DEPARTMENT OF HOMELAND SECURITY
UNITED STATES COAST GUARD
ENGINEERING SERVICES DIVISION

SCOPE OF WORK
FOR
REPLACE SEWAGE LIFT STATION
U.S. COAST GUARD STATION
CAPE CHARLES, VA

COMMANDING OFFICER
UNITED STATES COAST GUARD
CIVIL ENGINEERING UNIT, RM 2179
1240 EAST NINTH STREET
CLEVELAND, OHIO 44199-2060

1.0 GENERAL

1.1 BACKGROUND

1.1.1 The United States Coast Guard (USCG) Station Cape Charles must maintain their Sewage Lift Station. This project will include replacing wire, panelboards, a control board, breakers, pumps, and restoring and relining the existing concrete manhole. Prior to submitting a quote, it is mandatory to examine this SOW and visit the facility to take field evaluations and become familiar with the existing condition under which the work will be performed.

1.2 SCOPE

1.2.1 The scope of work involves all necessary parts, labor, and equipment to repair and perform necessary maintenance of the Sewage Lift Station. This maintenance is required to restore the system to an efficient and fully functioning system.

2.0 SPECIFIC REQUIREMENTS/TASKS

2.1 PRICING SCHEDULE

2.1.1 Provide a lump-sum price for all labor, materials, equipment, and supervision necessary to repair existing sewage lift station. Specific requirements are outlined in this scope of work.

2.2 REFERENCES

2.2.1 Contractor shall be provided with the following reference drawings:

2.2.1.1 PN 9212753, Electrical One-Line Diagram, Sheet E-003

2.2.1.2 PN 05-C3100, Sewage System Modifications

2.2.1.3 PN 05-C6850, Electrical Site Plan, Sheet E-01

2.3 SITE PREPARATION AND DEMOLITION

2.3.1 The Contractor shall provide, install, and maintain a temporary sewage bypass pumping system to ensure uninterrupted facility operation during the entire project period. The bypass plan must be submitted to the Contracting Officer's Representative (COR) for approval prior to commencing any work.

2.3.2 Any spills resulting from bypass failure shall be immediately reported, contained, and remediated at the Contractor’s expense in accordance with environmental regulations.

2.3.3 Disconnect, lock-out/tag-out, and remove all existing sewage pumps, controls, level sensors, alarms, and associated piping. Contractor shall remove the manhole steps and retain them for the duration of the work.

2.3.4 Contractor shall remove all remaining sludge from the vault and properly dispose of the waste. Then, the Contractor shall remove all loose, deteriorated concrete, grout any cracks or voids, and prepare the surface to ensure a sound substrate.

2.3.5 The Contractor shall be responsible for the disposal of all removed equipment and debris off-site in accordance with all local, state, and federal laws and regulations.

2.4 ELECTRICAL

2.4.1 Utilizing the existing conduit, the Contractor shall remove all existing wiring and pull new, appropriately sized, and color-coded wires for the pumps, controls, and alarm system. All wiring and connections must be rated for a wet and corrosive environment. New wire shall be 3 phase 208 VAC.

2.4.2 Provide and install a new 3 phase 208 VAC duplex pump control panel and pumps. The panel must be NEMA 4X rated.

2.4.3 Provide and install a new intrinsic safety barrier for all wiring entering the wet well.

2.4.4 Provide and install a new alarm system with audible and visual indicators for high water level, pump failure, and loss of power.

2.5 MECHANICAL AND STRUCTURAL

2.5.1 Rehabilitate the sewage lift station manhole. Apply a protective corrosion-resistant watertight lining system designed to withstand a sanitary sewer environment. Inspect and test lining to ensure it performs as expected. Submittals must include manufacturer specifications and structural ratings. Product must have a minimum manufacturer rated lifetime of 30 years.

2.5.2 Install two (2) submersible, non-clog sewage grinder pumps. Pumps shall be complimented with a guide rail system for easy removal and maintenance. The contractor shall be responsible for the installation of two (2) pumps compatible with the system upgrades specified herein.

