Goodwyn Mills Cawood
11 North Water Street
Suite 15250
Mobile, Alabama 36602
T 251.460.4006
F 251.460.4423

TRANSMITTAL COVER SHEET

DATE: **October 26, 2023**

PAGE: **1 of 25 (INCLUDING THIS PAGE)**

TO: **ALL CONTRACTORS**

FROM: **DENISE KING**

PROJECT: **ROBERTSDALE WASTEWATER TREATMENT PLAN UPGRADES**
USDA RURAL DEVELOPMENT
FOR CITY OF ROBERTSDALE
GMC PROJECT NO. CMOB210098(A)

RE: **ADDENDUM #2**

PLEASE COMPLETE BELOW AND RETURN IMMEDIATELY.

Ashley Morris
Email: Ashley.Morris@gmcnetwork.com

I, the undersigned, hereby acknowledge receipt of this Addendum.

_____ _____
Authorized Representative of Contractor Date

_____ _____ _____
Company Name Telephone Fax

_____
Contractor's License Number (if applicable)

ADDENDUM NUMBER 2

WASTEWATER TREATMENT PLANT UPGRADES

USDA RURAL DEVELOPMENT

FOR

THE CITY OF ROBERTSDALE

GMC PROJECT NO. CMOB210098A

1. Revisions to Project Manual

1.1 The following revisions are hereby added as Addendum No. 2 to the referenced Project Manual and Plans and shall be considered when preparing bids.

2. Revisions to Project Manual

2.1 Specification 43 23 40 – Horizontal Self-Priming Centrifugal Pumps has been revised and is included as an attachment to this addendum.

- Referencing Section 2.1.D, the design Total Dynamic Head for the pumps shall be 20 feet.

2.2 Specification 46 43 81 – Fiberglass Reinforced Plastic Density Current Baffles has been revised and is included as an attachment to this addendum.

- Referencing Section 2.1.A, EDGENG is included as an acceptable manufacturer for fiberglass reinforced density current baffles.

2.3 The bid form has been revised and is included as an attachment to this addendum.

3. Questions

3.1 **Question: The High-Performance Coatings Specification Section 09 96 00, para. 3.6.B IMMERSION OR VAPOR ZONE SERVICE is silent on concrete areas that are submerged in wastewater. Are there to be any coatings required for new or existing concrete surfaces exposed to wastewater?**
Answer: No high-performance coatings are required for concrete in this project.

4. Attachments

4.1 Specification 43 23 40 – Horizontal Self-Priming Centrifugal Pumps
4.2 Specification 46 43 81 – Fiberglass Reinforced Plastic Density Current Baffles
4.3 Revised Bid Form

5. Acknowledgement of Receipt

5.1 Receipt of Addendum No. 2 shall be acknowledged in two ways:

5.1.1 Note on (EJCDC C-410) page 3 of Bid Form of the Project Manual – Bidder acknowledges receipt of "Addendum No. 2" and date of "October 26, 2023".

AND

5.1.2 EMAIL GMC office immediately at ashley.morris@gmcnetwork.com with the signed transmittal which confirms the addendum has been received and is legible.

6. Conclusion

6.1 This is the end of Addendum No. 2, dated Thursday, October 26, 2023.

BID FORM FOR CONSTRUCTION CONTRACT – ADDENDUM NO. 2

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

City of Robertsdale

Attn: The Honorable Charles Murphy

P.O. Box 429

22647 Racine Street

Robertsdale, AL 36567

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting data; ~~**and**~~

~~**G. [List other documents and edit above as pertinent].**~~

G. If Bid amount exceeds $10,000, signed Compliance Statement (RD 400-6). Refer to specific equal opportunity requirements set forth in the Supplementary Conditions of the Construction Contract (EJCDC C-800);

H. If Bid amount exceeds $25,000, signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions (AD-1048);

I. If Bid amount exceeds $100,000, signed RD Instruction 1940-Q Exhibit A-1, Certification for Contracts, Grants, and Loans.

