DOCUMENT 00910

ADDENDUM NUMBER 1

DATE: November 21, 2024

PROJECT: Water Reclamation Facility Improvements

PROJECT NUMBER: R954719170
CWSRF Project No. CS011086-01

OWNER: City of Springville

ENGINEER: CDG, Inc.
1962 West Main Street
Dothan, Alabama 36301

TO: Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated November 14, 2024.

Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

This Addendum consists of twenty-nine (29) pages.

CHANGES TO THE PROJECT MANUAL:

DOCUMENT 00800 – SUPPLEMENTARY CONDITIONS

1. Insert the attached document notated as Addendum 1 (1 page).

DOCUMENT 11217 – PACKAGED LIFT STATION

1. Replace the published document with the attached document notated as Addendum 1 (12 pages).

DOCUMENT 11331 – SEMI-CYLINDRICAL SCREEN

1. Add “Kusters Water” to Section 2.01, A. as an acceptable screen manufacturer.

DOCUMENT 11341 – MAGNETIC FLOW METER

1. Add “Endress+Hauser” to Section 2.1, A. as an acceptable magnetic flow meter manufacturer.

DOCUMENT 024520 – AGGREGATE PIER GROUND IMPROVEMENT

1. Insert the attached document notated as Addendum 1 (9 pages).

CHANGES TO CONSTRUCTION PLANS:

1. Sheet C-303: Yard Piping Plan
    a. Remove Sheet C-303: Yard Piping Plan and replace with attached, updated Sheet C-303: Yard Piping Plan notated as Addendum 1.

2. Sheet C-404: SBR Details
    a. Remove Sheet C-404: SBR Details and replace with attached, updated Sheet C-404: SBR Details notated as Addendum 1.

3. Sheet C-405: SBR Details
    a. Remove Sheet C-405: SBR Details and replace with attached, updated Sheet C-405: SBR Details notated as Addendum 1.

4. Sheet C-406: SBR Details
    a. Remove Sheet C-406: SBR Details and replace with attached, updated Sheet C-406: SBR Details notated as Addendum 1.

5. Sheet C-408: Effluent Tie In Detail
    a. Remove Sheet C-408: Effluent Tie In Detail and replace with attached, updated Sheet C-408: Effluent Tie In Detail notated as Addendum 1.

6. Sheet S-101: General Notes
    a. Remove Site and Foundation Note 9, "WHERE BLADDER TANK AND FILTER DISK ARE PLANNED OVER-EXCAVATION SHOULD EXTEND TO A MINIMUM OF 72 INCHES BELOW ORIGINAL GROUND SURFACE. GEOTECH TO VERIFY IN FIELD."

ISSUED THIS 21st DAY OF NOVEMBER 2024.

Carmen D. Chosie, PE
Project Manager

END OF DOCUMENT

ADDENDUM 1

DOCUMENT 00800

SUPPLEMENTARY CONDITIONS

1. *General*

1.1 These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings indicated below, which are applicable to both the singular and plural thereof.

2. *Article 5 – Bonds and Insurance*

Replace Paragraph 5.06, A. with the following:

A. Builder's Risk: Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be required by Laws and Regulations). This insurance shall:
   1. Include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an additional insured;
   2. Be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils or causes of loss as may be specifically required by the General Conditions 00700 - 17 (Rev. 02-15-22);
   3. Include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
   4. Cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER;
   5. Allow for partial utilization of the Work by OWNER;
   6. Include testing and startup; and
   7. Be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR, and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

END OF DOCUMENT

ADDENDUM 1

SECTION 11217

PACKAGED LIFT STATION

PART 1 GENERAL

1.1 SUMMARY

A. Description:
   1. The Contractor shall furnish, install, test and place into satisfactory operation, as shown on the Plans and specified, three (3) wet-pit, non-clog submersible pump(s) and related accessories in a new concrete wet well lift station, controls, and all appurtenances, accessories and spare parts as will be required to produce a complete and workable installation.

B. Related Sections:
   1. Drawings and general provisions of the Contract including General and Supplemental General Conditions, and Technical Specifications.

1.2 REFERENCES

A. American National Standards Institute (ANSI) and American Water Works Association (AWWA)
   1. ANSI B16.1 - Cast iron pipe flanges and flanged fittings
   2. ANSI/AWWA C115/A21.51 - Cast/ductile iron pipe with threaded flanges
   3. ANSI 253.1 - Safety Color Code for Marking Physical Hazards
   4. ANSI B40.1 - Gauges, Pressure and Vacuum
   5. AWWA C508 - Single Swing Check Valves
   6. AWWA C504 - Plug Valves

B. American Society for Testing and Materials (ASTM)
   1. ASTM A48 - Gray Iron Castings
   2. ASTM A126 - Valves, Flanges, and Pipe Fittings
   3. ASTM A307 - Carbon Steel Bolts and Studs
   4. ASTM F593 - Stainless Steel Bolts, Hex Cap Screws, and Studs
   5. ASTM A36 - Structural Steel

C. Institute of Electrical and Electronics Engineers (IEEE)
   1. ANSI/IEEE Std. 100 - Standard Dictionary of Electrical Terms
   2. ANSI/IEEE Std. 112 - Test Procedure for Polyphase Induction Motors
   3. IEEE Std. 242 - Protection of Industrial and Control Power Systems

D. National Electric Code (NEC), National Electrical Manufacturers Association (NEMA)
   1. NEC - National Electric Code
   2. NEC 701 - National Electric Code article 701
   3. NEMA Std. MG1 - Motors and Generators

1.3 SUBMITTALS

A. Section 01330 - Submittal Procedures.

B. 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.

C. Product Data: Submit information concerning materials of construction and fabrication.

D. Manufacturer's Installation Instructions: Submit detailed instructions on installation requirements including storage and handling procedures, anchoring, and layout.

E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

F. Manufacturer's Field Reports: Certify equipment has been installed in accordance with manufacturer’s instruction.

G. Other Information: Technical manuals, parts list, warranty information, equipment storage recommendations.

1.4 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements.

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

C. Operation and Maintenance Data:
1. Submit five (5) copies of operation and maintenance data in three-ring hard-backed binder, with cover indicating Owner specified station name.
2. Submit maintenance instructions for equipment and accessories.
3. Furnish list of equipment and tools needed to maintain and calibrate equipment.
4. Include detailed dimensions for materials and equipment, including wiring and control diagrams, performance charts and curves, electrical motor data, installation and anchoring requirements, fasteners, recommended spare parts list, equipment start-up documentation.
5. Motor performance chart exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. Data to include motor starting and no-load characteristics.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Owner’s standard.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. The manufacturer shall have a minimum of five installations of the exact combination of pump and motor model proposed to be furnished for this project. Installations must be in operation for a minimum of five years and shall list the pump model, motor model and horsepower, date of installation, duty point, and contact information including telephone number. A list of these installations shall be furnished to the Engineer with submittals.

1.7 PRE-INSTALLATION MEETINGS

A. Section 01300 - Administrative Requirements.

B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements.

B. Inspect for damage.

C. Store products in areas protected from weather, moisture, or possible damage; do not store products directly on ground; handle products to prevent damage to interior or exterior surfaces. Store and handle products in accordance with manufacturer's recommendations.

1.9 SEQUENCING

A. Section 01100 - Summary.

B. Sequence work to prevent interference with Owner's operation.

1.10 SCHEDULING

A. Section 01300 - Administrative Requirements.

B. Schedule work to install pumps in wet well prior to connecting piping work.

1.11 COORDINATION

A. Section 01300 - Administrative Requirements.

B. Coordinate installation and start-up with Owner and Engineer.

1.12 MAINTENANCE MATERIALS

A. Section 01700 - Execution Requirements.

B. Furnish one complete rebuild kit for each pump.

C. Furnish special tools required for equipment maintenance.

PART 2 PRODUCTS

2.1 STATION CONSTRUCTION

A. Wet Well

1. The wet well shall consist of a reinforced concrete structure as shown on the plan sheets. The top elevation and bottom elevation of the wet well shall be as shown on the plans. Backfilling around the wet well shall be completed prior to installation of any pumping equipment.
2. The wet well shall be equipped with access lid, air vent and bug screen, submersible pump system, inlet and outlet connections, electrical control panel and level sensors.
3. The access lid and frame assembly shall be provided in the top of the wet well structure. The access door shall have means of locking and a latch to hold the door in the open position.
4. Air vent and bug screen shall be constructed of the configuration shown on the plans and shall be fitted with manufactured screen to prevent intrusion of insects or birds into the vent piping.
5. The structure dimensions of the wet well and air vent shall be as shown on the Drawings.
6. Safety grating shall be provided with the wet well top and access cover for the safety of the operating personnel.

B. Valve Vault/Enclosure

1. A valve vault ***or*** enclosure shall be provided as an integral part of the lift station.
   a. Valve Vault
      1) The valve vault shall be equipped with access lid, air vent and bug screen, one (1) check valve and one (1) gate valve for each pump.
      2) The access lid and frame assembly shall be provided in the top of the valve vault structure. The access door shall have means of locking and a latch to hold the door in the open position. Air vent and bug screen shall be constructed of the configuration shown on the plans and shall be fitted with manufactured screen to prevent intrusion of insects or birds into the vent piping.
      3) A valve vault drain shall be furnished so that water can drain to the wet well. This drain shall be equipped with a check valve.
      4) The structure dimensions of the valve vault shall be as shown on the Drawings.
   b. Valve Enclosure
      1) Valve enclosure shall be provided with a 1300/1500 watt, 115-volt electric heater with cord, thermostat, and grounding plug for installation in the fiberglass enclosure to protect against freezing.
      2) Valve enclosure shall be provided with a 60 watt, 115-volt AC hand lamp with 25 feet of cord and grounding plug. Hand lamp shall be constructed of corrosion resistant materials, and shall be equipped with a guard and a clear globe.
      3) Valve enclosure shall contain all valves and associated controls.
      4) Valve enclosure shall include two access doors along each long side (four doors total). Doors shall be sized and placed to permit

routine maintenance operations through the door openings of the enclosure.

a) Access doors shall be provided with hinges and a latch. Hinges shall be stainless steel continuous type. Latch shall engage the enclosure at not less than three places and shall be protected by a keyed lock. Doors shall be rigid, without perceptible flex when fully open.