2.5.3 Provide and install all new interior piping, including but not limited to PVC pipes, check valves, and isolation valves for each pump. All pipe penetrations shall be sealed using flexible, watertight rubber boots or links to prevent groundwater infiltration and exfiltration.

2.5.4 Provide and install a new ventilation system for the vault, extending to a location approved by the COR. The vent shall include an odor control filter.

2.5.5 Provide and install a new level control system (e.g., float switches or pressure transducer) for pump operation (lead, lag, and stop) and high-level alarm activation.

2.5.6 Reinstall manhole steps in the same configuration as the pre-construction conditions.

2.6 TESTING, TRAINING, AND DELIVERABLES

2.7.1 Upon completion of the installation, the Contractor shall perform a complete operational test of the new system for the COR. The test must demonstrate the proper function of all pumps (in lead, lag, and alternating sequences), control functions, and alarm conditions.

2.7.2 The Contractor shall provide a minimum of four (4) hours of training to USCG personnel on the operation, maintenance, and emergency procedures for the new lift station.

2.7.3 The Contractor must submit As-Built drawings, two (2) complete sets of Operation and Maintenance (O&M) manuals, and all product data sheets to the COR upon project completion.

3.0 CONTRACTOR PERSONNEL

3.1 QUALIFIED PERSONNEL

3.1.1 The Contractor must provide qualified and licensed personnel to perform all requirements and tasks specified in this task order issued under this contract. Contractor shall have a minimum of 10 years experience removing and installing systems of a similar nature and provide proof of similar projects with proposal.

3.2 ON SITE SUPERVISION

3.2.1 The Contractor shall always provide qualified supervision when work is being conducted by Contractor employees or Sub-Contractor employees.

3.3 EMPLOYEE IDENTIFICATION.

3.3.1 Contractor employees visiting Government facilities must sign in daily and wear an identification badge that, at a minimum, displays the Contractor name, the employee's photo, name, and badge expiration date. Visiting Contractor employees must comply with all Government escort rules and requirements. All Contractor employees must identify themselves as Contractors when their status is not readily apparent and always display all identification badges in plain view above the waist.

3.4 EMPLOYEE CONDUCT

3.4.1 Contractor employees and representatives must follow all applicable Government regulations, policies, and procedures at the worksite, including submitting to security checks.

3.5 REMOVING EMPLOYEES FOR MISCONDUCT OR SECURITY REASONS

3.5.1 The Government reserves the right to direct the Contractor to remove any Contractor employee from DHS facilities for misconduct or security reasons. Upon dismissal, the employee must return all identification required for worksite entry. Removal does not relieve the

Contractor of the responsibility to continue providing the services required under the contract. The Contracting Officer will provide the Contractor with a written explanation to support any request to remove an employee.

4.0 OTHER APPLICABLE CONDITIONS

4.1 SECURITY

4.1.1 Contractor personnel are not required to have security clearances at the time of award. However, the Government may require clearances in the future. Personnel who are eligible for a Secret Clearance are preferred.

4.2 PERIOD OF PERFORMANCE

4.2.1 The period of performance for this contract, including site cleanup, punch list, acceptance by the COR, and required deliverables must not exceed 120 calendar days from the issuance of the Notice to Proceed (NTP) by the Contracting Officer unless stated otherwise.

4.3 PLACE OF PERFORMANCE

4.3.1 The primary place of performance will be USCG Station Cape Charles, 1 Marina Road, Cape Charles, VA 23310.

4.4 HOURS OF OPERATION

4.4.1 Contractor employees shall perform all work during normal unit operational hours of 0800 to 1600, Monday through Friday, unless permission has been obtained from the COR.

4.4.2 The Contractor shall provide the US Coast Guard at least 48 hours advanced notice prior to working on weekends or Federal holidays. Rejection of any such request shall not impact the completion time of the contract.

4.5 PROGRESS MEETINGS AND INSPECTIONS

4.5.1 The Contractor must keep the COR informed of contract operations and plans as well as be available to meet with the COR upon request to present deliverables, discuss progress, exchange information, observe work, and resolve emergent technical problems and issues.

