CROSSLAND HEAVY CONTRACTORS

# ADDENDUM NO. 3

Bentonville WRRF Improvements

City of Bentonville, AR

Dated: May 2, 2025

**This Addendum shall be a part of the Plans and Contract Documents and Specifications to the same extent as though it were originally included therein, and it shall supersede anything contained in the Plans and Contract Documents and Specifications with which it might conflict.**

## A. GENERAL CLARIFICATIONS

1. Further clarification has been provided concerning sales tax. Please see attached memorandum.
2. Concrete washout pits shown in the drawings are for emergencies only; all concrete contractors shall provide your own washout dumpsters for each pour. Dumpsters may be located in the pullout with the washout pits.

## B. SPECIFICATIONS

1. SPECIFICATIONS — SECTION 00010 — TABLE OF CONTENTS, is revised to add the following specification sections:
    a. 02495 Geotechnical Instrumentation
    b. 05210 Steel Joists
    c. 05310 Metal Decking
    d. 05513 Galvanizing
2. SPECIFICATIONS - SECTION 01611 — METEOROLOGICAL AND SEISMIC DESIGN CRITERIA, shall be replaced with the revised Specification Section included with this Addendum.
3. SPECIFICATIONS — SECTION 02945 — GEOTECHNICAL INSTRUMENTATION, included with this Addendum is added in its entirety.
4. SPECIFICATIONS — SECTION 05210 — STEEL JOISTS, included with this Addendum is added in its entirety.
5. SPECIFICATIONS — SECTION 05310 — METAL DECKING, included with this Addendum is added in its entirety.
6. SPECIFICATIONS — SECTION 05500 — MISCELLANEOUS METAL:
    a. Delete Paragraph 2.05 Metal Grating in its entirety.
    b. Delete Paragraph 2.07 Steel Stairs in its entirety. Refer to Paragraph 1.06 of Specification Section 05120 — Structural Steel for design requirements for stairs, landings, and elevated platforms.
    c. Renumber the remaining paragraphs as 2.05 through 2.11.
7. SPECIFICATIONS — SECTION 05513 — GALVANIZING, included with this Addendum is added in its entirety.

8. SPECIFICATIONS — SECTION 05530 — GRATINGS AND COVER PLATES:
    a. Replace Paragraph 2.01, Subparagraph B with the following:
        i. Grating, frames and supports shall be aluminum fabricated from AA 6061 T6 alloy unless otherwise shown on the drawings. Where aluminum contacts dissimilar metal, masonry, or concrete, coal tar epoxy shall be used to provide a dielectric separation between the aluminum and dissimilar metal, masonry, or concrete.
9. SPECIFICATIONS — SECTION 11260 — UV DISINFECTION SYSTEM
    a. Paragraph 2.01.B is revised to read as follows:
        i. Electrical and control equipment enclosures not integral to the in-channel components will be installed outdoors. The ambient temperature in the area where the equipment will be installed will be between 0- and 110-degrees. The maximum relative humidity where the equipment will be installed will be 100 percent (100%).
    b. Paragraph 2.05.L.1 is revised to read as follows:
        i. Instruments for monitoring and control of the UV system shall be provided and shall include UV intensity sensors for each bank, ultrasonic level metering system for measuring level in the common inlet channel, and electrode conductance level switches for low water level for each UV channel. A bench photometer shall also be furnished to measure the UV transmittance of the effluent.
10. SPECIFICATIONS — SECTION 11315 — SUMP PUMPS, is revised to include paragraph 1.07.B.8 below:
    a. One (1) pump (SP-08) shall be located in the Wet Weather Meter Vault. The pump shall discharge from the vault to the Waste Meter Vault.
11. SPECIFICATIONS — SECTION 11631.01 — MIXING SYSTEM ROTARY SCREW AIR COMPRESSORS, shall be replaced with the revised Specification Section included with this Addendum.

## C. DRAWINGS

1. CONSTRUCTION PLANS — SHEET G-2:
    a. Replace Sheet G-2 with the revised Sheet G-2 included with this Addendum.
2. CONSTRUCTION PLANS — SHEET G-3:
    a. Replace Sheet G-3 with the revised Sheet G-3 included with this Addendum.
3. CONSTRUCTION PLANS — SHEET C-16:
    a. Replace Sheet C-16 with the revised Sheet C-16 included with this Addendum.
4. CONSTRUCTION PLANS - SHEET C-17:
    a. Replace Sheet C-17 with the revised Sheet C-17 included with this Addendum.
5. CONSTRUCTION PLANS — SHEET C-18:
    a. Replace Sheet C-18 with the revised Sheet C-18 included with this Addendum.
6. CONSTRUCTION PLANS — SHEET C-19:
    a. Replace Sheet C-19 with the revised Sheet C-19 included with this Addendum.

