support equipment using appropriate equipment for the atmosphere (i.e. Hydraulic Shears).



**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

**1.08 Job Specific Safety**

All diving and inspection work shall be conducted under the following regulations, directives or guidelines:

- Association of Diving Contractors Diving Consensus Standards
- Scuba Diving Institute Safety Manual.
- OSHA, 29CFR 1910, Subpart T
- Program Loss Control Manual

A. Safety

1. Man Basket

- a. OSHA, 29CFR 1926, Subpart CC
- b. Diagram of man basket to be approved by Program Safety Team

2. Crane

- a. A daily pre-operation safety inspection shall be performed on the on-site crane that shall be lifting the man basket (dive stage).
- b. A daily pre-operation lift test shall be conducted with the crane and the dive stage to ensure safe entry and exit for the diver.
- c. Crane is required to have Load Moment Indicator

3. Tenders working within 6 feet of open hole shall don fall arrest harnesses and prepare for downhole operations. 100% fall protection shall be required for any persons within 6' of the fall exposure.

4. Jersey barriers shall be required to be set up at a minimum of 10 feet from open hole.

**a. Diagram included in Addendum 1**

5. The diver shall enter the water using man-basket/dive stage. The dive stage shall have an emergency air whip with quick disconnect fitting which is compatible with the divers' helmet.

B. Emergency Situations

This items shall need to be covered in a Job Hazard Analysis (JHA) at a minimum:

1. Entrapped or fouled diver.
2. Loss of vital support equipment.
3. Loss of breathing gas.
4. Loss of communications with the diver.
5. Lost diver.
6. Diver injured in water.
7. Deck/equipment fire during dive.

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

8. Diver blow up/over rapid ascent to surface
9. Dive loss of consciousness in water.
10. Injured/ill surface crew member during diving operations.
11. Situations where decompression was omitted.
12. Severance of diver's umbilical.
13. Diving in contaminated water.

**PART 2 – MATERIALS & EQUIPMENT**

2.01 MATERIALS

A. Submittals

1. Unless otherwise specified all sample submittals shall be delivered to the Program Manager within two weeks of the NTP.
2. Traffic Control Plan shall be submitted to the Program Manager, including the following items:
  - a. Outline of permit acquisition procedure for lane closures.
  - b. Methods for proper signing and barricades, which comply with City of Memphis requirements.
  - c. Major streets (e.g. Shelby County Principal Arterial & Minor Arterial) requiring a City approved permit if taking a lane for mobile operations, secured through Traffic Control Plan submittal to the City and signed by a TN P.E. The City requires two-week lead time for permit processing.
    - i. The Contractor shall be required to deliver a sample primary/arterial road Traffic Control Plan for review by the City.
    - ii. If the City determines that the nature of the work operation or the type of road in which the Contractor is working requires a permit, the Contractor shall be required to modify the sample Traffic Control Plan to obtain a permit from the City.
  - d. For everywhere else where a permit is not required, the Contractor shall develop, provide, and implement a traffic control plan for all mobile operations in accordance with standard MUTCD specifications.
  - e. The Contractor is also responsible for acquiring all necessary disposal and/or landfill site permits as required to perform this work.
  - f. Railroad Rights of Way: The Contractor shall notify the Program Manager when work or access to manholes and sanitary sewers lie within the 25 feet of railroad easement as measured by 25 feet outside the nearest rail of the tracks. To access sewer facilities within the 25 feet of the railroad right of way the Contractor shall contact the Program Manager 48 hours in advance who shall alert

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

the City's Zone Construction Inspector to coordinate individual railroad direction and guidance.

3. Site Contractor emergency phone numbers.
4. Schedules of work on a weekly basis that shall be delivered no later than 2:00 PM on Thursday for the week following with daily AM email updates of approximate crew locations each day.
  - a. Weekly schedule format shall contain the following elements:
    - i. Map format.
    - ii. Sufficient streets labeled and identified at a scale to provide clarity.
    - iii. Nature and type of crew location by map area.
5. Confined space entry plans for both "permit required" and "non-permit required" confined spaces.
6. Copies of National Association of Sewer Service Companies (NASSCO) certification for all field staff conducting PACP inspections.
7. Sample of PACP compliant television survey log in MS Access format.
8. Sample of PACP compliant video inspection in MP-4 format.
9. CCTV and Sonar/CCTV inspection vehicle and equipment supplies list.
10. Sample of combined CCTV & Sonar/CCTV inspection report.