5) Valve enclosure shall contain a screened vent to maximize air flow for enclosure ventilation on one side. The opposite side shall contain the blower with intake shroud, as well as the wet well vent.

6) Valve enclosure shall be removable. The top of the fiberglass enclosure shall be field-removable to facilitate field repair and/or replacement of valves or other heavy components as may be required. Submittal data provided shall furnish details on the connection of the top of the enclosure.

7) Valve enclosure shall be manufactured of molded reinforced isophthalic polyester resins with a minimum of 30% fiberglass, and a maximum of 70% resin.

8) The fiberglass core of the enclosure and doors shall be nominal 1-inch thickness with a minimum core insulating value of R~7 in accordance with on ASTM C518.

9) All interior surfaces of the enclosure shall be coated with a polyester resin-rich finish, which shall provide the following:

a) Maintenance-free service

b) Abrasion resistance

c) Protection from sewage, greases, oils, gasoline, and other common chemicals that can be expected to be found in a normal municipal pumping installation

d) The outside of the enclosure shall be coated with a suitable pigmented resin, compounded to ensure long maintenance-free life. Exterior finish color shall complement the color of the polymer concrete specified elsewhere herein, and shall be a light tan that minimizes the effects of fading, etc.

10) An exhaust blower shall be provided of capacity sufficient to change station air a minimum of once every minute. The blower motor shall be operated automatically via a thermostat located in or on the control panel, and shall normally be turned on and off at adjustable temperatures. Blower motor and control circuit shall be protected by a thermal-magnetic air circuit breaker to provide overcurrent and overload protection. Blower exhaust outlet shall be designed to prevent the entry of foreign material and shall be screened.

11) Schedule 80 conduit connections shall be provided on the exterior of the fiberglass enclosure for feeding electrical and control wiring. All conduit and fittings shall be furnished and installed by the lift station manufacturer between the fiberglass enclosure exterior and the pump control panel enclosure along with necessary fittings as required to secure the conduit firmly in

place. A suitably sized outlet shall be provided on the enclosure exterior for all conduit connections, each to be fitted with a gasketed cover and screws.

2.2 RAW SEWAGE PUMPS

A. Manufacturers:
1. Ebara
2. Barnes
3. KSB
4. Sulzer
5. Substitutions: Section 01600 - Product Requirements

B. General:
1. The sewage pumping units shall be vertical, non-clogging, centrifugal sewage pumps with bottom inlet and side discharge. The pumps shall be direct driven by integral squirrel cage, electric induction motors. Each pump shall include motor, bearings, quick removal system, anchor bolts and all accessories specified herein.
2. Pump Materials of Construction: Compatible with raw sewage.
3. Pump and motor produced by same manufacturer.

C. Power Cable:
1. Minimum 50 feet of submersible cable (SUBCAB) suitable for submersible pump applications, sized in accordance to NEC and ICEA standards and meeting P-MSHA approval.

D. Lifting Cable:
1. Minimum 30 feet per pump of stainless-steel cable capable of lifting loads 5 times greater than actual pumping unit weight.

E. Pump Design:
1. Pump designed to automatically and firmly connect to the discharge connection, guided by no less than two guide bars extending from top of station to discharge connection.
2. Provide intermediate guide brackets for installations greater than 20 feet.
3. Sealing of pumping unit to discharge elbow accomplished by machined metal-to-metal watertight contact.

F. Pump Construction:
1. Major pump components shall be grey cast iron ASTM A-48, Class 35, with smooth surfaces free of blow holes or other irregularities.
2. Exposed nuts or bolts of stainless steel construction.
3. Factory applied spray coating of acrylic dispersion zinc phosphate primer with polyester resin paint finish on exterior pump surfaces coming into contact with sewage.
4. Metal to metal contact sealing design on machined surfaces.
5. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings.

G. Cooling System:

1. Integral, closed-loop motor cooling system encircling stator housing providing for dissipation of motor heat, consisting of integral impeller driven by pump shaft.
2. Cooling system to include one fill port and one drain port integral to the cooling jacket.
3. Cooling system to provide continuous pump operation at liquid or ambient temperatures up to 104°F.

H. Cable Entry Seal:
   1. Dual cylindrical elastomer grommets, flanked by washers, all having close tolerance fit against cable outside diameter and entry inside diameter.
   2. Grommets compressed by cable entry unit, providing strain relief function.
   3. Cable entry junction chamber and motor sealed from each other.

I. Motor:
   1. NEMA B, induction type with squirrel cage rotor, shell type design, housed in air-filled watertight chamber.
   2. Stator windings insulated with moisture resistant Class F insulation rated for 180°C.
   3. Stator insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in winding fill factor of no less than 95%.
   4. Inverter duty rated in accordance with NEMA MGA, Part 31.
   5. Stator heat shrink fitted into cast iron stator housing.
   6. Motor designed for continuous duty while handling pumped media up to 104°F.
   7. Motor designed to withstand no less than 15 evenly spaced starts per hour.
   8. Rotor bars and short-circuit rings constructed of aluminum.
   9. Three thermal switches embedded in stator end coils, one per phase winding to monitor stator temperature.
   10. Junction chamber sealed from stator housing containing a terminal board for connection of power and pilot sensor cables using threaded compression type terminals.
   11. Motor service factor of 1.15.
   12. Motor voltage tolerance of +/- 10%.
   13. Motor designed for continuous operation up to 40°C ambient temperature with NEMA Class B maximum operating temperature rise of 80°C.
   14. Motor horsepower sufficient for pump to be non-overloading throughout entire performance curve, from shut-off to run-out.
   15. Motor and cable capable of continuous submergence underwater without loss of watertight integrity up to and including to a depth of 65 feet.

J. Bearings:
   1. Integral pump/motor shaft to rotate on two bearings.
   2. Motor bearings sealed and permanently grease lubricated with high temperature grease.
   3. Two row angular contact ball bearing on upper motor bearing.
   4. Two row angular contact ball bearing on lower motor bearing designed to handle both thrust and radial forces.
   5. Minimum L10 bearing life of 50,000 hours at any useable point on the pump curve.

K. Mechanical Seals:

1. Provide pumps with positively driven, dual, tandem mechanical shaft seal system consisting of two seal sets, each with independent spring.
2. Lower primary seal, located between pump and seal chamber, containing one stationary and one positively driven rotating corrosion resistant tungsten-carbide ring.
3. Upper secondary seal, located between seal chamber and seal inspection chamber, containing one stationary and one positively driven rotating corrosion resistant tungsten-carbide seal ring.
4. Provide pumps with lubricant chamber for shaft sealing system. Lubricant chamber designed to prevent overfilling and providing capacity for lubricant expansion. Lubricant chamber designed with one drain plug and one inspection plug accessible from exterior of motor unit.
5. Separate seal leak chamber capable of capturing leakage occurring past upper secondary mechanical seal prior to leakage entry into motor stator housing. Leakage chamber provided with float type switch that will signal if chamber reaches 50% capacity.

L. Pump/Motor Shaft:

1. Single piece unit, ASTM A479 S43100-T stainless steel.

M. Impeller:

1. ASTM A-48 Class 35 grey cast iron, dynamically balanced, non-clog design.
2. Mechanically self-cleaned automatically upon each rotation as passing across spiral groove located on volute suction.
3. Impeller leading edges hardened to Rc 45.
4. Impeller capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater.
5. Impellers shall be key driven and securely held to the shaft by a streamlined impeller washer and bolt assembly specifically designed to reduce friction in the suction eye of the impeller. The arrangement shall be such that the impeller cannot unscrew or be loosened by torque from either forward or reverse rotation.
6. The impeller shall be capable of passing a 3-inch solid non-deformable sphere through the bottom inlet and out between the two shrouds. Designs which cannot pass a sphere through the impeller or rely on deforming, cutting or chopping solid materials shall not be acceptable.

N. Volute:

1. ASTM A-48, Class 35 single piece grey cast iron, with smooth passages of sufficient size to pass any solids entering impeller.
2. Volute to have integral spiral-shaped, sharp-edged grooves cast into suction cover.
3. Internal volute bottom shall provide effective sealing between the impeller and volute. All mating surfaces requiring a watertight seal shall be machined and fitted with Buna-n O-rings. Paper gaskets are not acceptable.

O. Discharge Base Elbow:

1. ASTM A-48, Class 35 grey cast iron, ANSI class 125 pound flange, coated with coal tar epoxy.

2. The discharge base elbow shall be provided to support the full weight of the submersible pump in the installation and provide a leak proof connection in which the pump coupling mates using a conformed Buna-N seal which is held in place by the combined weight of the cantilevered pump and motor. The hydraulic pressure generated while the pump is in operation also aids the sealing.

P. Guide Rails:
1. 304 stainless steel guide rails supported by upper and intermediate brackets of 316 stainless steel shall guide each pump.
2. The guide rails shall consist of standard dimension schedule 40 piping with a 2” diameter as shown on the drawings. The guide rails shall be supported by a 316 upper guide rail bracket that will be mounted in the opening of the access cover to support and guide the pump/motor into and out of the wet well. Intermediate guide rail brackets will be provided for all installations deeper than 20 ft.

Q. Operating Characteristics:

Pumping units as specified herein include units installed at the location(s) as shown on the Drawings. The design characteristics are summarized as follows:

Primary Design Conditions:	675 GPM @ 27’ TDH
Minimum Hydraulic Efficiency at Design Point:	70%
Secondary Design Conditions:	675 GPM @ 14’ TDH
Minimum Hydraulic Efficiency at Design Point:	70%
Electrical Service:	460 V/ 3Ø/ 60Hz
Motor HP:	10 HP
Maximum Operating Speed:	1760 RPM
Discharge Elbow Size:	3-inch
Impeller Design:	Non-clog centrifugal

R. Pump Warranty:
1. Pump manufacturer shall warrant units supplied against defects in workmanship and materials for a period of five (5) years or 10,000 hours under normal use, operation and service. Warranty period to extend from date of start-up.