7. CONSTRUCTION PLANS — SHEET A-6:
    a. Replace Sheet A-6 with the revised Sheet A-6 included with this Addendum.
        i. Detail 1/A-6: Change thickness of bent plate to /" minimum.
        ii. Detail 2/A-6: Change thickness of bent plate to /” minimum.
8. CONSTRUCTION PLANS — SHEET SA-1:
    a. Replace Sheet SA-1 with the revised Sheet SA-1 included with this Addendum.
9. CONSTRUCTION PLANS — SHEET SA-2:
    a. Replace Sheet SA-2 with the revised Sheet SA-2 included with this Addendum.
10. CONSTRUCTION PLANS — SHEET SA-3:
    a. Replace Sheet SA-3 with the revised Sheet SA-3 included with this Addendum.
11. CONSTRUCTION PLANS — SHEET SA-4:
    a. Replace Sheet SA-4 with the revised Sheet SA-4 included with this Addendum.
12. CONSTRUCTION PLANS - SHEET SA-5:
    a. Replace Sheet SA-5 with the realised Sheet SA-5 included with this Addendum.
13. CONSTRUCTION PLANS — SHEET SA-6:
    a. Replace Sheet SA-6 with the revised Sheet SA-6 included with this Addendum.
14. CONSTRUCTION PLANS — SHEET SA-7:
    a. Replace Sheet SA-7 with the revised Sheet SA-7 included with this Addendum.
15. CONSTRUCTION PLANS — SHEET SA-8:
    a. Replace Sheet SA-8 with the revised Sheet SA-8 included with this Addendum.
16. CONSTRUCTION PLANS — SHEET SA-9:
    a. Replace Sheet SA-9 with the revised Sheet SA-9 included with this Addendum.
17. CONSTRUCTION PLANS — SHEET SA-10:
    a. Replace Sheet SA-10 with the revised Sheet SA-10 included with this Addendum.
18. CONSTRUCTION PLANS - SHEET SA-11:
    a. Replace Sheet SA-11 with the revised Sheet SA-11 included with this Addendum.
19. CONSTRUCTION PLANS — SHEET SA-12:
    a. Replace Sheet SA-12 with the revised Sheet SA-12 included with this Addendum.
20. CONSTRUCTION PLANS — SHEET SA-13:
    a. Replace Sheet SA-13 with the revised Sheet SA-13 included with this Addendum.
21. CONSTRUCTION PLANS — SHEET SA-14:
    a. Replace Sheet SA-14 with the revised Sheet SA-14 included with this Addendum.
22. CONSTRUCTION PLANS — SHEET SA-15:
    a. Replace Sheet SA-15 with the revised Sheet SA-15 included with this Addendum.
23. CONSTRUCTION PLANS — SHEET SA-16:
    a. Replace Sheet SA-16 with the revised Sheet SA-16 included with this Addendum.
24. CONSTRUCTION PLANS — SHEET SA-17:
    a. Replace Sheet SA-17 with the revised Sheet SA-17 included with this Addendum.
25. CONSTRUCTION PLANS - SHEET SA-18:
    a. Replace Sheet SA-18 with the revised Sheet SA-18 included with this Addendum.
26. CONSTRUCTION PLANS — SHEET SA-19:
    a. Replace Sheet SA-19 with the revised Sheet SA-19 included with this Addendum.
27. CONSTRUCTION PLANS — SHEET SA-20:

a. Replace Sheet SA-20 with the revised Sheet SA-20 included with this Addendum.

28. CONSTRUCTION PLANS — SHEET SA-21:
    a. Replace Sheet SA-21 with the revised Sheet SA-21 included with this Addendum.
29. CONSTRUCTION PLANS — SHEET SA-22:
    a. Replace Sheet SA-22 with the revised Sheet SA-22 included with this Addendum.
30. CONSTRUCTION PLANS - SHEET SA-23:
    a. Replace Sheet SA-23 with the revised Sheet SA-23 included with this Addendum.
31. CONSTRUCTION PLANS — SHEET SA-24:
    a. Replace Sheet SA-24 with the revised Sheet SA-24 included with this Addendum.
32. CONSTRUCTION PLANS - SHEET SA-25:
    a. Replace Sheet SA-25 with the revised Sheet SA-25 included with this Addendum.
33. CONSTRUCTION PLANS — SHEET SA-26:
    a. Replace Sheet SA-26 with the revised Sheet SA-26 included with this Addendum.
34. CONSTRUCTION PLANS — SHEET SA-27:
    a. Replace Sheet SA-27 with the revised Sheet SA-27 included with this Addendum.
35. CONSTRUCTION PLANS — SHEET SA-28:
    a. Replace Sheet SA-28 with the revised Sheet SA-28 included with this Addendum.
36. CONSTRUCTION PLANS — SHEET SA-29:
    a. Replace Sheet SA-29 with the revised Sheet SA-29 included with this Addendum.
37. CONSTRUCTION PLANS — SHEET SA-30:
    a. Replace Sheet SA-30 with the revised Sheet SA-30 included with this Addendum.
38. CONSTRUCTION PLANS — SHEET SE-3:
    a. Revise Section 4 to limit plan dimension limits associated with the Secondary Clarifier No. 1 Scum Box and address excavation shoring requirements.
39. CONSTRUCTION PLANS — SHEET SE-7:
    a. Revise Section 9 to limit plan dimension limits associated with the Secondary Clarifier No. 3 Scum Box and address excavation shoring requirements.
40. CONSTRUCTION PLANS — SHEET SH-1:
    a. Replace Sheet SH-1 with the revised Sheet SH-1 included with this Addendum.
41. CONSTRUCTION PLANS — SHEET SH-2:
    a. Replace Sheet SH-2 with the revised Sheet SH-2 included with this Addendum.
42. CONSTRUCTION PLANS — SHEET SH-3:
    a. Replace Sheet SH-3 with the revised Sheet SH-3 included with this Addendum.
43. CONSTRUCTION PLANS — SHEET SH-4:
    a. Replace Sheet SH-4 with the revised Sheet SH-4 included with this Addendum.
44. CONSTRUCTION PLANS - SHEET SH-5:
    a. Replace Sheet SH-5 with the revised Sheet SH-5 included with this Addendum.
45. CONSTRUCTION PLANS — SHEET SH-6:
    a. Replace Sheet SH-6 with the re\/ised Sheet SH-6 included with this Addendum.
46. CONSTRUCTION PLANS — SHEET SH-7:
    a. Replace Sheet SH-7 with the revised Sheet SH-7 included with this Addendum.
47. CONSTRUCTION PLANS — SHEET SH-8:
    a. Replace Sheet SH-8 with the revised Sheet SH-8 included with this Addendum.

