Part 1: PROJECT DESCRIPTION

1.1 GENERAL INFORMATION

A. The work shall take place at Taylor Creek Wastewater Treatment Plant, 6975 East Miami River Road, Cleves, OH, 45002. Drawings and detailed specifications for the work are enclosed with this packet.

Summary of Work
- Remove two (2) existing telescopic valves
- Furnish and install two new (2) 6-inch swinging arm style floating decanters with in-basin supports.
- Furnish and install two new (2) 6-inch flanged plug valves with 14-foot(approximate) extensions, floor stands, wall brackets, guides, and open-closed electric actuators.
- Design, furnish and install circuit breaker, control panel “FD”, conduits, (2) level transmitters, and associated mounting equipment per Power Plan drawing, Oneline Drawing, and Power and Control Drawing. Include installation of specified equipment.

B. If further information is required at any time, bidders may contact one of the MSD Wastewater Treatment (WWT) Plant Engineers listed below via email:

- Beth Hinzman (Beth.Hinzman@cincinnati-oh.gov)
- Andrew Sampson (Andrew.Sampson@cincinnati-oh.gov)

1.2 SUBMITTALS

A proposal shall include cost, a complete list of materials to be used, subcontractors (if any), and a project schedule. Submittal shall indicate if a simultaneous shutdown of both tanks will be required (see section 3.1). Proposal shall be submitted in a sealed envelope.

1.3 NOTICE TO PROCEED

After bid opening, a notice to proceed will be issued in writing by the WWT Plant Engineer named in paragraph 1.2 C. above. Site safety plan and submittal list shall be provided at kick off meeting, and submittals must be approved prior to implementation.

1.4 SAFETY & JOB CONDITIONS
A. The contractor will NOT be permitted to use any of the various treatment plant locker rooms or washroom facilities unless approved by Treatment Plant Supervisor. The contractor should consider bringing temporary restroom and washroom facilities to the site for the duration of the project.

B. The contractor may use the plant’s potable water for construction purposes only. The contractor may use the plant 120-volt electric service for operation of power tools.

C. The contractor must submit a site-specific safety plan for review by the MSD Safety Section at kick off meeting.

D. The contractor must abide by all appropriate safety regulations as presented in OSHA 29 CFR 1910, and the State of Ohio Department of Transportation construction and Material Specifications. Hard hats and safety shoes shall be required for all workers while working on the job site.

1.5 QUALIFICATIONS

Contractor shall be qualified to do the work listed in this contract, and must have a record of completing similar jobs with an equal or greater level of scope and complexity. References of similar jobs should be submitted with proposal. Qualifications may be verified by contacting the references listed and by other means available.

1.6 WARRANTY

All work, workmanship, and materials shall be warranteed for a period of (1) one years from the date of completion. Contractor agrees to repair, replace, or remedy any defective equipment or workmanship at contractor’s expense if notified of defect within warranty period. Contractor’s warranty is in addition to any manufacturers’ warranty and shall not supersede such warranty. Contractor’s warranty shall be issued to WWTP Plant Engineer in writing prior to completion of job and in order to receive payment.

1.7 MANUALS

O&M Manuals for the floating decanters, plug valves, actuators, and sensors shall be provided to the WWTP Plant Engineer named in paragraph 1.2 C. above at completion of job, and prior to final payment.

Part 2: PRODUCTS

2.1 FLOATING DECANTERS

Decanters should be Siemens 6-inch Model FLD6-600, or PremierTech Aqua SwingCanter (6”), or equal as approved before bid submission by WWTP Plant
Engineer named in paragraph 1.2 C. Floating decanters must be able to operate in the depth range indicated on the drawings.

2.2 VALVES

Valves should be DeZurik 6-inch flanged plug valves model PEC, or equal as approved before bid submission by MSD WWT Engineer.

2.3 VALVE ACTUATORS

Valve actuators should be Auma open-closed electric actuators model SA/GS, or equal approved before bid submission by WWT Plant Engineer. Valve actuator shall not be mounted to the handrail.

2.4 CONCRETE PIPE SUPPORTS

All concrete shall be Class C according to ODOT Item 499.02. Supports shall be connected to the existing tank using #4 rebar dowels. Edges shall be chamfered 1" x 45 degrees.