J. Accounting of Sales Tax Attachment to Proposal Form.

ARTICLE 3—BASIS OF BID—

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s), together with any Unit Prices indicated in Paragraph 3.02:

LUMP SUM BASE BID

The Bidder hereby proposes to accept as full payment for completion of the Project the amounts computed under the provisions of the Contract Documents and based on the following lump sum amount. The Bidder agrees that the lump sum price represents a true measure of the labor and material required to perform the work, including all allowances, overhead and profit for work called for. The Lump Sum (LS), including cash allowances, shall be shown in both figures and words. If a discrepancy exists between the amount stated in words and the amount stated in figures, the amount stated in words shall govern.

The Bidder acknowledges that the **Lump Sum amount includes the amounts for Allowances as listed below.**

THE BIDDER AGREES TO PERFORM ALL THE WORK DESCRIBED IN THE BASE BID OF THE CONTACT DOCUMENTS FOR THE FOLLOWING LUMP SUM PRICE OF

_____ DOLLARS

AND _____ CENTS

$_____

subject to the reductions or additions resulting from price items, all in accordance with the following Schedule of Payment Items.

ALLOWANCES

Allowances (Specification Section 01 21 00) may be used, as authorized and directed by the Engineer, to pay for costs of additional work resulting from the need for allowance items identified below. This work is not shown or specified in the drawings and not covered by another line item in the Bid. This work may be required in the event the Engineer or Owner establish the need for additional work deemed to be necessary for the completion of this contract. This cash allowance amount is to be included in the Lump Sum Base Bid, but is to be paid to the Contractor only if authorized as provided in this paragraph.

	DESCRIPTION	UNIT PRICE		TOTAL PRICE
1	Engineering Startup Allowance	LS	$	15,000
2	Allowance for Unforeseen Conditions	LS	$	200,000
			$	215,000

OWNER SELECTED EQUIPMENT/SUPPLIER

All Owner-Selected Equipment/Supplier items shall be bid according to the following:

The product(s) noted as "A" selection for each item of equipment listed in the following Owner-Selected Equipment/Supplier Schedule has been designated by the Owner for use in the Project. Contractor must bid base bid items. Where more than one product is noted as "A", Bidder must circle the item on which the bid is based. The Bidder may indicate substitute equipment/supplier by writing in a substitute for "B", and writing in the amount of deduction for the substitute equipment supplier.

The prior naming of substitute equipment/suppliers is based on a belief that the substitute should be able to furnish "equal" equipment/service as that specified, although it may not be the supplier's standard. Should the write-in substitute be disallowed by the Owner as "not equal" or "not desired", then the Bidders shall supply the circled "A" item. If no substitute is indicated, the Bidder must supply the circled "A" item. Should Bidder fail to circle one, or circle more than one, the Bid will be deemed by Owner to be based upon the first-listed equipment/supplier, and Bidder, if awarded the Contract, shall provide same.

The Bidder must supply a base bid for the Owner-Selected Equipment/Supplier items. The Bidder may supply a deductive cost from the base bid for one of the products noted for each item. This amount will be deducted from the base bid if the Owner in its sole discretion determines that the acceptance of the substitute product is in its own best interest. The Owner in its sole discretion may determine any substitute "not desired" and reject said substitute.

For comparable alternate named equipment "B", the furnished items shall fulfill the function and performance of the item specified and shall be of equal quality to base bid equipment "A"; any modifications required by the furnished alternate equipment to the structure, process, associated equipment, electrical or piping shall be include in the Alternate Bid price, and the completed installation of the item by the Contractor shall incur no additional cost to the Owner, including engineering cost to accommodate alternate supplier.

Additional substitutes will not be considered after receipt of the Bidder's Proposal.