2.3 PUMP CONTROLS

A. Control panels will be provided for each pump station, designed to automatically operate pumps in response to excursions in liquid level as specified for each station. Each control panel shall be UL 508A certified, completely assembled, wired, tested and properly labeled prior to shipment. The control panel shall be supplied by the pump distributor to ensure compatibility between pumps and controls.

B. The pump controls will be housed in a NEMA 4X “UL Listed” stainless steel enclosure with an aluminum inner door. Wiring shall not have less than 600-volt insulation with a 75-degree Celsius rating. The enclosure will have a 3-point pad lockable stainless-steel latch and stainless steel hinge.

C. Refer to Specification Section 16480 (“Manufactured Control Panels”) for additional control panel requirements.

1. The following pump control panels shall be provided with the pumps by the pump supplier and shall consist of the following components:
    1) Voltage 460V 3-Phase
    2) Main Breaker sized by control panel manufacturer.
    3) Overload and short circuit protection for each pump.
    4) Integral 120V Control Power Transformer with primary/secondary overcurrent protection as required (see diagram on electrical plans).
    5) Circuit breakers for Control power and GFCI Outlet (mounted inside control panel).

       Pump Controls as summarized below.
2. Electrical
    a. Refer to electrical plans for panel short circuit ratings and other similar electrical requirements.
    b. All breakers shall be mounted such as to be accessible from the outside of the dead front panel without requiring the operator to be exposed to live/energized parts.
    c. All circuit breakers shall be heavy duty thermal magnetic or motor circuit protectors similar and equal to SQUARE D type FAL.
3. The control panels shall consist of the following components.
    a. Hand-Off-Automatic switch for each pump.
    b. Red high level tamper resistant LED alarm light with steady and flash circuits.
    c. Thermal motor protection circuit.
    d. Solid state cross wired alternator with pump isolation switch.
    e. Circuit breaker protection capable of full panel operation with interlocked handle.
    f. Circuit breaker for each pump.
    g. Pump seal fail monitor.
    h. Pump run green LED pilot light for each pump.
    i. Full Voltage across line non reversing NEMA-rated starter/contactor for each pump.
    j. Overload reset button.
    k. Run time hour meters.
    l. Lightning arrestor installed as per the drawing.
    m. Red overload trip LED pilot light for each pump.
    n. Amber seal fail LED pilot light for each pump.
    o. 15A GFCI convenience outlet mounted on inner door.
    p. All switches and pushbutton to be oil tight NEMA 4X rated.
    q. SCADA dry contacts for:
        1) Power Loss Alarm.
        2) High Level Alarm
        3) Alarm (overload, seal failure, overtempt) for each pump.
        4) Pump running for each pump.
    r. Installation of pump monitor relays as outlined above on the inner door of the panel enclosure, with internal wiring and interconnection for pilot lights, alarm indication, etc. as required.

D. Field wiring connection points will be supplied using terminal strips with the exception of supply power. The terminals will have printed tabs using UV setting printer ink.

E. Pump control will use 4 floats. Float switches shall be Anchor Scientific Roto-Float type S with integral weights, chemical-resistant polypropylene casings, and normally-open AND normally-closed dry contacts

F. Panel control sequencing will alternate pumps on each off cycle. The alternator shall have a selector switch for pump 1, pump 2 or alternate. No pump will run with the off float in the deactivated position. When the off float is activated and the level continues to rise and activates the lead float the lead pump will start and run until the off float is deactivated. Should the level continue to rise upon activation of the lag float the second pump will start and both pumps run until the off float is deactivated. Should the level continue to rise the high-level alarm float will be activated turning on the alarm light, and close the alarm SCADA contact.

G. The control panel will contain a thermal motor temperature circuit and pump seal moisture detector. The thermal circuit will shut down the corresponding motor on winding over temperature. The seal monitor will activate the SCADA alarm contact for the associated pump upon detecting moisture in the pump motor.

H. The panel will contain a correctly sized main circuit breaker.

I. Each pump will have a correctly sized breaker, contactor and ambient compensated adjustable overload with a reset button on the inner door. Hour meters will be installed for pump run time display.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01300 - Administrative Requirements.

B. Verify layout and orientation of pumps, accessories, and piping connections.

3.2 INSTALLATION

A. Install pumps where indicated on Drawings and in accordance with manufacturer's instructions.

B. Provide and connect piping, power and control conduit and wiring to make system operational, ready for startup.

C. Flush piping with clean water.

3.3 FIELD QUALITY CONTROL

A. Section 01700 - Execution Requirements.

B. Pre-operational Check: Before operating system or components, make the following checks:

1. Check pump and motor alignment.

2. Check for proper motor rotation.
3. Check pump and drive units for proper lubrication.

C. Start-up and Performance Testing:
   1. Operate pump on clear water at design point for continuous period of two hours, under supervision of manufacturer's representative and in presence of Engineer.

D. Verify pump performance by performing time/draw down test.

E. Check pump and motor for high bearing temperature and excessive vibration in accordance with the manufacturer’s recommendations. Check for motor overload by taking ampere readings.

F. Equipment Acceptance:
   1. Adjust, repair, modify or replace system components that fail to perform as specified and rerun tests. Make final adjustments to equipment under direction of manufacturer's representative.

3.4 MANUFACTURER'S FIELD SERVICES

A. Section 01400 - Quality Requirements.

B. Furnish services of manufacturer's representative experienced in installation of products furnished under this specification for not less than one eight-hour day on-site for installation inspection and field testing, and instructing Owner's personnel in maintenance of equipment.

C. Certify that equipment has been properly installed and is ready for start-up and testing.

3.5 DEMONSTRATION

A. Section 01700 - Execution Requirements.

B. Demonstrate equipment startup, shutdown, routine maintenance, alarm condition responses, and emergency repair procedures to Owner’s personnel.

END OF SECTION

SECTION 024520 - AGGREGATE PIER GROUND IMPROVEMENT

PART 1 - GENERAL REQUIREMENTS

1.1 DESCRIPTION

A. Work shall consist of designing, furnishing and installing aggregate pier ground improvement to the lines and grades designated on the project foundation plan and as specified herein. Aggregate pier ground improvement as referenced in this specification shall be constructed by either vibro stone columns or Rammed Aggregate Pier® systems. The aggregate piers shall be in a columnar-type configuration and shall be used for support of foundation loads.

1.2 WORK INCLUDED

B. Provision of all equipment, material, labor, and supervision to design and install aggregate piers. Design shall rely on subsurface information presented in the project geotechnical report. Layout of aggregate piers, spoil removal (as required), footing excavations, and subgrade preparation following aggregate pier installation is not included.

C. The aggregate pier design and installation shall adhere to all methods and standards described in this Specification.

D. Drawings and General Provisions of the Contract, including General and Supplemental Conditions, and Division 1 Specifications, apply to the work in this specification.

1.3 APPROVED INSTALLERS

A. The Aggregate Pier Installer (the Installer) shall be approved by the Owner’s Engineer prior to bid opening. Without exception, no alternate installer will be accepted unless approved by the Owner’s Engineer at least two (2) weeks prior to bid opening.

B. Installers of aggregate pier foundation systems shall have a minimum of 5 years of experience with the installation of aggregate pier systems and shall have completed at least 50 projects.

1.4 REFERENCE STANDARDS

A. Design

1. “Control of Settlement and Uplift of Structures Using Short Aggregate Piers,” by Evert C. Lawton (Assoc. Prof., Dept. of Civil Eng., Univ. of Utah), Nathaniel S. Fox (President, Geopier Foundation Co., Inc.), and Richard L. Handy (Distinguished Prof. Emeritus, Iowa State Univ., Dept. of Civil Eng.), reprinted from IN-SITU DEEP SOIL IMPROVEMENT, Proceedings of sessions sponsored by the Geotechnical Engineering Division/ASCE in conjunction with the ASCE National Convention held October 9-13, 1994, Atlanta, Georgia.

2. "Settlement of Structures Supported on Marginal or Inadequate Soils Stiffened with Short Aggregate Piers," by Evert C. Lawton and Nathaniel S. Fox. Geotechnical Special Publication No. 40: Vertical and Horizontal Deformations of Foundations and Embankments, ASCE, 2, 962-974.
3. "Behavior of Geopier®-Supported Foundation Systems during Seismic Events," by Kord Wissmann, Evert C. Lawton, and Tom Farrell. Geopier Foundation Company, Inc. Blacksburg, VA ©1999.
4. "The design of vibro replacement." H.J. Priebe. Ground Engineering, London. Dec 1995.

B. Modulus Testing

1. ASTM D 1143 - Pile Load Test Procedures
2. ASTM D 1194 - Spread Footing Load Test

C. Materials and Inspection

1. ASTM D 1241 - Aggregate Quality
2. ASTM D 422 - Gradation of Soils

D. Where specifications and reference documents conflict, the Aggregate Pier Designer shall make the final determination of the applicable document.

1.5 CERTIFICATIONS AND SUBMITTALS

A. Design Calculations - The Installer shall submit detailed design calculations and construction drawings prepared by the Aggregate Pier Designer (the Designer) for review and approval by the Owner or Owner's Engineer. All plans shall be sealed by a Professional Engineer in the State in which the project is constructed.

B. Professional Liability Insurance - The Aggregate Pier Designer shall have Errors and Omissions design insurance for the work. The insurance policy should provide a minimum coverage of $3 million per occurrence.

C. Building Code Acceptance – The Aggregate Pier Installer shall demonstrate that the Aggregate Pier system has been evaluated by the International Code Council (formerly ICBO).

D. Modulus Test Reports – A modulus test(s) is performed on a non-production Aggregate Pier element as required by the Aggregate Pier Designer to verify the design assumptions. The Installer shall furnish the General Contractor a description of the installation equipment, installation records, complete test data, analysis of the test data and verification of the design parameter values based on the modulus test results. The report shall be prepared under direction of a Registered Professional Engineer.

E. Daily Aggregate Pier Progress Reports – The Installer shall furnish a complete and accurate record of Aggregate Pier installation to the General Contractor. The record shall indicate the pier location, length, volume of aggregate used or number of lifts, densification forces during installation, and final elevations or depths of the base and top of piers. The record shall also indicate the type and size of the installation equipment used, and the type of aggregate used.