48. CONSTRUCTION PLANS — SHEET SH-9:
    a. Replace Sheet SH-9 with the revised Sheet SH-9 included with this Addendum.
49. CONSTRUCTION PLANS — SHEET SH-10:
    a. Replace Sheet SH-10 with the revised Sheet SH-10 included with this Addendum.
50. CONSTRUCTION PLANS — SHEET SH-11:
    a. Replace Sheet SH-11 with the revised Sheet SH-11 included with this Addendum.
51. CONSTRUCTION PLANS — SHEET SH-12:
    a. Replace Sheet SH-12 with the revised Sheet SH-12 included with this Addendum.
52. CONSTRUCTION PLANS — SHEET SH-13:
    a. Add a new Sheet SH-13 included with this Addendum in its entirety and renumber Sheets SH-13 through SH-18 as SH-14 through SH-19.
53. CONSTRUCTION PLANS — SHEET SZ-2:
    a. Replace Sheet SZ-2 with the revised Sheet SZ-2 included with this Addendum. Details S201 and S202 have been red/ised.
54. CONSTRUCTION PLANS — SHEET SZ-3:
    a. Replace Sheet SZ-3 with the reVised Sheet SZ-3 included with this Addendum. Detail S304 has been revised.
55. CONSTRUCTION PLANS — SHEET SZ-4:
    a. Replace Sheet SZ-4 with the revised Sheet SZ-4 included with this Addendum. Detail S406 has been revised and Note No. 1 added to this plan sheet.
56. CONSTRUCTION PLANS — SHEET MB-1:
    a. Replace Sheet MB-1 with the revised Sheet MB-1 included with this Addendum.
57. CONSTRUCTION PLANS — SHEET MD-2:
    a. Replace Sheet MD-2 with the revised Sheet MD-2 included with this Addendum.
58. CONSTRUCTION PLANS - SHEET E-13:
    a. Replace Sheet E-13 with the revised Sheet E-13 included with this Addendum.
59. CONSTRUCTION PLANS — SHEET E-14:
    a. Replace Sheet E-14 with the revised Sheet E-14 included with this Addendum.
60. CONSTRUCTION PLANS — SHEET E-17:
    a. Sheet E-17 included with this Addendum is added in its entirety.
61. CONSTRUCTION PLANS — SHEET EL-5:
    a. Replace Sheet EL-5 with the revised Sheet EL-5 included with this Addendum.
62. CONSTRUCTION PLANS — SHEET EL-9:
    a. Replace Sheet EL-9 with the revised Sheet EL-9 included with this Addendum.
63. CLARIFICATION — COMPRESSED AIR MIXING SYSTEM
    a. An example layout of the proposed compressed air mixing system is attached to the addendum for reference only. Contractor is responsible for coordinating system design, submittals, and installation with the equipment manufacturer as described in the plans and specifications. The document provided is preliminary, not for construction, and intended for information only.

## D. RFP DOCUMENTS

1. Bid Item clarifications:
    a. Bid Package 10 – Yard Piping, Bid Item G25 – Phase 2 – 2" PVC FM from Wet Weather Meter Vault to Waste Meter Vault to MH33-3 (No Profile) shall include the 2" forcemain from the RAS PS Meter Vault to MH33-3.
2. The following bid items have been changed. Please see attached bid forms for changes.
    a. Bid Package 02 – Earthwork
        i. ADD FF31 – Phase 2 – Maint. Bldg. – Earthwork – 1 LS
        ii. ADD FF32 – Phase 2 – Maint. Bldg. – Gravel Pavement – 723 SY
    b. Bid Package 05 – Concrete – Headworks & Anoxic Basin
        i. CHANGE QUANTITY N5 – Phase 1 – Anoxic Basins – Gravel Infill Used Between Walls to 590 CY
    c. Bid Package 06 – Concrete – Effluent PS, Filtration UV, Clarifiers
        i. DELETE AA5 - Eff PS & Elec Bldg. - CIP Conc. Infill
        ii. CHANGE QUANTITY AA6 to 40 CY
    d. Bid Package 10 – Yard Piping
        i. ADD G25.5 – Phase 2 – RAS PS Flow Meter Vaults 1 & 2 Sump Pump Piping – 1 LS
    e. Bid Package 23 – Process Equipment Installation
        i. ADD M12 – Phase 2 - Wet Weather Meter Vault – Sump Pump Install – 1 LS
        ii. ADD P18 – Phase 1 – Surface Wasting PS – Sump Pump Install – 1 LS
        iii. ADD V12 – Phase 1 - RAS Pump Station Flow Meter Vault No. 2 – Sump Pump Install – 1 LS
        iv. ADD W12 – Phase 1 - Wasting Meter Vault – Sump Pump Install – 1 LS
        v. ADD Y4 - Phase 1 – Ex WAS PS – Set & Store Spare WAS Pump – 1 LS
        vi. ADD BB12 – Phase 2 - Blower Building Valve Vault – Sump Pump Install - 1 LS
        vii. ADD DD12 – Phase 2 - Digester No.4 Valve Vault – Sump Pump Install – 1 LS
        viii. ADD OO12 – Phase 1 – EX RAS Pump Station No. 1 Meter Vault No.1 & No. 2 – Sump Pump Install – 1 LS

## E. QUESTIONS & ANSWERS

**Q1.** Sheet E-11, duct bank section 10, is only partially shown with a note "Extend fiber conduits to final electrical power pole". Please provide additional information for routing, termination point and estimated length for this duct bank.