Design of this project is based upon the manufacturer's equipment or product noted as "A" item in the schedule. Should a Bidder propose furnishing substitute equipment, the Bidder shall comply with the provisions in Specification Section 01 25 00 – Substitution of Major Equipment Items.

Indicate the Base Bid manufacturer under "Manufacturer" below by circling the manufacturer used for the Lump Sum Base Bid Total.

Item	Specification Section	Description	Manufacturer/Supplier		Amount of Alternate ($+/-)
1	43 23 40	Horizonal Self-Priming Centrifugal Pumps	A	Gorman Rupp	
			A	Vaughan	
			B		$
2	46 21 14	Static Screens	A	Parkson Corporation	
			B		$
3	46 21 14.1	Shaftless Screw Conveyor	A	Parkson Corporation	
			B		$
4	46 23 23	Vortex Grit Removal Equipment	A	Smith & Loveless	
			B		$
5	46 43 11	Aeration Basin Equipment	A	Parkson Corporation	
6	46 43 12	Aeration Basin Liners	A	ATARFIL USA	
			B		$
7	46 43 21	Circular Clarifiers	A	ClearStream	
			A	Ovivo	
			A	WesTech	
			B		$
8	46 43 81	FRP Density Current Baffle	A	Enduro	
			A	NEFCO	
			A	WesTech	
			A	EDGENG	
			B		$

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 ~~Bidder agrees that the Work will be substantially complete on or before **[Bidder inserts date]**, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **[Bidder inserts date]**.~~

Deleted

4.03 ~~Bidder agrees that the Work will be substantially complete within **[Bidder inserts number]** calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **[Bidder inserts number]** calendar days after the date when the Contract Times commence to run.~~

Deleted

4.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.

2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work**, including all American Iron and Steel requirements.**

4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
    a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
    b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
    c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
    d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

SIGNATURE PAGE TO FOLLOW

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____

SECTION 43 23 40 – HORIZONTAL SELF-PRIMING CENTRIFUGAL PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Horizontal self-priming centrifugal pumps.

B. Related Requirements:

1. Section 09 96 00 – High Performance Coatings
2. Division 26 – Electrical
3. Division 40 – Process Interconnections
4. Section 43 05 20 – Common Work Results for Liquid Handling Equipment

1.2 REFERENCE STANDARDS

A. American Bearing Manufacturers Association:

1. ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
2. ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. ASME International:

1. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings.

C. ASTM International:

1. ASTM A29 - Standard Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought.
2. ASTM A536 - Standard Specification for Ductile Iron Castings.

1.3 COORDINATION

A. Section 01 31 00 – Project Management and Coordination: Requirements for scheduling.

B. Coordinate the installation of the pump with field conditions and verify layout with manufacturer’s shop drawings.

C. Coordinate installation and startup of Work of this Section with plant operations.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information for materials of construction and fabrication.

C. Shop Drawings:

1. Submit detailed dimensions for materials and equipment, including wiring and control diagrams, performance charts and curves, installation and anchoring requirements, fasteners, and other details.
2. Include manufacturer's specified displacement tolerances for vibration at operational speed specified for pumps.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures, anchoring, and layout.

F. Source Quality-Control Submittals: Indicate results of factory non-witnessed performance tests and inspections.

G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

H. Manufacturer Reports: Certify that equipment has been installed according to manufacturer instructions.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations and final orientation of equipment and accessories.

1.6 QUALITY ASSURANCE

A. Materials, physical and chemical characteristics of the components and tests or test requirements shall conform to current AWWA, ANSI, and ASTM standards.

B. All electrical equipment provided shall be manufactured in complete accordance with the requirements of the National Electric Code.

C. The naming of a manufacturer in this Specification Section is not an indication that the manufacturer’s standard equipment will be acceptable in lieu of the specified component features. Naming is only an indication that the manufacturer may have the capability of Engineering and supplying the pumps as specified herein. The manufacturer shall clearly note on his bid proposal and submittal data any and all deviations to this specification.