The Installer shall immediately report any unusual conditions encountered during installation to the General Contractor, to the Designer and to the Testing Agency.

PART 2 - MATERIALS

2.1 AGGREGATE

A. Aggregate used by the Aggregate Pier Installer for pier construction shall be pre-approved by the Designer and shall demonstrate suitable performance during modulus testing. Typical aggregate consists of Type 1 Grade B in accordance with ASTM D-1241-68, No. 57 stone, recycled concrete or other graded aggregate approved by the Designer.

B. Potable water or other suitable source shall be used to increase aggregate moisture content where required. The General Contractor shall provide such water to the Installer.

PART 3 - DESIGN REQUIREMENTS

3.1 AGGREGATE PIER DESIGN

A. The design of the Aggregate Pier system shall be based on the service load bearing pressure and the allowable total and differential settlement criteria of all footings indicated by the design team for support by the Aggregate Pier system. The Aggregate Pier system shall be designed in accordance with generally-accepted engineering practice and the methods described in Section 1 of these Specifications. The design life of the structure shall be 50 years.

B. The design shall meet the following criteria.

Maximum Allowable Bearing Pressure for gravity loads on Footings Supported by Aggregate Pier Reinforced Soils	4000 psf
Estimated Total Long-Term Settlement for Footings:	≤ 1-inch
Estimated Long-Term Differential Settlement of Adjacent Footings:	≤ ½-inch

3.2 DESIGN SUBMITTAL

A. The Installer shall submit detailed design calculations, construction drawings, and shop drawings, (the Design Submittal), for approval at least 2 week(s) prior to the beginning of construction. A detailed explanation of the design parameters for settlement calculations shall be included in the Design Submittal. Additionally, the quality control test program for Aggregate Pier system, meeting these design requirements, shall be submitted. All computer-generated calculations and drawings shall be prepared and sealed by a Professional Engineer, licensed in the State or Province where the piers are to be built. Submittals will be submitted electronically only unless otherwise required by specific submittal instructions.

PART 4 - EXECUTION

4.1 APPROVED INSTALLATION PROCEDURES

A. The following sections provide general criteria for the construction of the Aggregate Piers. Unless otherwise approved by the Designer, the installation method used for Aggregate Pier construction shall be that as used in the construction of the successful modulus test.

B. Aggregate Piers Installed using augered Rammed Aggregate Pier systems –

1. Augered Rammed Aggregate Pier systems shall be pre-augered using mechanical drilling or excavation equipment.
2. If cave-ins occur during excavation such that the sidewalls of the hole are deemed to be unstable, steel casing shall be used to stabilize the cavity or a displacement Rammed Aggregate Pier system may be used.
3. Aggregate shall be placed in the augered cavity in compacted lift thicknesses no greater than 24 inches as determined by the Aggregate Pier Designer.
4. Should cave-ins occur on top of a lift of aggregate such that the volume of the caved soil is greater than 10 percent of the volume of the aggregate in the lift, then the aggregate shall be considered contaminated and shall be removed and replaced with uncontaminated aggregate.
5. A specially-designed beveled tamper and high-energy impact densification apparatus shall be employed to densify lifts of aggregate during installation. The tamper diameter shall be at least 80% of the pre-augered hole diameter. The apparatus shall apply direct downward impact energy to each lift of aggregate.

C. Aggregate Piers Installed using Displacement Rammed Aggregate Pier systems –

1. Displacement Rammed Aggregate Pier systems shall be constructed by advancing a specially designed mandrel with a minimum 15 ton static force augmented by dynamic vertical ramming energy to the full design depth. The hollow-shaft mandrel, filled with aggregate, is incrementally raised, permitting the aggregate to be released into the cavity, and then lowered by vertically advancing and/or ramming to densify the aggregate and force it laterally into the adjacent soil. The cycle of raising and lowering the mandrel is repeated to the top of pier elevation. The cycle distance shall be determined by the Rammed Aggregate Pier designer.
2. Special high-energy impact densification apparatus shall be employed to vertically densify the Rammed Aggregate Pier elements during installation of each approximate 1-foot thick constructed lift. The tamper diameter shall be at least 50% of the Aggregate Pier design diameter.
3. Downward crowd pressure shall be applied to the mandrel during installation.

D. Aggregate Piers Installed using Vibroflot Stone Columns

1. If vibroflot stone column construction is used to construct the Aggregate Piers, the Installer shall use an electric down-hole vibroflot (probe) capable of providing at least 200 HP of rated energy and a centrifugal force of 30 tons. The vibroflot diameter must be at least 60% of the Aggregate Pier design diameter. An appropriate metering device should be provided at such a location that inspection of amperage build-up may be verified during the operation of the equipment. Metering device may be an ammeter

directly indicating the performance of the vibroflot tip of the eccentric. Complete equipment specifications should be submitted to the Engineer prior to commencement of the fieldwork.

2. The probe and follower tubes shall be of sufficient length to reach the elevations shown on the installer's approved construction drawings. The probe, used in combination with the available pressure to the tip jet, shall be capable of penetration to the required tip elevation. Pre-augering shall be used to aid penetration.
3. The probe shall penetrate into the foundation soil layer to the minimum depths required in the installer's construction plans. After penetration to the required depth, the probe shall not be withdrawn more than 2 feet at any time unless the stone stops flowing to the bottom of the probe.
4. Redriving the probe into the treated depth shall be attempted at approximately 12 to 18-inch intervals to observe resistance to penetration and amperage build-up. During redriving, the probe tip shall penetrate to within 1 foot of the previous redriving depth.
5. Amperage build-up and backfill quantities will be contingent upon the type of probe used and procedures. Prior to commencement of work, the contractor shall discuss the equipment capabilities with the Engineer to determine if trial probes will be necessary.
6. The Installer shall provide a full-time quality control technician on-site during the installation process.

4.2 PLAN LOCATION AND ELEVATION OF AGGREGATE PIERS

A. Aggregate Pier elements installed beyond the maximum allowable tolerances shall be abandoned and replaced with new piers, unless the Designer approves the condition or provides other remedial measures. All material and labor required to replace rejected piers shall be provided at no additional cost to the Owner, unless the cause of rejection is due to an obstruction or mislocation.

PART 5 - QUALITY CONTROL

5.1 CONTROL TECHNICIAN

A. The Installer shall have a full-time, on-site Control Technician to verify and report all installation procedures. The Installer shall immediately report any unusual conditions encountered during installation to the Aggregate Pier Designer, the General Contractor, and to the Testing Agency. The quality control procedures shall include the preparation of Aggregate Pier Progress Reports completed during each day of installation containing the following information:

1. Footing and Aggregate Pier location.
2. Pre-auger diameter and soil conditions encountered during drilling (if required).
3. Aggregate Pier length.
4. Planned and actual Aggregate Pier elevations at the top and bottom of the Aggregate Pier.
5. Average lift thickness of each Aggregate Pier.
6. Volume of aggregate used in each Aggregate Pier.
7. Documentation of any unusual conditions encountered.
8. Type and size of densification equipment used

5.2 AGGREGATE PIER MODULUS TEST

A. When authorized, an Aggregate Pier Modulus Test(s) shall be performed at locations agreed upon by the Aggregate Pier Designer and the Testing Agency to verify or modify Aggregate Pier designs. Modulus Test Procedures shall utilize appropriate portions of ASTM D 1143 and ASTM D 1194, as outlined in the Aggregate Pier design submittal. Aggregate Piers shall be tested to 150 percent of the maximum design stress as shown in the aggregate pier design submittal. The modulus tests shall be of the type and installed in a manner specified herein.

B. A telltale shall be installed at the bottom of the test pier so that bottom-of-pier deflections may be determined. Acceptable performance is indicated when the bottom of the pier deflection is no more than 30% of the top of pier deflection at the design stress level.

C. ASTM D-1143 general test procedures shall be used as a guide to establishing load increments, load increment duration, and load decrements.

D. With the exception of the load increment representing approximately 117% of the design maximum top of Aggregate Pier stress, all load increments shall be held for a minimum of 15 minutes. Loads are then maintained until the rate of deflection reduces to 0.01 inch per hour or for the maximum of 1 hour, whichever is occurs first.

E. The load increment that represents approximately 117% of the design maximum stress on the Aggregate Pier shall be held for a minimum of 15 minutes. Loads are then maintained until the rate of deflection reduces to 0.01 inch per hour or for the maximum of 4 hours, whichever is occurs first.

F. A seating load equal to 5 percent of the total load shall be applied to the loaded steel plate prior to application of load increments and prior to measurement of deflections to compensate for surficial disturbance.

5.3 BOTTOM STABILIZATION TESTING (BSTS) /CROWD STABILIZATION/TESTING (CSTS)

A. Bottom stabilization testing (BSTs) or Crowd stabilization testing (CSTs) shall be performed by the Control Technician during the installation of the modulus test pier. The tests are performed by applying downward vertical energy to the tamper, mandrel or probe following lift construction and monitoring the amount of additional deflection from the applied energy. Additional testing as required by the Aggregate Pier Designer (typically 10% of the production Aggregate Piers) shall be performed on selected production Aggregate Pier elements to compare results with the modulus test pier.

PART 6 - QUALITY ASSURANCE

6.1 INDEPENDENT ENGINEERING TESTING AGENCY

A. The Aggregate Pier Installer shall provide full-time Quality Control monitoring of Aggregate Pier construction activities. The General Contractor is responsible for retaining an independent engineering testing firm to provide Quality Assurance services.

6.2 RESPONSIBILITIES OF INDEPENDENT ENGINEERING TESTING AGENCY

A. The Testing Agency shall monitor the modulus test pier installation and testing. The Installer shall provide and install all dial indicators and other measuring devices.

B. The Testing Agency shall monitor the installation of Aggregate Piers to verify that the production installation practices are similar to those used during the installation of the modulus test elements.

C. The Testing Agency shall report any discrepancies to the Installer and General Contractor immediately.

D. The Testing Agency shall observe the excavation, compaction and placement of the foundations as described in Section 7.05. Dynamic Cone Penetration testing may be performed to evaluate the footing bottom condition as determined by the Testing Agency.