**A1.** The final electrical power pole is existing pole P3517, shown on sheet E-13. Routing will be coordinated with the road construction between the WRRF and the Compost Facility. Allow for up to 275' of total length.

**Q2.** Spec section 11333, 2.01, H: "Furnish all required anchor bolts and other anchorage for the structure." Is this directed to the equipment supplier or installing contractor?

**A2.** This is directed to the equipment supplier.

**Q3.** Assuming the field brick is to match existing, what will be the color of the accent brick shown on the drawings?

**A3.** Brick 'A' shall be ACME Brick, Blend PEP250 “Royal Oak”, velour modular to match the existing, and brick 'B' shall be ACME Brick, Blend PEP030 “Dove Gray”, velour modular.

**Q4.** Will there be adequate structural support for masonry scaffolding at the Influent building low roof and where aluminum plating is shown?

**A4.** The aluminum plating is not designed for masonry scaffolding loads and should not be used to support the masonry scaffolding.

**Q5.** The Erosion Control bid package For WRRF Bentonville includes Rubberized Wattles. Could you provide details on their intended locations and any additional specifications available?

**A5.** Rubberized Wattles will be installed at locations where silt fence cannot be installed.

**Q6.** Are Crispin Valves acceptable for the following valve specifications? 2.06 Swing Check Valves, 2.07 Resilient Seated Gate Valves, 2.08 Lined Eccentric Plug Valves, 2.10 Air/Vacuum, Vacuum Breaker, Air Release Valves, 2.16 Butterfly Valves. Crispin Valve will meet/exceed the specifications.

**A6.** Where equals are allowed in the Contract Documents, alternative products that comply with the specified requirements may be bid.

**Q7.** Would it be acceptable to propose Hammond TruWave or PowerSide PowerAct Active harmonic filters in place of Square D Accusine?

**A7.** Where equals are allowed in the Contract Documents, alternative products that comply with the specified requirements may be bid.

**Q8.** The finish schedule for WRRF calls out LVT flooring in rooms M107,M108 & M109. The walls in these rooms have tile on the walls and base. Can you confirm that the flooring is not also supposed to be tile to match the walls?

**A8.** The owner has requested LVT flooring in M107, M108 & M109.

**Q9.** Please confirm the stopping points for the tile wainscot in room M108?

**A9.** The 7'-0" tall porcelain tile wainscott shall extend from the plan northwest corner of the shower stall in M108 and follow the plan east walls where the plumbing fixtures are located, and terminate in the plan southwest corner of the toilet stall in M108. The remainder of the walls shall have a cut porcelain tile base, as shown on sheet AM-8.

**Q10.** Our screen stainless steel finish is as follows: Welded areas on all stainless steel frame and structural members shall be passivated by means of CitriSurf 2310 passivation gel. Stainless steel frame and structural members shall then be mechanically cleaned using Chemours Starblast or equivalent mineral blast material. Stainless steel sheet metal components, such as covers or discharge chute, shall be furnished with a 2B finish. Welded areas on stainless steel sheet metal components shall be cleaned and passivated by means of a Capital Weld Cleaner electro-chemical weld cleaning process. Is this finish acceptable? The wash press spec is based around dual auger by Duperon. We do not offer a dual auger wash press. We would offer our standard washer compactor.

**A10.** Named manufacturer's standard construction is acceptable.

**Q11.** Does the Service Plan outlined in Spec Section 11631 also apply to Spec Section 11631.01 Mixing System Rotary Screw Air Compressors? Any other details regarding the service plan?

**A11.** Yes, as Section 11631.01 is a component of the equipment outlined in Section 11631. No additional details.

**Q12.** With the various bid packages for the gates, can you assign each gate on the schedule a bid package that it should be bid under? This will be so we don't misallocate gates to the inappropriate bid package.

**A12.** Please bid the gates as within the current package.

**Q14.** Section 09902 para. 2.04 E. - since there is no PVC pipe painting, is the "Banding to be done with the Pipe Labeling tape?

**A14.** Painted banding is acceptable. The intention of this paragraph is to identify that PVC pipe is not to be completely coated with paint.

**Q15.** Regarding Micropiles: On drawing SB-2, I see a load table, and I want to confirm that the table is a compression load?

**A15.** Yes, the loads indicated in the Micro-Pile table on Drawing SB-2 are compression loads.

**Q16.** Do you want the micropile designed for tension and lateral loads as well? If so, what load should I use?

**A16.** Yes, we will provide the proposed tension and lateral loads in a future Addendum.

**Q17.** I was unable to find the loads for the Influent Electrical Building and Effluent Pump Station. Can you please provide those?

**A17.** Compression, tension, and lateral loads for the Influent Structure Electrical Building and the Effluent Pump Station Building will be provided in a future Addendum.