**2.02 EQUIPMENT**

**A. General**

1. All equipment used for PACP compliant Sonar/CCTV sewer segment inspections of existing larger diameter sanitary sewer mains shall be specifically designed and manufactured for the purpose intended under this Contract. The software and hardware for the electronic capture of the inspection defects and recorded observations must be Version 6.0.1 NASSCO PACP compliant.

**PART 3 – EVALUATION REQUIREMENTS**

**3.01 Manhole Condition Evaluation**

- ~~A. Perform 3D Optical Manhole Inspection Scans on all manholes.~~
- ~~B. Dive Team and SARP10 Program shall review 3D manhole scans to plan the manhole entries.~~
- C. Preform Level 2 MACP condition assessment**
- D. Dive Team shall develop a comprehensive plan/approach to inspect the interceptor from the bottom of the target manholes. The inspection of the interceptor shall require several preparatory tasks. These tasks shall

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

- include removal of all manhole steps that could entangle any air hoses, safety lines and personnel stages. All grease, solids and other materials would block the divers safe and efficient entry from the bottom of the manhole into the interceptor shall be removed and disposed of properly.
- E. Collect gas readings for every 10 feet in manhole. Those gases that are to be recorded:
- a. H<sub>2</sub>S
  - b. O<sub>2</sub>
  - c. CO
  - d. Combustible(s)
- F. The Dive Team begins operations at target manhole. Dive Team evaluates the general characteristics of the interceptor at the entry point including visibility, debris characteristics and capacity (free space of the interceptor). The Dive Team shall remove any protruding objects on the surface of the shaft that may cause obstructions to diver or dive support equipment. The Dive Team shall remove debris in interceptor that prevents them from entering interceptor. The Dive Team shall perform tactile inspections of the pipe using appropriate tools. The purpose of the tactile inspection is to determine the soundness of pipe. The Dive Team shall also take recorded images of the crown of the pipe using Clear Box Video recording technology. The Dive Team shall utilize a water parachute (or other approved methods) to float a tag line to the next manhole. Sonar/CCTV Contractor shall then attach their HD Sonar/CCTV Profiler to the tag and winch the profiler through the Priority Area collection Sonar/CCTV data. The assistance of the Dive Team may be required to launch or extract the HD Sonar/CCTV Profiler.
- G. Perform penetration dive 300 feet horizontal from each manhole.
- H. Collect 3 Clear Box images at 9 o'clock, 11 o'clock and 3 o'clock every 100 feet on the interceptor wall.
- I. Collect at least 1 water temperature reading in the pipe at each manhole
- a. Record obvious temperature changes experienced by the diver in interceptor.
- J. Dive Team shall inspect the sluice gate at end of the tunnel. The team shall document the structural integrity **and material of gate.**

3.02 Sonar/CCTV Inspection of Sewer Mains

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

A. Sonar/CCTV Combined Operations

1. Where there is free space in the pipe CCTV/Sonar/CCTV Combo shall be recorded.
2. The combination CCTV and Sonar/CCTV equipment shall be capable of inspecting a length of sewer up to at least 1,000 linear feet when entry into the sewer may be obtained at each end and up to 750 feet where a self-propelled unit is used and where entry is possible from one end only.
3. Each inspection unit shall contain a means of transporting the CCTV camera or Sonar/CCTV equipment in a stable condition through the sewer under inspection. Such equipment shall ensure the maintained location of the CCTV camera and Sonar/CCTV equipment when used independently on or near to the central axis of a circular shaped sewer. The maximum allowable flow depth that is permissible for the combination Sonar/CCTV/CCTV is equal to 75% of the pipe diameter.
4. Where the CCTV camera or Sonar/CCTV head are towed through the sewer, all winches shall be stable with either lockable or ratcheted drums. All connection shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera or Sonar/CCTV equipment through the surcharged sewer. All winches shall be inherently stable under loaded conditions.
5. Each inspection unit shall carry sufficient numbers of guides and rollers such that, when inspecting, all connecting materials are supported away from pipe and manhole structures and all CCTV & Sonar/CCTV lines used to measure the CCTV camera and the Sonar/CCTV head location within the sewer are maintained in a taut manner and set a right angles where possible, to run through or over the measuring equipment.
6. The CCTV Camera and Sonar/CCTV head shall be positioned to reduce the risk of picture distortion. In circular sewers the CCTV camera lens and/or Sonar/CCTV head shall be positioned, when possible, centrally within the “dry” area for the CCTV and centrally within the “wet” area for the Sonar/CCTV head. In non-circular sewers, picture/Sonar/CCTV image orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances the camera/Sonar/CCTV lens shall be positioned looking along the axis of the sewer. A positioning tolerance of + 10% of the vertical sewer dimension shall be allowed.
7. When the scanning Sonar/CCTV is deployed, either stand alone or combined with CCTV, the speed or travel shall be limited to 4 inches per second or 20 feet per minute.
8. A General Condition 360° CCTV rotational scan must be implemented at every 50 feet interval (min) along sewers, and at all manholes and all salient, specified, defect features. More frequent scans must be