PART 7 - RESPONSIBILITIES OF THE GENERAL CONTRACTOR

7.1 SITE PREPARATION AND PROTECTION

A. The General Contractor shall locate and protect underground and aboveground utilities and other structures from damage during installation of the Aggregate Piers.

B. Site grades for aggregate pier installation shall be within 1 foot of the top of footing elevation or finished grade elevation to minimize aggregate pier installation depths. Ground elevations and bottom of footing elevations shall be provided to the Rammed Aggregate Pier Installer in sufficient detail to estimate installation depth elevations to within 3 inches.

C. The General Contractor will provide site access to the Installer, after earthwork in the area has been completed. A working surface shall be established and maintained by the General Contractor to provide wet weather protection of the subgrade and to provide access for efficient operation of the Aggregate Pier installation.

D. Prior to, during and following Aggregate Pier installation, the General Contractor shall provide positive drainage to protect the site from wet weather and surface ponding of water.

E. If spoils are generated by aggregate pier installation, spoil removal from the aggregate pier work area in a timely manner to prevent interruption of aggregate pier installation is required.

7.2 AGGREGATE PIER LAYOUT

A. The location of aggregate pier-supported foundations for this project, including layout of individual aggregate pier elements, shall be marked in the field using survey stakes or similar means at locations shown on the drawings.

7.3 CONTRACTOR'S / OWNER'S INDEPENDENT TESTING AGENCY (OWNER'S QUALITY ASSURANCE)

A. General Contractor is responsible for acquiring an Independent Testing Agency (Quality Assurance) as required. Testing Agency roles are as described in Part 6 of this specification. The Aggregate Pier Installer will provide Quality Control services as described in Part 5 of this specification.

7.4 EXCAVATIONS FOR OBSTRUCTIONS

A. Should any obstruction be encountered during Aggregate Pier installation, the General Contractor shall be responsible for promptly removing such obstruction, or the pier shall be relocated or abandoned. Obstructions include, but are not limited to, boulders, timbers, concrete, bricks, utility lines, etc., which shall prevent placing the piers to the required depth, or shall cause the pier to drift from the required location.

B. Dense natural rock or weathered rock layers shall not be deemed obstructions, and piers may be terminated short of design lengths on such materials.

7.5 UTILITY EXCAVATIONS

A. The General Contractor shall coordinate all excavations made subsequent to Aggregate Pier installations so that excavations do not encroach on the piers as shown in the Aggregate Pier construction drawings. Protection of completed Aggregate Piers is the responsibility of the General Contractor. In the event that utility excavations are required in close proximity to the installed Aggregate Piers, the General Contractor shall contact the Aggregate Pier Designer immediately to develop construction solutions to minimize impacts on the installed Aggregate Pier elements.

7.6 FOOTING BOTTOMS

A. Excavation and surface compaction of all footings shall be the responsibility of the General Contractor.

B. Foundation excavations to expose the tops of Aggregate Piers shall be made in a workman-like manner, and shall be protected until concrete placement, with procedures and equipment best suited to (1) avoid exposure to water, (2) prevent softening of the matrix soil between and around the Aggregate Piers before pouring structural concrete, and (3) achieve direct and firm contact between the dense, undisturbed Aggregate Piers and the concrete footing.

C. All excavations for footing bottoms supported by Aggregate Pier foundations shall be prepared in the following manner by the General Contractor. Recommended procedures for achieving these goals are to:

1. Limit over-excavation below the bottom of the footing to 3-inches (including disturbance from the teeth of the excavation equipment).
2. Compaction of surface soil and top of Aggregate Piers shall be prepared using a motorized impact compactor ("Wacker Packer," "Jumping Jack," or similar). Sled-type

tamping devices shall only be used in granular soils and when approved by the designer. Loose or soft surficial soil over the entire footing bottom shall be recompacted or removed, respectively. The surface of the aggregate pier shall be recompacted prior to completing footing bottom preparation.

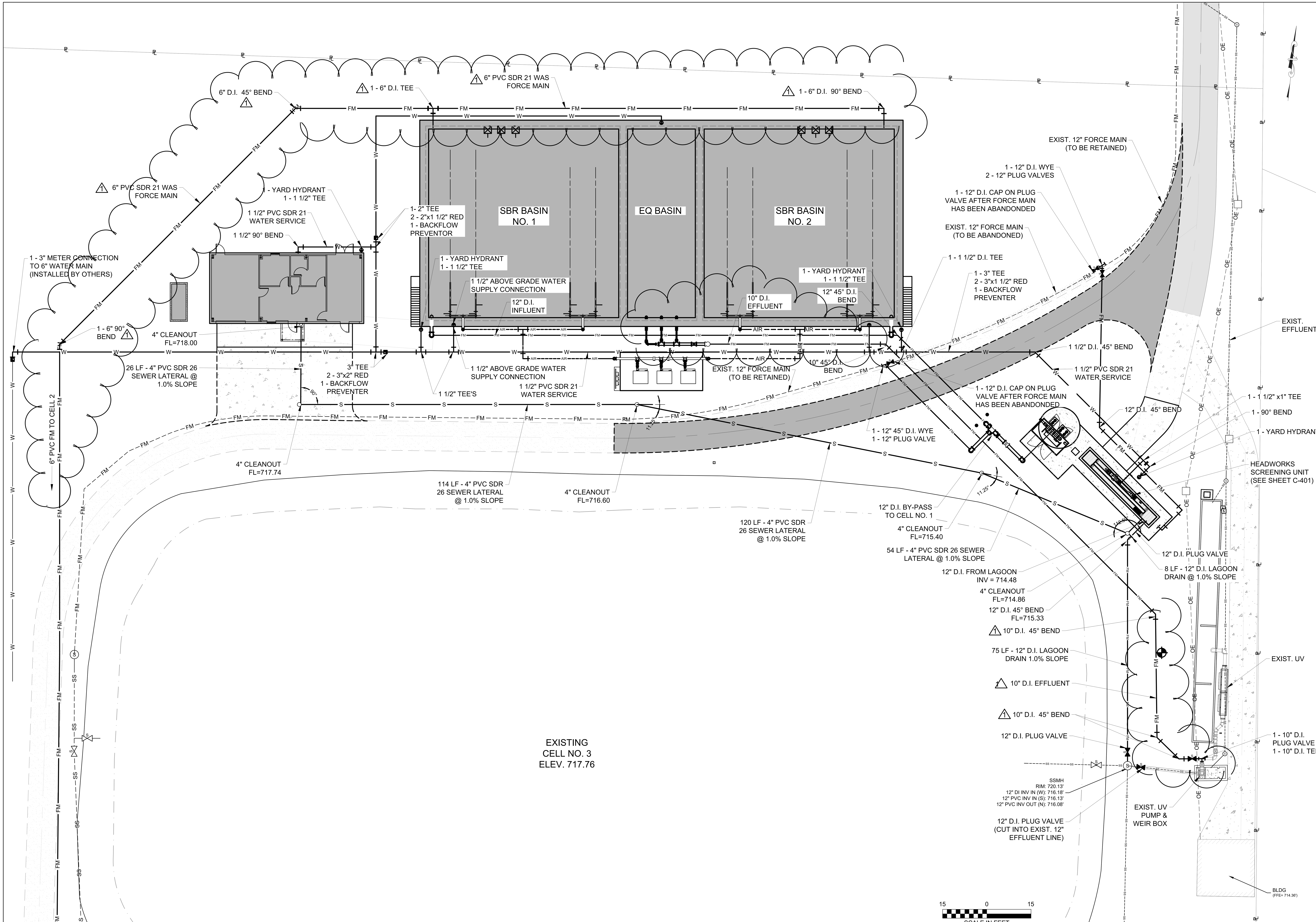
3. Place footing concrete immediately after footing excavation is made and approved, preferably the same day as the excavation. Footing concrete must be placed on the same day if the footing is bearing on moisture-sensitive soils. If same day placement of footing concrete is not possible, open excavations shall be protected from surface water accumulation. A lean concrete mud-mat may be used to accomplish this. Other methods must be pre-approved by the Designer.

D. The following criteria shall apply, and a written inspection report sealed by the project Testing Agency shall be furnished to the Installer to confirm:

1. That water has not been allowed to pond in the footing excavation at any time.
2. That all Aggregate Piers designed for each footing have been exposed in the footing excavation.
3. That immediately before footing construction, the tops of Aggregate Piers exposed in each footing excavation have been inspected and recompacted as necessary with mechanical compaction equipment.
4. That no excavations or drilled shafts (elevator, etc) have been made after installation of Aggregate Pier elements within the excavation limits described in the Aggregate Pier construction drawings, without the written approval of the Installer or Designer.

E. E. Failure to provide the above inspection and certification by the Testing Agency, which is beyond the responsibility of the Aggregate Pier Installer, may void any written or implied warranty on the performance of the Aggregate Pier system.