D. It is the intent of these specifications to accurately describe equipment that is a regular production item of the specified manufacturer, and that has a proven record of performance in identical or similar applications in other treatment facilities. The pump manufacturer shall have a minimum of twenty (20) years of documented experience in the design and production of wastewater pumps of all types, and not less than five (5) years of experience in the production of the exact equipment as specified herein. The pump manufacturer shall have a minimum of twenty (20) successful installations of pumps for similar applications.

1.7 TOOLS AND SPARE PARTS

A. The pump manufacturer shall provide one (1) set of recommended spare parts.

B. The pump manufacturer shall provide a list of recommended spare parts.

C. The manufacturer shall furnish any special tools necessary to disassemble, service, repair, and adjust the equipment.

1.8 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. All equipment, apparatus, and parts furnished shall be warranted for one (1) year from startup or eighteen (18) months from shipment, excepting only those items that are normally consumed in service, such as oils, grease, packing, gaskets, O rings, etc. The pump manufacturer shall be solely responsible for warranty of the pump equipment and all components.

1.9 SHIPPING, HANDLING AND STORAGE

A. Follow manufacturer's recommendations for handling and storage of equipment.

B. Contractor shall inspect all delivered equipment for any damage and shall note any damage. Contactor shall receive recommendations from Manufacturer for correcting damaged equipment.

C. Any damaged equipment shall be repaired or replaced prior to installation.

PART 2 - PRODUCTS

2.1 HORIZONTAL NON-CLOG CENTRIFUGAL PUMPS

A. Manufacturers:

1. Gorman Rupp (Model T6)
2. Vaughan
3. Approved Equal

B. Pump Design:

1. Pumps shall be horizontal, self-priming centrifugal type, designed specifically for handling the anticipated service liquid. The pumps shall also be capable of handling heavy concentrations of rags, debris, grit, plastic, hair, and other foreign material that can be expected to be present in a typical RAS pumping application.
2. The rotating assembly, which includes impeller, shaft, mechanical shaft seal, lip seals, bearings, sealplate and bearing housing, must be removable as a single unit without disturbing the pump casing or piping.

C. Schedule:

1. RAS Pumps:

    a. P5010
    b. P5020
    c. P5030

D. Performance and Design Criteria:

1. Capacity: 700 gpm
2. Total Dynamic Head: 20 ft
3. Horsepower (max): 10 hp
4. Service liquid: Return Activated Sludge
5. Minimum Suction Diameter: 6 inch
6. Minimum Discharge Diameter: 6 inch

E. Casing:

1. Material: ASTM A48, Cast iron – Class 30
2. End Connections:

    a. Flanged.
    b. Comply with ASME B16.1, Class 125

3. Drain plug: 1-1/4” NPT

F. Coverplate

1. Material: Cast iron – Class 30
2. Coverplate shall incorporate the following maintenance features:

    a. Retained by hand nuts for complete access to pump interior. Coverplate removal must provide ample clearance for removal of stoppages, and allow service to the impeller, seal, wearplate or check valve without removing suction or discharge piping.
    b. A replaceable wearplate secured to the coverplate by weld studs and nuts shall be hardened alloy steel.
    c. In consideration for safety, a pressure relief valve shall be supplied in the coverplate. Relief valve shall open at 75-200 PSI.
    d. Two O-rings of Buna-N material shall seal coverplate to pump casing.
    e. Pusher bolt capability to assist in removal of coverplate. Pusher bolt threaded holes shall be sized to accept same retaining capscrews as used in rotating assembly.
    f. Easy-grip handle shall be mounted to face of coverplate.

G. Impeller:

1. Material: Austempered ductile iron or cast alloy steel
2. Design to pass sand, grit, and solids normally encountered in a wastewater treatment plant without clogging and pass a maximum solid size of 3 inches.
3. Type: two-vane, semi-open, non-clog, with integral pump out vanes on the back shroud.