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

made should the condition of the pipe differ from the previous scan. The tilt must not be less than 225°.

9. The color palette shall have a minimum of 16 colors with text. The Sonar/CCTV image, inside the viewing area shall be in color.
10. The picture update speed shall not result in unsatisfactory picture resolution. The range of resolution shall be 1/10 inch.
11. The maximum beam width of Sonar/CCTV energy pulse shall be no greater than two degrees from the center of the transducer.
12. The transducer shall be of the continuous scanning type, the speed of which shall be 1 second per 360° scan.
13. The Contractor is responsible for hiring a licensed sub-contractor to retrieve any equipment/foreign objects that get stuck in the sewer system through the execution of the scope of work (fallen cameras, jet nozzles, inflatable plugs, sandbags etc.) at the Contractor's own cost. Such retrieval by an appropriately licensed sub-contractor shall be made within 72 hours to avoid interfering with the City of Memphis sewer system operations. Any and all impacts and related costs due to the Contractor's equipment in the line shall be the responsibility of the Contractor.

B. Quality Assurance

1. QA/QC shall be as contained in Section 00003 - Closed Circuit Television Inspection of Sewer Mains & Connections, Paragraph 3.01.D. Quality Assurance.

C. Deliverable Documentation

1. Mainline Sewer:
  - a. Submit V.6.0.1 PACP/**MACP** and ~~3D Optical Manhole Inspection Scans~~ compliant records, logs, and electronic inspection data for sewer line/manhole inspection to Program Manager by the close of business fifteen (15) days after data acquisition
  - b. Digital videos, data, and photos shall be delivered to the Program Manager on external hard drives which shall become property of the Program Manager.
  - c. Data files shall be formatted to facilitate upload into a PACP/**MACP** Database with the approval of the Program Manager.
  - d. Inspections displaying poor digital video/audio quality shall be rejected. Quality refers to, but is not limited to, grease or debris on lens, camera under water, image too dark, image washed-out,

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

distorted image, or out of focus images, lines improperly cleaned, and poor/no audio.

- i. Contractor shall re-televise rejected inspections and resubmit inspections at no additional cost to the Program Manager.
2. Map changes/undocumented manholes:
    - a. For map changes identifying undocumented manholes and network changes which were found as a result of field inspections or observations, a Map Edit Form shall also be prepared and supplied by the Contractor with a drawing or sketch and shall indicate special details, field measurement or distances, or locations about an observed undocumented manhole or a change to the sewer network. The Map Edit Form should also identify buried manholes and siphons that have been encountered.
    - b. Contractor shall indicate all buried manholes identified in the field via Sonar/CCTV/CCTV using the provided Buried Manhole Form. Any additional manholes that have not been located or verified via Sonar/CCTV/CCTV but are impeding the completion of required Sonar/CCTV/CCTV work should be designated as unable to locate (UTL) and be included on the form.
  3. Sonar/CCTV Reports
    - a. The Contractor shall submit two hard copies of all details, i.e. a typed “Full Detail” report for each inspection, showing the position and full text of each defect encountered and their grades. The Contractor shall also supply an overall Summary Report detailing major defects and those inspections that require attention along with a statistical report showing lengths of sewers inspected and a breakdown of sizes and lengths inspected.
    - b. The Contractor shall supply a MS ACCESS database and free issue software for both the viewing of the media files and the Sonar/CCTV images from within the database.
    - c. The Sonar/CCTV Inspection shall include complete structural and service Evaluation to the equivalent PACP standard as that obtained through conventional CCTV imagery.
    - d. The Sonar/CCTV inspection shall include measurement of flow depth and debris/silt depth.
    - e. A Color High Resolution Sonar/CCTV image of cross sections of the sewer must be taken (saved) every 50 feet or more frequently should the internal profile or debris/silt depth of the sewer change from the previously saved image.
    - f. These images are to be cross-referenced to the reports and database(s) for ease of retrieval.