END OF SECTION 024520



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YARD PIPING PLAN

WATER RECLAMATION FACILITY IMPROVEMENTS

CITY OF SPRINGVILLE
SPRINGVILLE, ST. CLAIR COUNTY, ALABAMA

ALABAMA LICENSED No. 36280 PROFESSIONAL ENGINEER CARMEN D. CHOSIE

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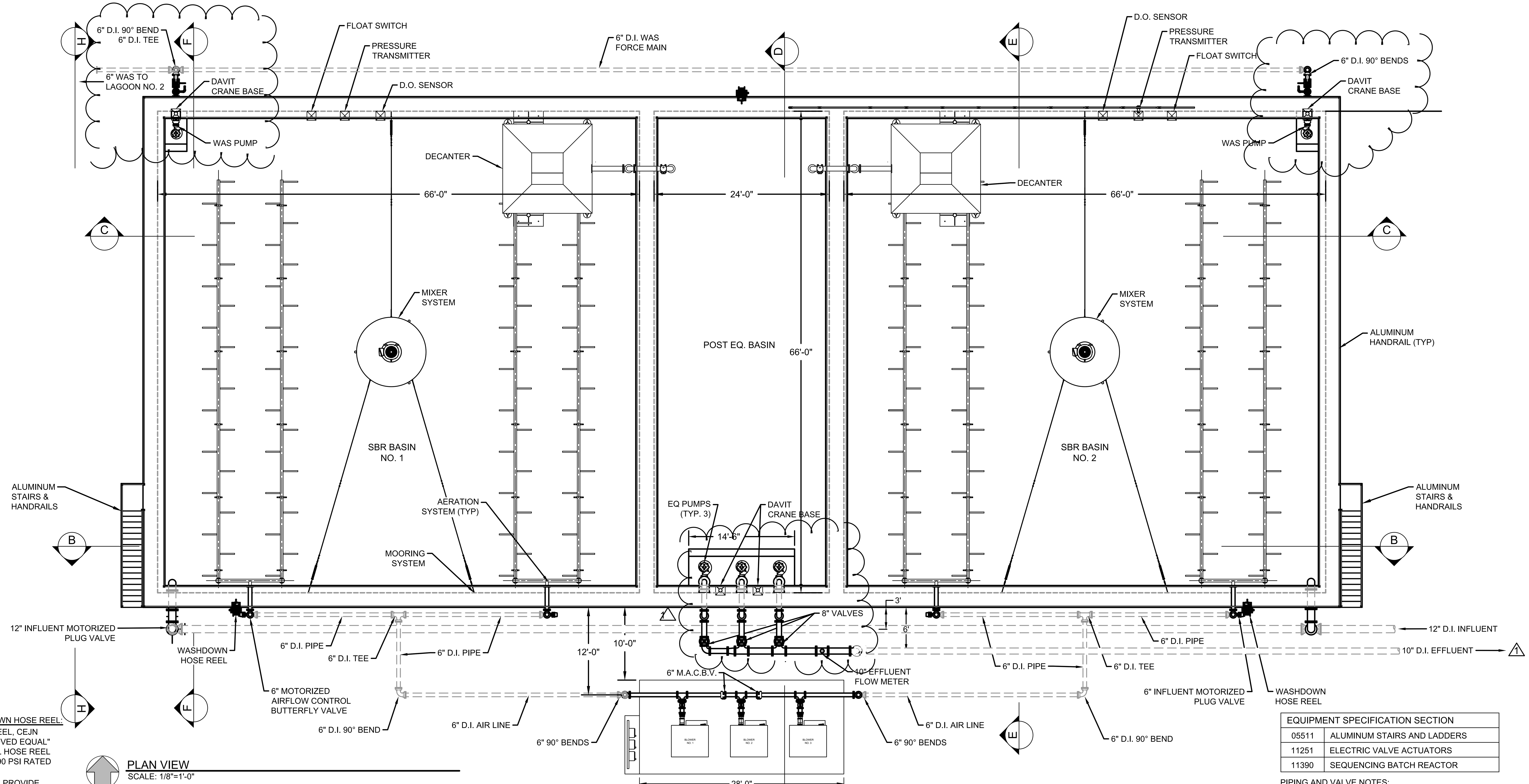
DATE:	November 2024
REVISION	DATE
ADD. NO. 1	11.21.24

PROJECT NO. R954719170

SHEET NO. C-303



PLAN VIEW

SCALE: 1/8"=1'-0"

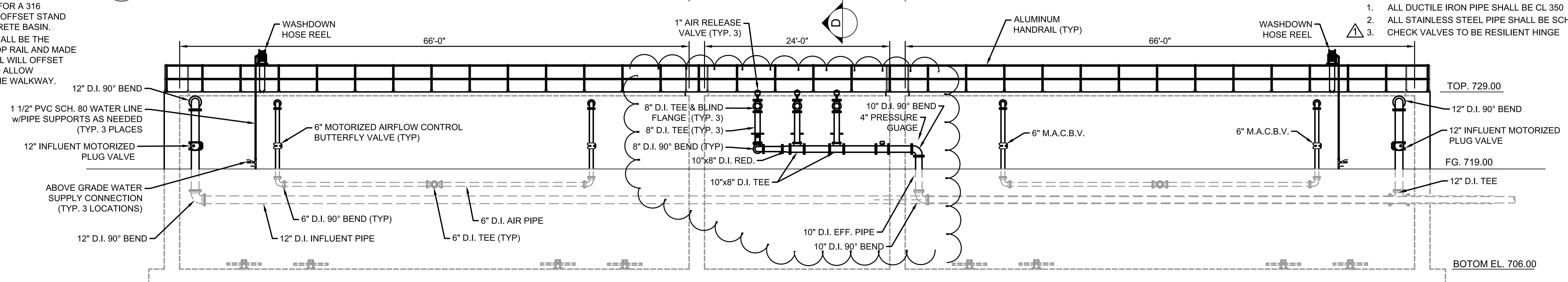
GENERAL NOTE WASHDOWN HOSE REEL:

1. WASHDOWN HOSE REEL, CEJN MODEL 913 or "APPROVED EQUAL" 316 STAINLESS STEEL HOSE REEL w/SPRING REWIND, 290 PSI RATED 3/4" ID x 65' L HOSE.
2. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR A 316 STAINLESS STEEL OFFSET STAND BOLTED TO CONCRETE BASIN.
3. OFFSET STAND SHALL BE THE HEIGHT OF THE TOP RAIL AND MADE SO THE HOSE REEL WILL OFFSET OVER THE RAIL TO ALLOW CLEARANCE OF THE WALKWAY.

EQUIPMENT SPECIFICATION SECTION	
05511	ALUMINUM STAIRS AND LADDERS
11251	ELECTRIC VALVE ACTUATORS
11390	SEQUENCING BATCH REACTOR

PIPING AND VALVE NOTES:

1. ALL DUCTILE IRON PIPE SHALL BE CL 350
2. ALL STAINLESS STEEL PIPE SHALL BE SCH. 40 TYPE 316
3. CHECK VALVES TO BE RESILIENT HINGE



SECTION VIEW A-A

SCALE: 1/8"=1'-0"

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SBR DETAILS

WATER RECLAMATION FACILITY IMPROVEMENTS

CITY OF SPRINGVILLE
SPRINGVILLE, ST. CLAIR COUNTY, ALABAMA

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 36280 CARMEN D. CHOSIE

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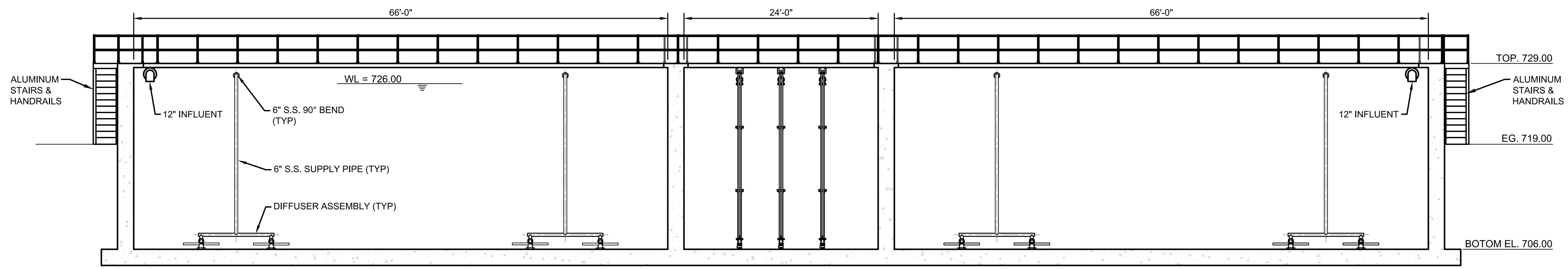
EQUIPMENT SPECIFICATION SECTION	
05511	ALUMINUM STAIRS AND LADDERS
11251	ELECTRIC VALVE ACTUATORS
11390	SEQUENCING BATCH REACTOR

PIPING NOTES:

1. ALL DUCTILE IRON PIPE SHALL BE CL 350
2. ALL STAINLESS STEEL PIPE SHALL BE SCH. 40 TYPE 316



SECTION VIEW B-B
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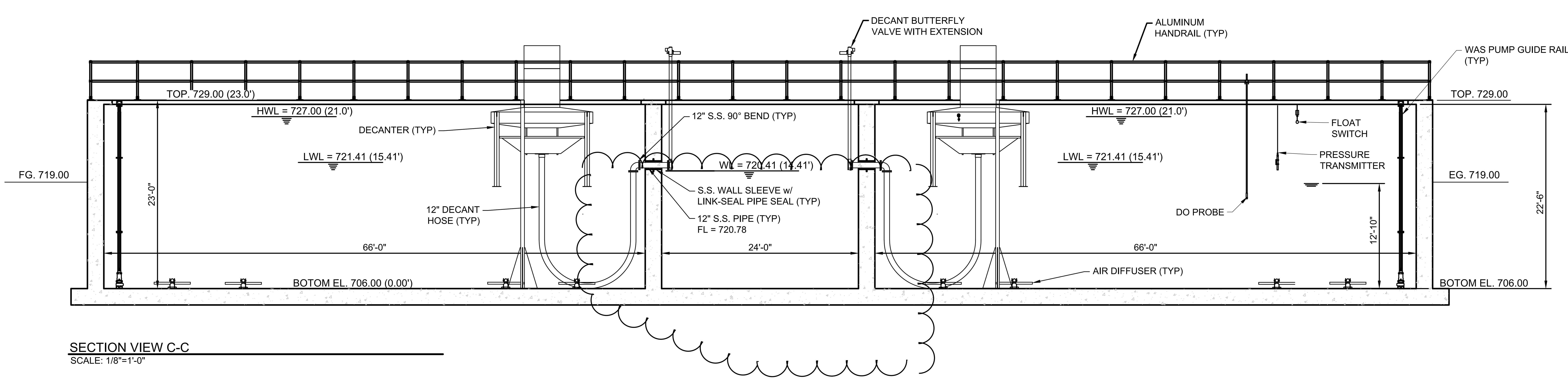

SECTION VIEW C-C
SCALE: 1/8"=1'-0"