4. Statically and dynamically balanced after assembly.
5. Threaded to shaft.

H. Shaft:

1. Material: AISI 4140, steel
2. Key couplings to shaft.

I. Wearing Rings:

1. Replaceable.
2. Stainless steel in accordance with AISI 410 with a minimum hardness of 300 BHN

J. Bearings:

1. Type: Anti-friction ball bearings
2. Minimum B10 Life: 100,000 hours at continuous maximum load and speed, according to AFBMA 9.
3. Bearings shall be oil lubricated from a dedicated reservoir.

K. Seals:

1. Mechanical seal.
2. Lubrication: dedicated oil reservoir.

L. Sealplate and Bearing Housing:

1. Sealplate and bearing housing shall be cast iron Class 30. Separate oil filled cavities, vented to atmosphere, shall be provided for shaft seal and bearings. Cavities shall be cooled by the liquid pumped. Three lip seals shall prevent leakage of oil.
2. The bearing cavity shall have an oil level sight gauge and fill plug check valve. The clear sight gauge shall provide easy monitoring of the bearing cavity oil level and condition of oil without removal of the fill plug check valve. The check valve shall vent the cavity but prevent introduction of moist air to the bearings.
3. The seal cavity shall have an oil level sight gauge and fill/vent plug. The clear sight gauge shall provide easy monitoring of the seal cavity oil level and condition of oil without removal of the fill/vent plug.
4. Double lip seal shall provide an atmospheric path providing positive protection of bearings, with capability for external drainage monitoring.

M. Suction check valve:

1. Suction check valve shall be molded Neoprene with integral steel and nylon reinforcement. A blow-out center shall protect pump casing from hydraulic shock or excessive pressure. Removal or installation of the check valve must be accomplished through the coverplate opening, without disturbing the suction piping. Sole function of check valve shall be to save energy by eliminating need to reprime after each pumping cycle. Pumps requiring a suction check valve to assist reprime will not be acceptable.

N. Spool flanges shall be one-piece cast iron, class 30 fitted to suction and/or discharge ports. Each spool shall have one 1-1/4" NPT and one 1/4" NPT tapped hole with pipe plugs for mounting gauges or other equipment.

O. Volute Casing Heater:

1. Each pump shall be provided with a thermostat mounted to the exterior of the volute casing, and a 750-watt 115-volt electric heater inserted into the interior of the volute by means of a dedicated port. The heater shall be energized at 43+/-3 ºF to provide heat to the casing and eliminate the possibility of freezing. Heater probes that must be installed through a pump drain port shall not be acceptable.

P. Pump Base

1. Pump shall be mounted on a fabricated steel base consisting of pump, motor, V-belt drive unit, and belt guard.
2. Bases shall be provided with suitably sized openings to allow the Contractor to firmly anchor and grout each pump base. All necessary grout dams shall be constructed as a part of the steel support base, and anchor bolt holes shall be provided as an integral part of the base design.

Q. Reprime Performance

1. Consideration shall be given to the sanitary sewage service anticipated, in which debris is expected to lodge between the suction check valve and its seat, resulting in the loss of the pump suction leg, and siphoning of liquid from the pump casing to the approximate center line of the impeller. Such occurrence shall be considered normal, and the pump must be capable of automatic, unattended operation with an air release line installed.
2. During unattended operation, the pump shall retain adequate liquid in the casing to ensure automatic re-priming while operating at its rated speed in a completely open system. The need for a suction check valve or external priming device shall not be required.
3. Pump must reprime >7 vertical ft. at the specified speed and impeller diameter. Reprime lift is defined as the static height of the pump suction above the liquid, while operating with only one-half of the liquid remaining in the pump casing. The pump must reprime and deliver full capacity within five minutes after the pump is energized in the reprime condition.