**PART 4 –DELIVERABLES**

**4.01 RECORDS**



**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

A. Digital Inspection Record

In the digital PACP V.6.0.1 compliant format, the Contractor shall provide the following information:

1. Digital CCTV survey and Sonar/CCTV inspection which shall be recorded and shall be continuous as the inspection proceeds through the manholes and sewer pipes.
2. Digital Recordings: The digital recording shall document the visual and audio record of the sewer pipe inspection and shall be the basis of measurement and payment. Digital recording playback shall be at the same speed that it was recorded. Original digital recordings for the Project shall be forwarded to the Program Manager on clearly labeled external hard drive(s) in PACP ACCESS format with final report submittals and shall become the property of the Program Manager. Data for a single facility asset will not be split across multiple hard drives. Digital recordings shall be available to the Program Manager by the close of business on the Monday following a week after data acquisition. File naming must be consistent. Additional instructions, naming conventions, file structures, etc. will be provided after contract award.
  - a. Picture Quality: The sewer inspection digital record shall be free of steam, fog, vapor, or other headspace distortion that degrades the quality of the picture from the intended purpose of evaluating the sewer for structural and watertight integrity. If necessary, the Contractor shall provide positive ventilation or other means through the sewer pipe to draw out steam, fog, and vapor that will degrade the recorded image of the pipe.

i. Inspection Documentation Logs

1. CCTV Records

- a. Observations made during television inspection shall be documented in an unmodified PACP compliant manner within an electronic inspection log form, supported by accompanying audio, digital photographs and MP-4 (web optimized) format recording written to an external hard drive and submitted to the Program Manager. Hard copies of completed inspection log photographs shall be furnished to the Program Manager with invoicing.

2. Sonar/CCTV Records

- a. Where combined CCTV and Sonar/CCTV inspections are performed, the display in the viewing area shall show the combined CCTV and Sonar/CCTV images of the sewer being inspected. The Sonar/CCTV image shall be superimposed on the

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

real CCTV image, and continuously recorded, as a combined operation at the time of the inspection resulting in a single combined video file in MP-4 (Web optimized) format for each inspection.

- b. The Sonar/CCTV Inspection shall include a comprehensive final report on the findings concerning major defects including fractures, displaced joints, deformation, corrosion, lateral intrusions, dominant surface features, encrustation, and debris/silt depths.

**C. Electronic & Hard Copy Records**

1. Reports: The Contractor shall prepare printed inspection log reports for each associated sewer pipe inspected during the actual field inspection activities. These field logs shall then be reviewed by the Contractor's technical staff, along with reviewing the associated digital video record, as a means of ensuring that no defects or entries are omitted or incorrect. Edited field logs shall then be used in the final project reports and submitted in pdf format.
2. Draft Report and Final Report: The Draft/Final Report will contain electronic and hard copies of each of the PACP CCTV log pipe segment inspection logs. Digital recordings of the inspections written to an external hard drive and the PACP compliant database of the inspections in ACCESS format shall also be submitted in electronic and pdf format.

The Final Report shall be in the style of an engineering technical memorandum (TM) which shall summarize the findings of the manhole and interceptor Evaluation work. The TM shall include everything required in Part IV, Deliverables, and include any engineering judgments regarding the information collected. A draft of the TM shall be submitted within fifteen (15) days for review and any relevant comments made to the TM by SARP10 shall be incorporated, as appropriate. The TM shall be submitted within two calendar weeks and returned with one original and one electronic copy. The TM shall be sealed by a TN Professional Engineer. At the Program Manager's discretion a meeting will be held so the Contractor can explain the processes used to address the comments.

**D. Meetings**

The Program Team shall arrange bi-weekly meetings (every other week) with the contractor to discuss data management and field issues.

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

E. Quality

Rejection of deliverables shall be submitted to the Contractor via the Program Team in a written communication discussing issues that must be addressed. The Contractor shall be required to follow up with a response within three business days upon receipt of the written communication. Contractors shall have seven (7) calendar days from the rejection notice date to make the necessary corrections and resubmit the data deliverable in its entirety.