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SBR DETAILS

WATER RECLAMATION FACILITY IMPROVEMENTS

CITY OF SPRINGVILLE
SPRINGVILLE, ST. CLAIR COUNTY, ALABAMA

ALABAMA LICENSED No. 36280 PROFESSIONAL ENGINEER CARMEN D. CHOSIE

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EQUIPMENT SPECIFICATION SECTION	
05511	ALUMINUM STAIRS AND LADDERS
11251	ELECTRIC VALVE ACTUATORS
11390	SEQUENCING BATCH REACTOR

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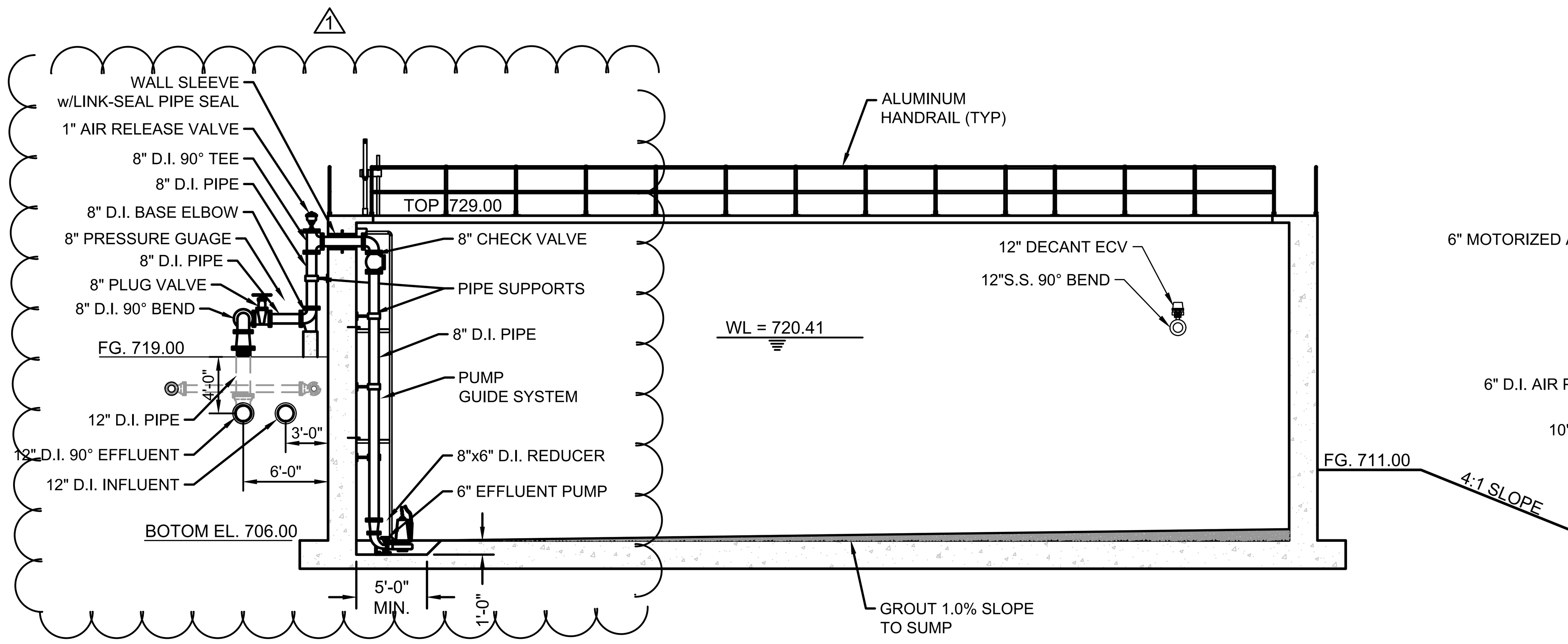

SECTION VIEW D-D
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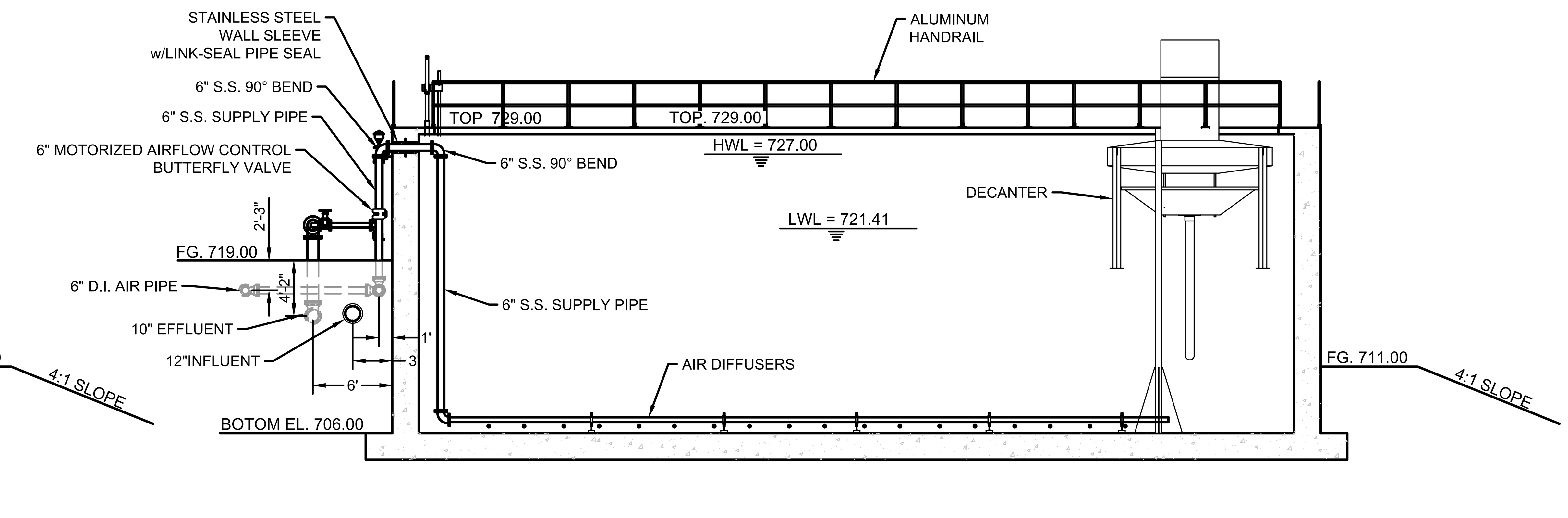

SECTION VIEW E-E
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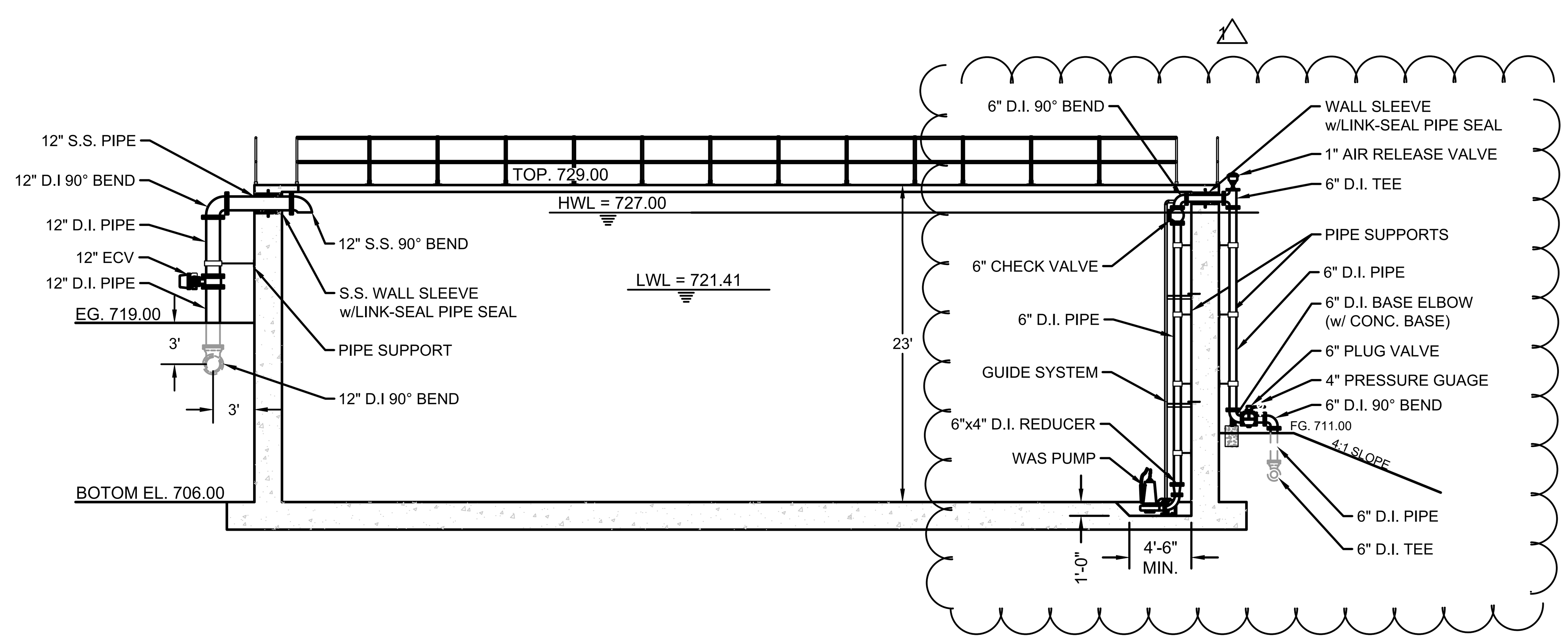