R. Fabrication:

1. Connect pump shaft to drive motor with universal flexible coupling to compensate for minor misalignment and to permit removal of pump-rotating assembly and motor without removing piping.
2. Shaft Guard: Enclose shaft and universal joint with enclosed-type metal shaft guard complying with OSHA standards.
3. Pump and Drive Mating Surfaces: Machine finished.

S. Operation:

1. Electrical Characteristics: As specified in Division 26 – Electrical

    a. 460 V / 3ph / 60 Hz

2. Motors: As specified in Section 26 05 93 - Common Motor Requirements for Process Equipment.

    a. Motors shall be provided with three (3) winding thermostats (one per phase) in the windings of each phase to afford protection of the motor against excessive operating temperature. Thermostats shall be suitable for use with 120VAC control power, with leads routed to the conduit box for connection to monitoring circuitry separate from the power wiring.
    b. Motors shall be provided with 120 VAC silicon space heaters in the windings of each motor to prevent the formation of condensation. The space heaters shall be sized by the motor manufacturer for the frame size provided, and shall be installed prior to shipment. Location of the space heaters shall not interfere with operation of the winding thermostats specified above. Leads from the space heaters shall be routed to the conduit box that is mounted on the side of the motor frame. Wiring of the space heaters to 120VAC power shall be provide by the Contractor, and shall be interlocked with auxiliary contacts from the motor starter sot that they are energized only when the respective pump is off line.

3. Controls: As indicated on the drawings and in Section 40 70 23 – Process Control Narratives.

T. Miscellaneous

1. Data Plates: Each pump shall be equipped with a data plate securely fastened to the pump that contains the manufacturer's name, pump size and type, serial number, pump speed, impeller data, capacity and head rating, and any other pertinent information.
2. Testing: The pump shall be factory non-witness performance tested in accordance with ANSI/HI 14.6 Acceptance Grade 2B. Test shall include, but not be limited to, checking the unit at its rated speed, capacity, head, efficiency, and brake horsepower at such conditions of head and capacity so as to properly establish the actual performance curve. Certified copies of the test reports shall be submitted for review prior to shipment. The Standards of the Hydraulic Institute shall govern the procedures and calculations for the prescribed testing.
3. Painting: All equipment above pump pad, including motor frame exterior, discharge head exterior and sole plate, shall be painted as specified in Section 09 96 00.
4. Fasteners: All pump fasteners shall be ASTM A276-00a Type 316 stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Contractor shall off-load equipment at installation site using equipment of sufficient size and design to prevent injury or damage. Immediately after off-loading, contractor shall inspect complete pump and appurtenances for shipping damage or missing parts. Any damage or discrepancy shall be noted in written claim with shipper prior to accepting delivery. Validate all pump serial numbers and parts lists with shipping documentation. Notify the manufacturer’s representative of any unacceptable conditions noted with shipper.

3.2 INSTALLATION

A. Install pumps where indicated on Drawings and according to manufacturer instructions.

B. Install, level, align, and lubricate pump(s) as indicated on project drawings. Installation must be in accordance with written instructions supplied by the manufacturer at time of delivery.

C. Suction pipe connections shall vacuum tight. Fasteners at all pipe connections must be tight. Install pipe with supports to prevent strain and vibration on pump piping. Install and secure all service lines (level control, air release valve or pump drain lines) as required in wet well.

D. Check motor and control data plates for compatibility to site voltage. Install and test the station ground prior to connecting line voltage to control panel.

E. Prior to applying electrical power to any motors or control equipment, check all wiring for tight connection. Verify that protective devices (fuses and circuit breakers) conform to project design documents. Manually operate circuit breakers and switches to ensure operation without binding. Open all circuit breakers and disconnects before connecting utility power. Verify line voltage, phase sequence and ground before actual start-up.

F. After all anchor bolts, piping and control connections are installed, completely fill the grout dam in the pump base with non-shrink grout.

3.3 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting and testing.