**PART 5 – MEASUREMENT**

5.01 REMOVAL OF ALL MANHOLE STEPS

Removal of all Manhole Steps shall be measured by a per each step removed.

5.02 DIVE TEAM PERSONEL

Dive Team Personnel shall be measured on an hourly basis. If for some reason the divers are stopped due to weather, program's safety discretion, Diver's choice, etc. The break down for hourly payment is as follows:

- 0-4 Hours
- 4-8 Hours
- 8-12 Hours

5.03 DIVE TEAM EQUIPMENT

Dive Team Equipment shall be measured on a daily basis.

5.04 PENETRATION PAY

Penetration pay shall be measured on a linear foot entered into interceptor

5.05 CUTTING AND GRINDING EQUIPMENT

Cutting and Grinding Equipment shall be measured on a set per day basis

5.06 DIVE TEAM CLEANING TEAM TO REMOVE GREASE

Dive Team Cleaning Team to Remove Grease shall be measured on a hour basis.

5.07 DIVE TEAM OVERTIME

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

- Dive Team Overtime shall be measured by hourly for work over 12 hours or on weekends
- 5.08 DIVE TEAM CLEAR BOX WITH VIDEO RECORDER
- Dive Team Clear Box with Video Recorder shall be measured on an hourly basis.
- 5.09 DEBRIS DISPOSAL
- Debris Disposal shall be measured on a ton amount per depth of manhole.
- 5.10 CONSUMABLES
- Consumables shall be measured on a ~~lump sum basis~~ **per basis**.
- 5.11 MAN RATED CRANE MOBILIZATION
- The mobilization of the crane shall be measured in a lump sum.
- 5.12 MAN RATED CRANE OPERATOR & RENTAL
- The operator and crane operation shall be measured on an hourly basis.
- 5.13 PENTRATION EQUIPMENT PREP AND DELIVERY
- The equipment prep and delivery for penetration shall be measured in a lump sum basis.
- 5.14 ~~3D OPTICAL MANHOLE INSPECTION SCANS~~
- ~~3D Optical manhole inspection scans shall be measured on an each manhole.~~
- 5.15 SLUICE GATE INSPECTION
- Sluice Gate inspection is measured in a lump sum basis.
- 5.16 SONAR/CCTV/CCTV INSPECTION
- Sonar/CCTV inspection shall be measured by linear foot by each diameter of mainline sewer inspected and documented in accordance with the specification.

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

5.17 Mobilization and Demobilization

This matter is an incidental of the project.

**5.18 MACP LEVEL 2 MANHOLE CONDITION EVALUATION**

The inspection and recording of all manhole observations in a MACP compliant fashion shall be measured for payment per each manhole inspected in accordance with the specification

**5.19 TRAFFIC CONTROL**

Traffic Control shall be measured per manhole that is needed to be installed

**5.20 Technical Memorandum Report**

Technical Memorandum will be measured as the draft and final report.

**PART 6 – PAYMENT**

6.01 REMOVAL OF ALL MANHOLE STEPS

The unit price shall cover the entire cost of removing all steps in the manhole.

6.02 DIVE TEAM PERSONEL

The unit price shall cover all cost of The Dive Team.

6.03 DIVE TEAM EQUIPMENT

The unit price shall cover the equipment needed to safely complete this dive.

6.04 PENETRATION PAY

This shall be made on a linear foot basis from the manhole entering interceptor.

6.05 CUTTING AND GRINDING EQUIPMENT

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

- The unit price shall cover all equipment needed for cutting and grid of manhole steps
- 6.06 DIVE TEAM CLEANING TEAM TO REMOVE GREASE
- Dive Team Cleaning Team to Remove Grease shall be measured on a hour basis.
- 6.07 DIVE TEAM OVERTIME
- Overtime shall only be allowed if approved by SARP10.
- 6.08 DIVE TEAM CLEAR BOX WITH VIDEO RECORDER
- The unit price shall cover all cost associated with taking 3 Clear Box images at 9 o'clock, 11 o'clock and 3 o'clock every 100 feet on the interceptor wall Dive Team Clear Box with Video Recorder.
- 6.09 DEBRIS DISPOSAL
- The debris that is removed from the manhole shall be disposed of properly. The unit price is for ton of debris depending on the depth of the manhole
- 6.10 CONSUMABLES
- Consumables shall be measured on a lump sum basis
- 6.11 MAN RATED CRANE MOBILIZATION
- The unit price covers the lump sum cost for mobilization of crane job site.
- 6.12 MAN RATED CRANE OPERATOR & RENTAL
- The operator and crane operation shall be measured on an hourly basis.
- 6.13 PENTRATION EQUIPMENT PREP AND DELIVERY
- The equipment prep and delivery for penetration shall be measured in a lump sum basis.
- 6.14 ~~3D OPTICAL MANHOLE INSPECTION SCANS~~