**Q18.** Plan Volume 1, Page A-6, Detail 1 and Detail 2: 1" bent plate for door jamb and door head. 1" Bent plate requires a much larger bend radius than what is drawn and would be un-usable. Requesting much thinner plate material (3/16") or skip welded corners. Note: fully welded corners will cause unacceptable warpage.

**A18.** The details will be revised as part of this addendum to reduce the minimum plate thickness to ¼".

**Q19.** What bid item under bid package 13 will the Effluent Pump Station structural items go (truss and deck)?

**A19.** The structural metals fall under the Misc Metals Bid Package 13, item AA16.

**Q20.** Can you provide the tank L X W X D dimensions for the BNR Anaerobic Zones, 1, 2 &, 3, Anoxic Zones 1, 2, & 3, and Mixed Liquor Fermenter 1, 2, & 3 tanks?

**A20.** Basin length, width, and depth dimensions are shown on sheets SB-1 through SB-7. Each zone is labeled and drawn to scale on sheets MB-1 through MB-6. Volumes for each zone are provided on sheet G-7.

**Q21.** Can you review 11631.01 MIXING SYSTEM ROTARY SCREW AIR COMPRESSORS; it looks like there is some information missing? Pages 8-9 looks like there is a page or two missing that includes parts of sections 2.05, 2.06, 2.07, & 2.08.

**A21.** A revised version of Specification Section 11631.01 is included with this Addendum.

**Q22.** Regarding earthwork package bid item C1 clearing and grubbing. The bid items states to "remove and dispose of trees, snags, stumps, shrubs, brush, limbs, and other vegetative growth. Then states it should also include removal and disposal of existing fences, drainage structures, abandoned utilities, paving, curbs and gutters, and trash." Later in the bid package, Bid item C11 remove asphalt paving is also covering asphalt paving removal. Which bid item should cover the asphalt paving demo?

**A22.** The asphalt paving demo item C11 shall cover the asphalt paving removal.

**Q23.** Regarding the vertical turbine pumps, in the paint spec it appears we just need to be concerned with the “Ductile Iron Subject to Submergence or Splashing” section. Can you confirm this? Also, can you confirm what Tnemec product to use? Our pump vendor’s suppliers usually use Tnemec 21.

**A23.** Section 09902 states that ductile iron subject to submergence or splash shall be primed with Tnemec Series N69 and finished with Series 142. This would only apply to materials in the wet well. Materials in the pump room would receive two (2) coats of Tnemec Series N69 as Interior Non-Submerged Ferrous Metals. Tnemec Series 21 would be an acceptable equal to N69 if it is the manufacturer’s standard coating system.

**Q24.** Can you confirm that the parameters in the table below other than the flow apply to 2 basins. According to the design table below; the loading for one (1) basin is called out at 1,174 scfm. The calculated flux rate based on this airflow rate is 1.95 scfm per sq ft which exceeds the max allowable floor flux rate (1.36 scfm/sq ft). Based on these SOR loadings, we are assuming that they are for two (2) tanks rather than one (1). Can the consultant confirm how many tanks? According to the engineer’s plans, MH-6 indicates that each tank has a 6” drop. If the airflow of 1174 scfm is intended for one tank, then a 6” drop would be undersized. Industry standards would require us to use an 8” drop. HOWEVER, if the design is for TWO tanks, then a 6” drop would be sufficient. We would like the consultant to clarify whether it is two tanks for this project or one.

| REQUIREMENTS | Peak Hour Plant(1) | UNIT |
|---|---|---|
| Wastewater Flow per Basin | 15 | MGD |
| Effluent Dissolved Oxygen (DO) | 7.0 | MG/L |
| Actual Oxygen Requirement (AOR) | 1,751 | LBS/DAY |
| Minimum Total Air to Coarse Bubble Aeration System | 1,174 | SCFM |
| Minimum Supply Pressure at Top of Dropleg | 6.7 | PSIG |
| Minimum Total Standard Oxygen Transfer Efficiency (SOTE) | 13.3 | % |
| Treatable Standard Oxygen Required (SOR) | 3,914 | LBS/DAY |
| Minimum Blower Efficiency | 70% | % |
| Standard Aeration Efficiency (# SOR / BHP-hr) | 3.18 | (# SOR / BHP-HR) |

(1) Flow is based on 2045 projections.

**A24.** Confirmed that the post-aeration system is comprised of two (2) tanks each designed for a flow of 15 MGD. Please refer to MH sheets for basin layout.

**Q25.** Regarding the Trojan UV system:

a. Shall the independent, third party-certified power consumption test & report take place after installation or before?
b. Is the transformer mentioned in 11260 2.04.E to be provided by the contractor?
c. As per section 11260-2.01.B, SCC and PDC are placed in Temperature controlled room, but in section 11260, 2.05.H3.a.7, SCC is location outdoor. Please confirm location.
d. As per specification 11260-2.5.L.1, the supplier is asked to provide UVT, however as per section 11260, 2.05.N, UVT is not required. Please confirm if supplier is providing UVT.
e. Does the equipment supplier need to provide a fiber optic port for SCADA?

**A25.** The answer to each corresponding question is below:

a. The power consumption test shall take place after installation.
b. Each Power Distribution Center will be supplied with 480/277V 3 phase 4 wire power. If voltages other than that are required the transformer shall be supplied by the equipment manufacturer.
c. Specification Section 11260-2.01.B shall be revised to state that the SCC and PDC are to be installed outdoors.
d. Specification Section 11260.2.05.L.1 will be revised to delete the requirement to provide a UV Transmittance Sensor.
e. Per Section 2.05.E.1.a an ethernet switch with multimode fiber uplink ports shall be provided.