2.5 PIPING

Piping shall be ductile iron pipe (DIP) with standard DIP fittings and hardware.

2.6 FASTENERS

All fasteners should be 316 SS.

2.7 ELECTRICAL

A. Building and Wire Cable

1. Approved Manufacturers:
   a. Okonite Company.
   b. Rome Cable Corporation.
   c. BICC (General Cable Technologies Corp.)
2. Description: Single conductor insulated wire.
3. Conductor: Copper, Stranded
5. Insulation: ICEA S-95-658 (NEMA WC 70); XHHW, 600 volt, 90 degrees C wet or dry insulation.

B. Instrumentation Cable:

1. Manufacturer: Belden or as approved before bid submission by WWT Plant Engineer.
2. Description: Shielded, twisted pair 16 AWG.
3. Conductor: Tinned, stranded copper.
4. Shielding: 100 percent foil with 20 AWG tinned, stranded copper drain wire.
5. Insulation Voltage Rating: 600 volts.
6. Insulation: Type PVC.

C. Conduit: Rigid Aluminum Conduit: Conduit shall conform to UL514, UL6, and ANSI C.80.1

D. Couplings, Connectors, and Fittings:
   1. Threaded.
   2. Manufactured with same materials and process as corresponding conduit, unless otherwise specified.

E. Fasteners for Rigid Aluminum Conduit: Stainless steel fasteners with Type 316 stainless steel bolts, nuts, and hardware.

F. Rigid Aluminum Conduit Expansion Fittings for Exposed Locations:
   1. Manufacturers: One of the following or equal:
      a. OZ/Gedney, Type EX with copper bonding jumper.
      b. Appleton, Type XJ with copper bonding jumper.

G. Rigid Metal Conduit Expansion Fittings at Structural Expansion Joints:
   1. Manufacturers: One of the following or equal:
      a. OZ/Gedney, Type DX.
      b. Crouse-Hinds, Type D.

H. Conduit Seals:
   1. Manufacturers: One of the following or equal:
      a. Killark.
      b. Crouse-Hinds.

I. Conduit Mounting Strut:
   1. Type 316 stainless steel for mounting of rigid aluminum conduit.

J. Conduit Thruwall Seals:
   1. Manufacturers: One of the following or equal:
      a. O-Z/Gedney, Type "WSK."
Part 3: EXECUTION

3.1 TANK SHUTDOWNS: This job takes place in a critical process area, i.e., the two waste sludge holding tanks. The plant operations staff must be able to fill, decant, and pump out at least one of the two tanks at all times. If both tanks do need to be taken off line to make piping connections, a shutdown cannot exceed 24 hours. In the case of a required shutdown, the plant must be given a 7 day notice by the contractor, and the shutdown-specific work plan must be approved by the WWT Plant Engineer named in paragraph 1.2 C. above, in advance of giving notice. If shutdown exceeds 24 hours, the contractor will be responsible for bypass pumping and hauling of all un-thickened waste sludge to the Mill Creek WWTP at 1600 Gest Street Cincinnati, Ohio 45204 for the duration of the shutdown period exceeding 24 hours. Note that the plant may require the 24 hour shutdown period to commence on a weekend. The scheduling of date and time of shutdown will be at the discretion of the Treatment Plant Supervisor.

3.2 DEMOLITION: Remove two (2) existing telescopic valves as shown on bid drawing. Remove existing DIP drain piping as necessary.

3.3 FLOATING DECANTERS: Add new DIP piping with necessary supports and install two (2) new 6" floating decanters and supports in the locations shown on the drawings. Installation of floating decanters must be installed in a manner approved by the manufacturer.

3.4 PLUG VALVES: Install two (2) 6-inch flanged plug valves in locations shown on drawing.

3.5 ACTUATORS: Install two (2) open-closed actuators with 14-foot extensions, floor stands, wall brackets, and guides in locations shown on drawing.

3.6 ELECTRICAL INSTALLATION:

A. Install all electrical conduit, pull boxes, devices, and wiring in accordance with NEC "Standard of Installation" and per manufacturer recommendations.