**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS**  
**SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR**  
**EVALUATION**

~~3D Optical manhole inspection scans shall be measured on an each manhole.~~

**6.15 SLUICE GATE INSPECTION**

This unit price shall cover the entire cost of the inspection of the Sluice gate.

**6.16 SONAR/CCTV/CCTV INSPECTION**

The unit price for Sonar/CCTV inspection shall cover the entire cost of the required Sonar/CCTV inspection and reporting in accordance with PACP V 6.0.1 format, including but not limited to labor, mobilization and access, equipment, recording media, traffic control, light cleaning of mainline sewer, documenting results in PACP records and logs, digital format recordings, photo equipment, power supply for equipment, interim and final reports, and all other appurtenant work.

No additional payment shall be made for:

1. Re-inspection due to rejected inspection and/or records for any reason
2. Incomplete electronic logs for either CCTV or Sonar/CCTV digital records

**6.18 MACP LEVEL 2 MANHOLE CONDITION EVALUATION**

The inspection and recording of all manhole observations in a MACP format shall be paid for at the unit price bid per each MACP Level 2 inspection performed in accordance with the specification, provided that QA/QC standards are met.

The unit price for each MACP manhole inspection shall cover the entire cost of the inspection and reporting, including but not limited to setup and access, documenting results in records and logs, digital photos, power supply for equipment, interim and final reports, and all other appurtenant work.

**6.19 TRAFFIC CONTROL**

Traffic Control shall be measured per manhole that is needed to be installed

**6.20 Technical Memorandum**

Technical Memorandum will be paid as the final draft is received and approved.



**CITY OF MEMPHIS – STANDARD EVALUATION SPECIFICATIONS  
SECTION 00011 – FRONT STREET AND MUD ISLAND INTERCEPTOR  
EVALUATION**

**6.21** PAYMENT SHALL BE MADE UNDER:

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
00011-6.01	Removal of All Manhole Steps	Each
00011-6.02	Dive Team Personnel	Day
00011-6.03	Dive Team Equipment	Day
00011-6.04	Penetration Pay	LF
00011-6.05	Cutting and Grinding Equipment	Set/Day
00011-6.06	Dive Team Cleaning Tools to Remove Grease	Hour
00011-6.07	Dive Team Overtime (Over 12 hours & Weekends)	Hour
00011-6.08	Dive Team Clear Box with Video Recorder	Hour
00011-6.09	Debris Disposal	
	<30 Feet	Ton
	30-50 Feet	Ton
	50-70 Feet	Ton
	>70 Feet	Ton
00011-6.10	Consumables Charged	LS
00011-6.11	Man Rated Crane Mobilization	LS
00011-6.12	Man Rate Crane Operator & Rental	Hour
00011-6.13	Penetration Equipment Prep and Delivery	LS
00011-6.14	3D Optical Manhole Inspection Scans	Each
00011-6.15	Sluice Gate Inspection	LS
00011-6.15	Sonar/CCTV/CCTV Inspection	LF
00011 - 6.17	Mobilization and Demobilization	LS
<b>00011-6.18</b>	<b>MACP Level 2 Manhole Condition Evaluation</b>	<b>Each</b>
<b>00011-6.19</b>	<b>Traffic Control</b>	<b>Each</b>
<b>00011.6.20</b>	<b>Technical Memorandum</b>	<b>LS</b>

**END OF SECTION 00011**

### **Coordination of Front Street and Mud Island Evaluation and Rehab Contractors**

The rehab contractor will cut the asphalt, remove manhole cone, frame and cover, then place a steel plate over the hole. Evaluation contractor will remove the plate and perform their work (which includes the use of Jersey barriers). When their work has been completed, they will remove all of their traffic control and safety equipment and cover the hole back up with the steel plate at which point the rehab contractor can replace the cone, frame, and cover, and continue work of rehab contract.