**Q26.** Spec section 05530, 2.01 (Aluminum Bar Grating), B: "Grating, frames, and supports shall be all galvanized steel construction..." Please confirm material type.

**A26.** This specification section has been revised as part of this addendum.

**Q27.** ON MCC-INF they show DV/DT filters called out for the 31A VFDs. if we use DV/DT filters in these units, the footprint will grow. In an effort to keep the footprint the same as its shown, can we use normal reactors in these units?

**A27.** Bid with DV/DT filters. Any revisions required for footprint will be analyzed during submittals.

**Q28.** MCC specification 1.07(a) asks that the MCCs be shipped on their side. This is not recommended by the MFG. They can be shipped in shipping section of 1,2 or 3 in order to make handling easier at the job site. Would this be accepted?

**A28.** Yes

**Q29.** VFD spec 2.02(m) ask for the output carrier frequency to be adjustable between .5 and 10 kHz. Rockwell VFDs are adjustable between 2 and 12 kHz. will that be acceptable, is there an explanation as to why the .5 to 10 kHz is needed?

**A29.** Carrier frequency between 2 and 12kHz is acceptable.

**Q30.** MCC specification 2.10 F,G,H calls out for ETM, HOA and Run indication. All these are available on the Intelligent OL door mounted HIM. Will that be acceptable?

**A30.** Yes intelligent HIM  is acceptable.

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# Tax Clarification

## Bentonville WRRF Improvements

Bidders are to reference Exhibit H of the bidding documents, issued by the Arkansas Department of Energy and Environment, defined as NPDES Permit No. AR0022403, AFIN:04-00154, for reference to items excluded from tax. Below is a list to define some, but not necessarily all, items which are to be assumed as taxable and thus not defined as tax-exempt as detailed by Exhibit H. Though this is CHC's interpretation, bidders are required to follow GR66.

- Earthwork, select fill material, aggregate base subgrade, backfill material, topsoil.
- Erosion control, BMP's, grass seed (temporary & permanent), solid sod, fertilizer, water.
- Asphalt, striping, aggregate subgrade, select fill subgrade.
- Materials associated with any/all demolition activities including topping slabs, concrete infills, rock infill.
- Concrete paving, permeable paving, sidewalks, ramps, curb & gutter, drainage ditches, drainage channels, headwalls, collars, concrete trail, equipment pads, pole bases, retaining walls, bollards.
- Fencing & gates, openers, operators.
- Subsurface modifications, drilled piers, micropiles.
- Suspended ceilings, light framing, insulation, drywall, fire stopping, sheetrock (tape, joint compound, finish, texture).
- Coatings, floor sealer, protective coatings, interior paint.
- Flooring, LVT flooring, floor tile, wall tile, grout, adhesives.
- Fire extinguishers, interior & exterior signage, pipe labels/markers, toilet & bath accessories.
- Exterior cantilevered canopies.
- HVAC, heaters, mechanical louvers, air conditioning, thermostats, wiring, condensation plumbing.
- Plumbing, fixtures, hot & cold-water supply lines, drainage lines, traps, drains, pipe encasement.
- Electrical, gear, wiring, conduits, raceways, accessories, and all other electrical components.
- Millwork, window sills, casework, trim.
- Pre-Engineered Metal Buildings, canopies, fasteners, anchors.
- Shoring systems.
- Yard piping (by bid item): G10, G11, G12, G13, G14, G15, G16, G17, G18, G19, G20, G21, G29, G46, G47, G58, G59, G60, G61, G62, G66, G87, G89, G90, G91, G92, G93, H2, H3, H4, H5, H6, H7, H8, H9, H10, LL10. All aggregate pipe bedding, cover, & backfill, yard pipe encasement.

**BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS**
**CITY OF BENTONVILLE, ARKANSAS**
**HWEI PROJECT NO. 2021037**

**ADDENDUM NO. 2**
**APRIL 22, 2025**

The following is a change and/or addition to the Construction Plans and Detailed Specifications, Bidding and Contract Documents, HWEI Project No. 2021037, prepared by Hawkins-Weir Engineers, Inc. for the City of Bentonville, Arkansas, dated March 2025.

1. SPECIFICATIONS – SECTION 00010 – TABLE OF CONTENTS, is revised to add the following specification sections:

   A. 02495 Geotechnical Instrumentation

   B. 05210 Steel Joists

   C. 05310 Metal Decking

   D. 05513 Galvanizing

2. SPECIFICATIONS – SECTION 01611 – METEOROLOCIAL AND SEISMIC DESIGN CRITERIA, shall be replaced with the revised Specification Section included with this Addendum.

3. SPECIFICATIONS – SECTION 02945 – GEOTECHNICAL INSTRUMENTATION, included with this Addendum is added in its entirety.

4. SPECIFICATIONS – SECTION 05210 – STEEL JOISTS, included with this Addendum is added in its entirety.

5. SPECIFICATIONS – SECTION 05310 – METAL DECKING, included with this Addendum is added in its entirety.

6. SPECIFICATIONS – SECTION 05500 – MISCELLANEOUS METAL:

   A. Delete Paragraph 2.05 Metal Grating in its entirety.

   B. Delete Paragraph 2.07 Steel Stairs in its entirety. Refer to Paragraph 1.06 of Specification Section 05120 – Structural Steel for design requirements for stairs, landings, and elevated platforms.