SECTION VIEW F-F
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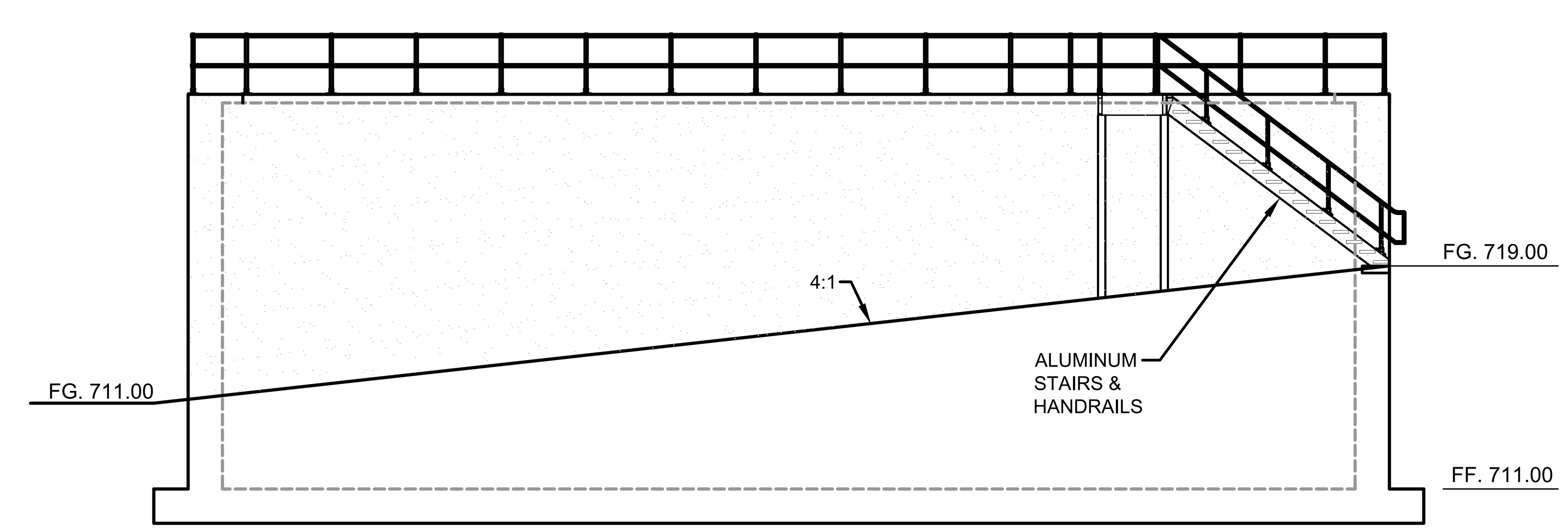

SECTION VIEW H-H
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SBR DETAILS
WATER RECLAMATION FACILITY IMPROVEMENTS
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SPRINGVILLE, ST. CLAIR COUNTY, ALABAMA

STATE OF ALABAMA LICENSED PROFESSIONAL ENGINEER No. 36280 CARMEN D. CHOSIE

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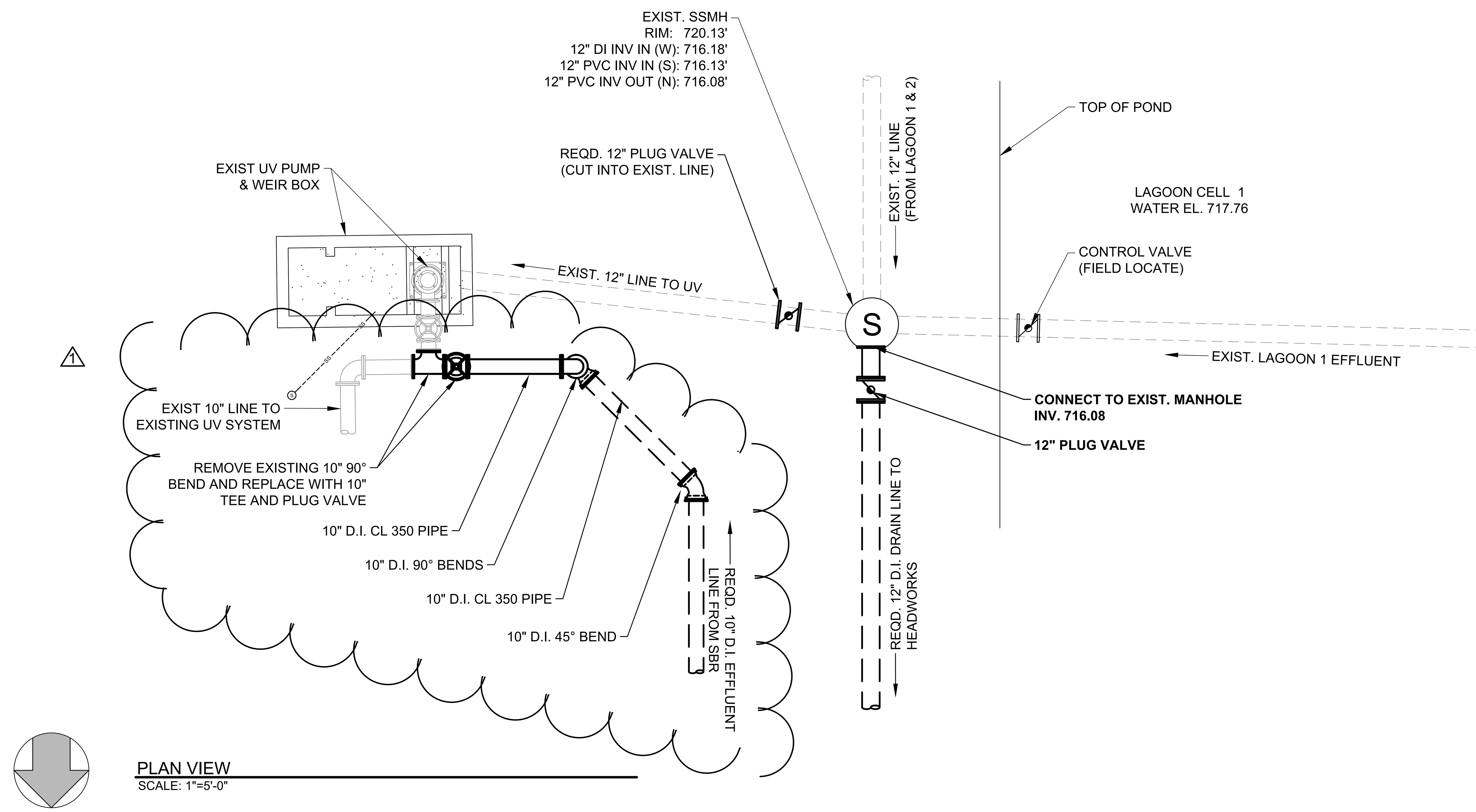
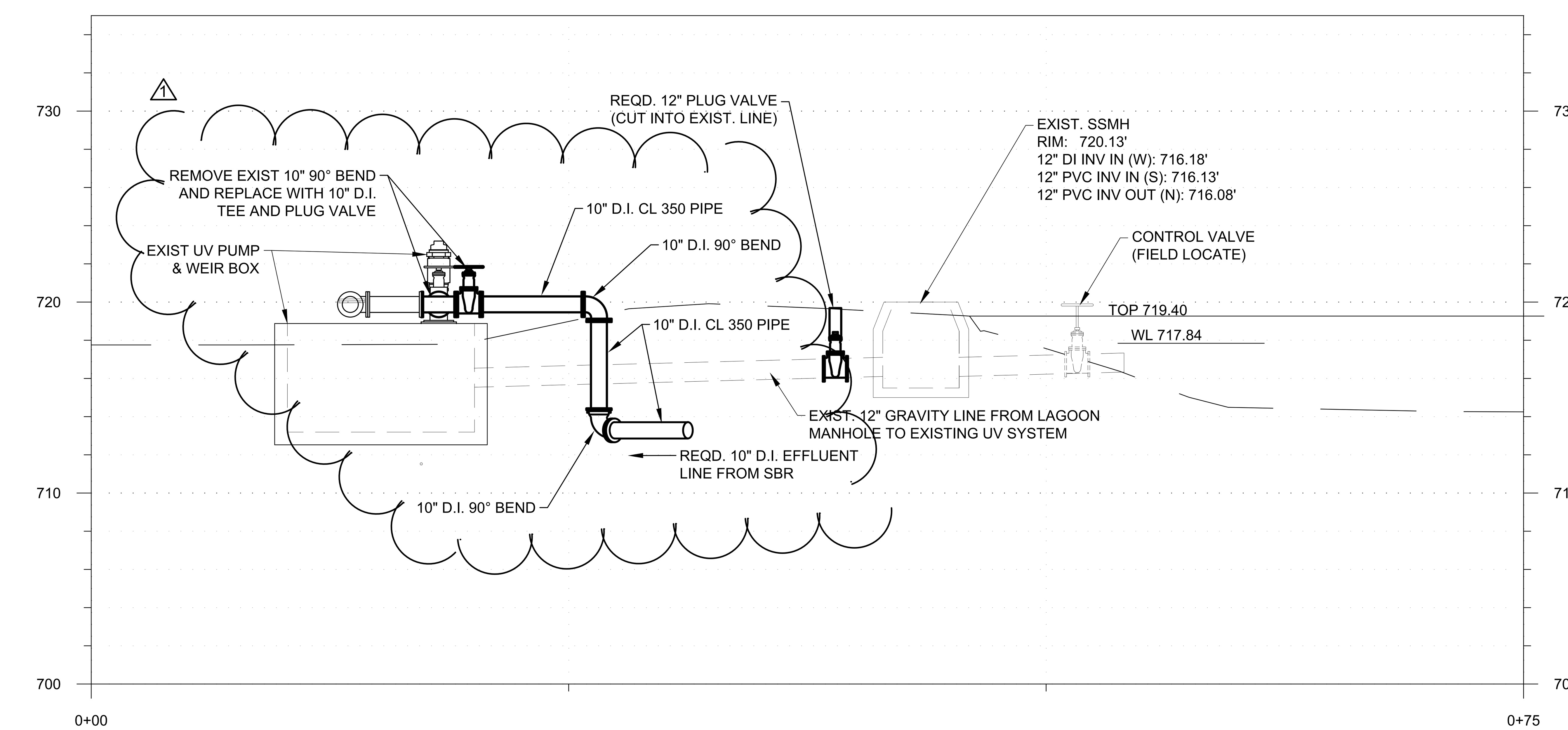


PLAN VIEW
SCALE: 1"=5'-0"



ELEVATION VIEW
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EFFLUENT TIE IN DETAIL
WATER RECLAMATION FACILITY IMPROVEMENTS

CITY OF SPRINGVILLE
SPRINGVILLE, ST. CLAIR COUNTY, ALABAMA

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 36280 CARMEN D. CHOSIE

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