4.6 SUBMITTALS

4.6.1 The Contractor shall submit a work schedule, operation and maintenance manuals, samples, product datasheets, shop drawings, catalog data, and any other information which can be used to determine compliance of equipment and material with the specifications. These documents shall be submitted to the COR for review no later than 30 calendar days after the issuance of the Notice to Proceed.

5.0 GOVERNMENT FURNISHED EQUIPMENT (GFE)

5.0.1 Reference One to this document provides further technical information for the GFE provided.

6.0 CONTRACTOR FURNISHED PROPERTY

6.0.1 The Contractor must furnish all facilities, materials, equipment and services necessary to fulfill the requirements of this contract, except for the Government Furnished Resources that may be specified in Section 5.0.

7.0 GOVERNMENT ACCEPTANCE PERIOD

7.0.1 The COR will review deliverables prior to acceptance and provide the contractor with an e-mail that provides documented reasons for non-acceptance. If the deliverable is acceptable, the COR will send an e-mail to the Contractor notifying it that the deliverable has been accepted.

7.0.2 The COR will have the right to reject or require correction of any deficiencies found in the deliverables that are contrary to the information contained in the Contractor's accepted proposal. In the event of a rejected deliverable, the Contractor will be notified in writing by the COR of the specific reasons for rejection. The Contractor may have an opportunity to correct the rejected deliverable and return it per delivery instructions.

7.0.3 The COR will have 10 business days to review deliverables and make comments. The Contractor must have 10 business days to make corrections and redeliver.

7.0.4 All other review times and schedules for deliverables must be agreed upon by the parties based on the final approved Project Plan. The Contractor must be responsible for timely delivery to Government personnel in the agreed upon review chain, at each stage of the review. The Contractor must work with personnel reviewing the deliverables to assure that the established schedule is maintained.

REFERENCE ONE

SULZER

Submersible Grinder Pump Type ABS Piranha

Piranha PE | 1-1/4", 2 Pole, 1-Phase, 60 Hz, PE1

Submersible Motor Specifications, PE1 Frame

Motor Design			NEMA design B, squirrel cage induction
Motor Type			Fully enclosed submersible, IP68 protection rating
Motor Efficiency Standard and Rating			IEC 60034-30 [2]
Motor Efficiency Test Protocol			IEC 60034-2-1 [2]
Insulation Material			Class H, 180ºC (356ºF), copper windings
Motor Filling Medium			Air
Temperature Rise			Class A
Maximum Fluid Temperature			40ºC (104ºF) continuous, 50ºC (122ºF) intermittent
Motor Protection	**Thermal**	**STD**	Normally closed bimetallic switch in each phase, connected in series, 140ºC (284ºF) +/- 5ºC (41ºF) opening temperature
	Leakage	**STD**	Moisture detection probe in seal sensing chamber (for use with appropriate relay)
Sensing Chamber Filling Medium			Environmentally safe, non-toxic oil
Bearing Type	**Upper**		Single row, deep groove ball bearing, permanently lubricated
	Lower		Double row, angular contact ball bearing, permanently lubricated
Motor Starter Types			Use with Direct-On-Line starting (DOL) recommended
Maximum Starts per Hour			12, evenly spaced
Maximum Submergence			20 meters (65 feet)
Available Voltages			208, 230, 460, 600 (consult factory for other voltages)
Voltage Tolerance from Rated			+/-10%
Agency Approvals			Factory Mutual, CSA
Explosion Proof Rating			NEC 500 Class 1, Division 1, Group C & D, Class T3C max surface temp

The picture above may differ from the actual product.
For illustrative purposes only.

[1] Requires external start kit mounted in the control panel. See document DS-Z01-009 for single phase start kits.
[2] Single phase motors are not covered by the 1.0, 2008-10 edition of the IEC standard, however the PE series of motors are constructed and tested in accordance with the IEC 60034-30 standard.