   C. Renumber the remaining paragraphs as 2.05 through 2.11.

7. SPECIFICATIONS – SECTION 05513 – GALVANIZING, included with this Addendum is added in its entirety.

8. SPECIFICATIONS – SECTION 05530 – GRATINGS AND COVER PLATES:

   A. Replace Paragraph 2.01, Subparagraph B with the following:

      Grating, frames and supports shall be aluminum fabricated from AA 6061 T6 alloy unless otherwise shown on the drawings. Where aluminum contacts dissimilar metal, masonry, or concrete, coal tar epoxy shall be used to provide a dielectric separation between the aluminum and dissimilar metal, masonry, or concrete.

9. SPECIFICATIONS – SECTION 11260 – UV DISINFECTION SYSTEM,

   A. Paragraph 2.01.B is revised to read as follows:

      B. Electrical and control equipment enclosures not integral to the in-channel components will be installed outdoors. The ambient temperature in the area where the equipment will be installed will be between 0- and 110-degrees F. The maximum relative humidity where the equipment will be installed will be 100 percent (100%).

   B. Paragraph 2.05.L.1 is revised to read as follows:

      1. Instruments for monitoring and control of the UV system shall be provided and shall include UV intensity sensors for each bank, ultrasonic level metering system for measuring level in the common inlet channel, and electrode conductance level switches for low water level for each UV channel. A bench photometer shall also be furnished to measure the UV transmittance of the effluent.

10. SPECIFICATIONS – SECTION 11315 – SUMP PUMPS, is revised to include paragraph 1.07.B.8 below:

    8. One (1) pump (SP-08) shall be located in the Wet Weather Meter Vault. The pump shall discharge from the vault to the Waste Meter Vault.

11. SPECIFICATIONS – SECTION 11631.01 – MIXING SYSTEM ROTARY SCREW AIR COMPRESSORS, shall be replaced with the revised Specification Section included with this Addendum.

12. CONSTRUCTION PLANS – SHEET G-2:

    A. Replace Sheet G-2 with the revised Sheet G-2 included with this Addendum.

13. CONSTRUCTION PLANS – SHEET G-3:

    A. Replace Sheet G-3 with the revised Sheet G-3 included with this Addendum.

14. CONSTRUCTION PLANS – SHEET C-16:

    A. Replace Sheet C-16 with the revised Sheet C-16 included with this Addendum.

15. CONSTRUCTION PLANS – SHEET C-17:

A. Replace Sheet C-17 with the revised Sheet C-17 included with this Addendum.

16. CONSTRUCTION PLANS – SHEET C-18:

A. Replace Sheet C-18 with the revised Sheet C-18 included with this Addendum.

17. CONSTRUCTION PLANS – SHEET C-19:

A. Replace Sheet C-19 with the revised Sheet C-19 included with this Addendum.

18. CONSTRUCTION PLANS – SHEET A-6:

A. Replace Sheet A-6 with the revised Sheet A-6 included with this Addendum.

a. Detail 1/A-6: Change thickness of bent plate to ¼" minimum.

b. Detail 2/A-6: Change thickness of bent plate to ¼" minimum.