B. Section 01 70 00 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

C. Prior to acceptance by owner, an operational test of all pumps, drives, and control systems shall be conducted to determine if the installed equipment meets the purpose and intent of the specifications. Tests shall demonstrate that all equipment is electrically, mechanically, structurally, and otherwise acceptable; it is safe and in optimum working condition; and conforms to the specified operating characteristics.

D. After construction debris and foreign material has been removed from the wet well, contractor shall supply clear water volume adequate to operate station through several pumping cycles. Observe and record operation of pumps, suction and discharge gage readings, ampere draw, pump controls, and liquid level controls. Check calibration of all instrumentation equipment, test manual control devices, and automatic control systems. Be alert to any undue noise, vibration or other operational problems.

3.4 MANUFACTURER SERVICES

A. Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than one (1) 8-hour day(s) on-Site for installation, inspection, field testing, and instructing Owner's personnel in maintenance of equipment.

END OF SECTION 43 23 31

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SECTION 46 43 81 – FIBERGLASS REINFORCED PLASTIC DENSITY CURRENT BAFFLES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes fiberglass reinforced plastic (FRP) density current baffles for each of two (2) clarifiers.

1.2 QUALITY ASSURANCE

A. Manufacturer shall be a reputable qualified manufacturer of FRP products.

B. The manufacturer shall provide documentation of five (20) installations of comparable size and that have been in operation for at least three (5) years.

1.3 SUBMITTALS

A. The following shall be submitted in accordance with the General and Special Provisions.

1. Shop Drawings

    a. Dimensions
    b. Job Specific Layout
    c. Sectional Assembly
    d. Location and identification markings
    e. Accessories, attachments, transition pieces
    f. Connection Details

2. Manufacturer’s catalog data showing:

    a. Dimensions, spacing, and construction details
    b. Materials of construction
    c. Description

3. Certificates

    a. Submit Manufacturer’s certification that all materials furnished are in compliance with the applicable requirements of this specification

4. Manufacturer’s Instructions

    a. Submit complete information and instructions relating to storage, handling, installation, and inspection of all equipment related to this section.

1.4 STORAGE AND TRANSPORTATION

A. All FRP components shall be shop fabricated and assembled as much as possible

B. The parts and assemblies that are shipped unassembled shall be packaged and tagged in a manner that will protect the equipment from damage and facilitate the final assembly in the field.

C. All FRP materials shall be stored until installation in a manner that prevents cracking, chipping, or damage to the materials.

1.5 WARRANTY

A. Manufacturer shall warrant the Density Current Baffle to be free of defects in materials and workmanship for a period of five (5) years after the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer

1. Enduro
2. NEFCO
3. Warminster Fiberglass
4. EDGENG
5. Approved Equal

2.2 Design

A. The Stamford Density Current Baffle shall consist of a series of baffle panels that are attached to the wall of the clarifier to form an inclined, shelf-like surface around the entire inner periphery of the tank. Each panel shall be molded of corrosion-resistant, UV-treated fiberglass. The panel shall be a maximum of 8 feet in length and shall be curved to follow the curvature of the clarifier tank. The width, inclination angle and mounting location of the baffle shall be determined based upon the clarifier configuration in order to provide optimum baffle performance. The panels shall be designed such that adjacent panels fit together without overlapping or cutting, and the completed baffle when installed, has a well-engineered and professional appearance.

B. The inclination angle of the baffle shall be 45 degrees as measured from the horizontal and the horizontal projection of the baffle shall be defined by the following equation:

C. Horizontal Projection (Inches) = 24 inches + 0.4in/ft x (tank diameter (ft) - 30)

D. Suppliers offering alternate configurations must provide CFD modeling results showing that the proposed alternate equals the performance of the specified configuration.

E. Provision shall be made to attach the panels to the clarifier wall and support them at the proper angle using a triangular panel bracket. The panel and bracket shall be molded as an integral part of each panel, forming a baffle module, or separate panels and brackets may be supplied. If the panel and bracket are molded as an integral unit with adequate stiffeners, only one bracket is required per panel. A specially formed "free-end" bracket shall be provided to support the free end of the last panel where the run of panels is interrupted by an obstruction. Panels may be cut as required to fit around obstructions.