Motor Ratings, PE1 Frame

Motor Model	Input Power (P1)	Rated Power Output (P2)	Nominal RPM	Rated Voltage	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	NEMA Service Factor	Motor Efficiency at % Load			Power Factor at % Load		
									100	75	50	100	75	50
PE 25/2W [1]	2.9 kW	2.5 kW 3.4 HP	3564	208 230	C/F 13.3	C/F 79	F	1.3	85.4	82.2	72.7	.957	.896	.818
PE 35/2W [1]	4.5 kW	4.0 kW 5.4 HP	3544	208 230	C/F 20.0	C/F 79	B	1.3	88.3	87.5	81.7	.983	.969	.940
PE 45/2W [1]	5.1 kW	4.5 kW 6.0 HP	3536	208 230	C/F 22.4	C/F 79	A	1.3	88.1	88.2	83.7	.992	.973	.953

SULZER

Submersible Grinder Pump Type ABS Piranha

Piranha PE | 1-1/4", 2 Pole, 1-Phase, 60 Hz, PE1

Cable Data, PE1 Frame

	Motor	Motor Voltage	Cable Qty	Cable Type	Cable Nominal Outside Diameter +/- .5mm (.02")	
					Power	Ground
Power Cable	PE 25/2W	208	C/F	C/F	C/F	C/F
		230	1	SOOW 12/7	18.8mm (0.74")	Integrated w/ Power
	PE 35/2W	208	C/F	C/F	C/F	C/F
		230	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
	PE 45/2W	208	C/F	C/F	C/F	C/F
		230	1	SOOW 10/7	20.7mm (0.82")	Integrated w/ Power
Control Cable	**Motor Monitoring Type [3]**		**Cable Qty**	**Cable Type**	**Cable Nominal Outside Diameter +/- .5mm (.02")**	
	Std monitoring		-	Integrated w/ Power	-	
Cable Length	Standard: 10m (32 feet)		Optional: 15m (49 feet), 20m (65 feet), 30m (98 feet); Consult Factory for longer lengths			

[3] See motor protection on page 1.

Pump Data

Discharge Size		DN32 oblong flanged, 1-1/4" female NPT w/ the use of discharge adapter kit									
Suction Size		N/A									
Volute Pressure Rating		10 bar (145 psi)									
Impeller Type		Semi-Open, Multi-vane, w/ Cutter Assembly & Seal Protection System									
Impeller	**Code**	PE25/2W	PE35/2W	PE45/2W							
	Diameter, mm (in.)	133 (5.2)	150 (5.9)	160 (6.3)							
Solids Passage Size, mm (in.)		N/A (N/A)	N/A (N/A)	N/A (N/A)							
Min. Recommended Flow, GPM [6]		20	20	20							

[6] Recommend minimum continuous flow. Discharge pipe size can affect minimum flow rate required for solids transport. Consult factory for applications below this flow rate.

Materials of Construction

		Standard	Optional
Power/Control Cable Jacket		Chlorinated Polyethylene (CPE)	
Lifting Hoop		Stainless Steel 1.4401 (AISI 316)	
Cable Connection Chamber		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Motor Housing		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Intermediate Housing		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Seal Plate		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Pump and Motor Shaft		Stainless Steel 1.4021 (AISI 420)	
Impeller		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Wear Parts	**Rotating Cutter**	Stainless Steel 1.4528 (AISI 440B+Co), 58-62 HRC	
	Stationary Cutter	Stainless Steel 1.4528 (AISI 440B+Co), 58-62 HRC	
	Bottom/Wear Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Volute		Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
External Hardware		Stainless Steel 1.4401 (AISI 316)	
O-Rings and Cable Glands		Nitrile (Buna-N)	
Mechanical Seals	**Lower**	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	
	Upper	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	
Coating/Protection		Two-part epoxy, blue, 120µm (4.7 mil) DFT	Two-part epoxy, blue, 400µm (15.7 mil)

General Data

	PE 25/2W	PE 35/2W	PE 45/2W			
Overall Height	604mm (23.8")	604mm (23.8")	604mm (23.8")			
Pump Weight	94 kg (207 lb)	94 kg (207 lb)	94 kg (207 lb)			