B. Contractor to supply and install circuit breaker in Panelboard “GL” for floating decanter power and control.

C. Contractor to supply and install control panel “FD” as shown on Drawings: NEMA 4x, UL 508A, Aluminum enclosure with inner door. Breakers shall be accessible through inner door. Include future SCADA terminals and wiring. Provide an additional 20% spare space on subpanel for future use. Supply and install two (2) 4-20mA level displays, Precision Digital model PD6000-6R5 with 2 configurable relay contacts, 4-20mA input and output, or approved equal. Level displays shall be mounted on outer door.

D. All panel and conduit wiring shall be labeled at both ends. AC Power wiring shall be black, AC control wiring shall be red for hot and white for neutral, DC wiring shall be blue (blue/white for common). Do not run signal wiring within electromagnetic noise range of power and control wiring. Where it cannot be avoided, run instrumentation wire perpendicular to power and control wire.
E. Supply and install two (2) level transmitters: Ohmart/Vega, explosion proof, loop powered, 3" flange mount with 6" cone, model PS66.UGHA12HDNAX, or approved equal. Mount two transmitters, one over each tank, with at least 1 foot clearance from the tank wall, as shown on Drawings. Brackets and hardware shall be stainless steel.

F. Valve actuators shall be explosion proof, Class I Division I, 208V – 3 phase, 60Hz. Provide local disconnect switch accessible to operators.

G. Provide conduit and wiring for power and controls as shown on drawings. Do not attach conduit, panels, or devices to handrails around tanks.

H. Supply and install all required conduit:
   1. Install separate conduit for 208VAC power, 120VAC control, and 4-20mA signal wire.
   2. Ground and bond conduit;
   3. Use seal-off fittings at transition to non-classified areas. Use 3M EMB sealant, or equivalent gel-type sealant for all transitions.
   4. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
   5. Do not install steel conduit in contact with aluminum where exposed to moisture.
   6. Where necessary to cut holes through existing walls, for raceways, make necessary repairs to building structures. Match existing construction.
   7. Cut conduit square using saw or pipe cutter; de-burr cut ends.
   8. Field Cut Threads: Use conduit dies. Clean of all cuttings and oil; coat with a cold galvanizing compound.
   10. Do not allow moisture traps. Provide junction box with drain fitting at low points in conduit system.
   11. Provide suitable pull string in each empty conduit except sleeves and nipples.
   12. Provide suitable expansion coupling every 50 feet for straight runs of non-metallic rigid conduit exceeding 50 feet in length.
   13. When running a conduit through any precast concrete structure seal both ends and gaps with rubber link seal with stainless steel fasteners.
   14. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
   15. Route conduits around areas indicated for gratings, future openings, foundations, and other obstructions to avoid tripping hazards and future conflicts.
   16. Concealed Conduit: Route point-to-point.
   17. Use factory elbows for 90 degree bends in metal conduit larger than 2 inches. No bend shall be greater than 90 degrees. Use conduit bodies to make sharp changes in direction.
   18. Arrange supports to prevent misalignment during wiring installation.
   19. Support conduit using stainless steel, coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
   20. Fasten conduit supports to building structure and surfaces.
21. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
22. Arrange conduit to maintain headroom and present neat appearance.
23. Do not support conduit on handrails.
24. Terminate conduit with insulated bushings.
25. Bring conduit to shoulder of fittings; fasten securely.
26. Use insulated grounding bushings with bonding jumpers for conduit terminations containing conductors #8 AWG or larger or to boxes with concentric or eccentric knockouts.
27. Use conduit hubs to terminate conduit to sheet metal boxes in damp and wet locations.
28. Do not fasten supports to pipes, ducts, handrails, mechanical equipment, and existing conduit. Do not use spring steel clips and clamps. Do not use powder-actuated anchors.
29. Fabricate supports from channel framing. Use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
30. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
31. Touch-up field cut ends of galvanized steel supports with galvanizing repair paint.

J. PULL BOXES

1. Install boxes in accordance with NEC "Standard of Installation."
2. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
3. Install boxes so that box covers are accessible at all times.

Part 4: PAYMENT

Payment shall be made in one lump sum at the completion of the job. Invoices shall be sent to WWT Plant Engineer named in paragraph 1.2 C. above. All timesheets, material, and service invoices shall be attached to invoice.