F. If separate panels and brackets are supplied, the panels shall be molded of fiberglass and shall meet the specifications of this section. The brackets shall be fabricated of 3" x 3" x 1/4" stainless steel or FRP angle and shall be triangular in shape, with the corners welded. Brackets shall be installed at a maximum spacing of four (4) feet. The panels shall be fastened to the brackets with stainless steel nuts, bolts and lock washers every 8 inches.

G. A method of interconnecting adjacent panels shall be provided such that the entire assembly forms a rigid structure capable of supporting its own weight plus snow and wind loads in the event the tank is out of service. The baffle shall also be designed to withstand a buoyant force load equal to the weight of the water displace from the volume beneath the baffle. The angled working surface of each baffle shall be sufficient in pitch and width to divert the flow and to create a self-cleaning action of the baffle itself.

H. Provision shall also be made to vent gases that may form beneath the baffle through 3" diameter half-round openings molded into the panel at its highest point. The vents should aim radially towards the center of the tank, such that any bubbling and/or by-passing current is directed away from the weir, preventing short-circuiting. Specially in cases where the panels are to be launder-mounted, with the vents sitting directly below the weir and scum baffle.

2.3 MATERIALS

A. Each baffle panel shall be molded of fiberglass-reinforced plastic. The resins and fiberglass reinforcing material shall be consistent with the environmental conditions and structural requirements.

B. The resin shall be an isophthalic polyester resin with corrosion-resistant properties, Corezyn COR75-AQ-010 or equivalent, suitable for use in submerged waste treatment applications. The resin shall not contain fillers except as required for viscosity control. For viscosity control, a thixotropic agent up to 5% by weight may be added to the resin. The resin shall be treated to provide UV suppression.

C. Glass reinforcement shall consist of chemically bonded surfacing mat and chopped strand roving. Surfacing mat shall be Type C veil. The glass reinforcement shall be 357-211 PLN CTC chopped strand roving or equivalent. The glass content of the finished laminate shall not be less than 30% by weight. The nominal thickness of each baffle panel shall be 1/4" (+/-) 1/16-inch-thick with resin rich surfaces and edges to prevent migration of moisture and fiber "blooming." The baffle shall be black in color.

D. The upper surface of each panel shall be mold smooth and no glass fibers shall be exposed. Laminations shall be dense and free of voids, dry spots, cracks or crazes. The upper surface of the baffle shall be reinforced with one layer of surfacing veil followed by 2 ounces or more of

chopped strand roving. In addition, the vertical mounting flange (return flange on launder mount applications) shall be reinforced with one layer of 24 oz woven roving.

E. No other glass product is permitted between these layers. All factory-trimmed edges shall be "hot coated" with resin to prevent wicking.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The installation contractor shall field verify existing dimensions and install the baffle in accordance with the contract drawings, approved shop drawings and manufacturer's recommendations. Mounting holes shall be factory drilled. Field cutting of baffle panels will be allowed to complete the structure and accommodate in-tank obstructions. All field cut or drilled edges shall be coated per the manufacturer's recommendations to prevent fiber blooming or fraying.

B. All fasteners required for installation shall be supplied by the baffle manufacturer. The baffle panels shall be attached to the wall using 3/8" x 3-3/4" concrete expansion anchors with oversized 1/8" x 2-1/4" stainless steel washers, and hex nuts, Adjacent baffle panels are fastened together using 1/4" bolts, 2 flat washers, lock washer, and hex nut. All of the installation fasteners shall be 316 stainless steel.

C. The density current baffle shall extend completely around the tank and shall be level, rigid and free of sway that could work anchors loose or cause undue wear.

END OF SECTION 46 43 81