19. CONSTRUCTION PLANS – SHEET SA-1:

A. Replace Sheet SA-1 with the revised Sheet SA-1 included with this Addendum.

20. CONSTRUCTION PLANS – SHEET SA-2:

A. Replace Sheet SA-2 with the revised Sheet SA-2 included with this Addendum.

21. CONSTRUCTION PLANS – SHEET SA-3:

A. Replace Sheet SA-3 with the revised Sheet SA-3 included with this Addendum.

22. CONSTRUCTION PLANS – SHEET SA-4:

A. Replace Sheet SA-4 with the revised Sheet SA-4 included with this Addendum.

23. CONSTRUCTION PLANS – SHEET SA-5:

A. Replace Sheet SA-5 with the revised Sheet SA-5 included with this Addendum.

24. CONSTRUCTION PLANS – SHEET SA-6:

A. Replace Sheet SA-6 with the revised Sheet SA-6 included with this Addendum.

25. CONSTRUCTION PLANS – SHEET SA-7:

A. Replace Sheet SA-7 with the revised Sheet SA-7 included with this Addendum.

26. CONSTRUCTION PLANS – SHEET SA-8:

A. Replace Sheet SA-8 with the revised Sheet SA-8 included with this Addendum.

27. CONSTRUCTION PLANS – SHEET SA-9:

    A. Replace Sheet SA-9 with the revised Sheet SA-9 included with this Addendum.

28. CONSTRUCTION PLANS – SHEET SA-10:

    A. Replace Sheet SA-10 with the revised Sheet SA-10 included with this Addendum.

29. CONSTRUCTION PLANS – SHEET SA-11:

    A. Replace Sheet SA-11 with the revised Sheet SA-11 included with this Addendum.

30. CONSTRUCTION PLANS – SHEET SA-12:

    A. Replace Sheet SA-12 with the revised Sheet SA-12 included with this Addendum.

31. CONSTRUCTION PLANS – SHEET SA-13:

    A. Replace Sheet SA-13 with the revised Sheet SA-13 included with this Addendum.

32. CONSTRUCTION PLANS – SHEET SA-14:

    A. Replace Sheet SA-14 with the revised Sheet SA-14 included with this Addendum.

33. CONSTRUCTION PLANS – SHEET SA-15:

    A. Replace Sheet SA-15 with the revised Sheet SA-15 included with this Addendum.

34. CONSTRUCTION PLANS – SHEET SA-16:

    A. Replace Sheet SA-16 with the revised Sheet SA-16 included with this Addendum.

35. CONSTRUCTION PLANS – SHEET SA-17:

    A. Replace Sheet SA-17 with the revised Sheet SA-17 included with this Addendum.

36. CONSTRUCTION PLANS – SHEET SA-18:

    A. Replace Sheet SA-18 with the revised Sheet SA-18 included with this Addendum.

37. CONSTRUCTION PLANS – SHEET SA-19:

    A. Replace Sheet SA-19 with the revised Sheet SA-19 included with this Addendum.

38. CONSTRUCTION PLANS – SHEET SA-20:

    A. Replace Sheet SA-20 with the revised Sheet SA-20 included with this Addendum.

39. CONSTRUCTION PLANS – SHEET SA-21:

    A. Replace Sheet SA-21 with the revised Sheet SA-21 included with this Addendum.

40. CONSTRUCTION PLANS – SHEET SA-22:

    A. Replace Sheet SA-22 with the revised Sheet SA-22 included with this Addendum.

41. CONSTRUCTION PLANS – SHEET SA-23:

    A. Replace Sheet SA-23 with the revised Sheet SA-23 included with this Addendum.

42. CONSTRUCTION PLANS – SHEET SA-24:

    A. Replace Sheet SA-24 with the revised Sheet SA-24 included with this Addendum.

43. CONSTRUCTION PLANS – SHEET SA-25:

    A. Replace Sheet SA-25 with the revised Sheet SA-25 included with this Addendum.

44. CONSTRUCTION PLANS – SHEET SA-26:

    A. Replace Sheet SA-26 with the revised Sheet SA-26 included with this Addendum.

45. CONSTRUCTION PLANS – SHEET SA-27:

    A. Replace Sheet SA-27 with the revised Sheet SA-27 included with this Addendum.

46. CONSTRUCTION PLANS – SHEET SA-28:

    A. Replace Sheet SA-28 with the revised Sheet SA-28 included with this Addendum.

47. CONSTRUCTION PLANS – SHEET SA-29:

    A. Replace Sheet SA-29 with the revised Sheet SA-29 included with this Addendum.

48. CONSTRUCTION PLANS – SHEET SA-30:

    A. Replace Sheet SA-30 with the revised Sheet SA-30 included with this Addendum.

49. CONSTRUCTION PLANS – SHEET SE-3:

    A. Revise Section 4 to limit plan dimension limits associated with the Secondary Clarifier No. 1 Scum Box and address excavation shoring requirements.

50. CONSTRUCTION PLANS – SHEET SE-7:

    A. Revise Section 9 to limit plan dimension limits associated with the Secondary Clarifier No. 3 Scum Box and address excavation shoring requirements.

51. CONSTRUCTION PLANS – SHEET SH-1:

    A. Replace Sheet SH-1 with the revised Sheet SH-1 included with this Addendum.

52. CONSTRUCTION PLANS – SHEET SH-2:

    A. Replace Sheet SH-2 with the revised Sheet SH-2 included with this Addendum.

53. CONSTRUCTION PLANS – SHEET SH-3:

    A. Replace Sheet SH-3 with the revised Sheet SH-3 included with this Addendum.

54. CONSTRUCTION PLANS – SHEET SH-4:

    A. Replace Sheet SH-4 with the revised Sheet SH-4 included with this Addendum.

55. CONSTRUCTION PLANS – SHEET SH-5:

    A. Replace Sheet SH-5 with the revised Sheet SH-5 included with this Addendum.

56. CONSTRUCTION PLANS – SHEET SH-6:

    A. Replace Sheet SH-6 with the revised Sheet SH-6 included with this Addendum.

57. CONSTRUCTION PLANS – SHEET SH-7:

    A. Replace Sheet SH-7 with the revised Sheet SH-7 included with this Addendum.

58. CONSTRUCTION PLANS – SHEET SH-8:

    A. Replace Sheet SH-8 with the revised Sheet SH-8 included with this Addendum.

59. CONSTRUCTION PLANS – SHEET SH-9:

    A. Replace Sheet SH-9 with the revised Sheet SH-9 included with this Addendum.

60. CONSTRUCTION PLANS – SHEET SH-10:

    A. Replace Sheet SH-10 with the revised Sheet SH-10 included with this Addendum.

61. CONSTRUCTION PLANS – SHEET SH-11:

    A. Replace Sheet SH-11 with the revised Sheet SH-11 included with this Addendum.

62. CONSTRUCTION PLANS – SHEET SH-12:

    A. Replace Sheet SH-12 with the revised Sheet SH-12 included with this Addendum.

63. CONSTRUCTION PLANS – SHEET SH-13:

    A. Add a new Sheet SH-13 included with this Addendum in its entirety and renumber Sheets SH-13 through SH-18 as SH-14 through SH-19.

64. CONSTRUCTION PLANS – SHEET SZ-2:

A. Replace Sheet SZ-2 with the revised Sheet SZ-2 included with this Addendum. Details S201 and S202 have been revised.

65. CONSTRUCTION PLANS – SHEET SZ-3:

A. Replace Sheet SZ-3 with the revised Sheet SZ-3 included with this Addendum. Detail S304 has been revised.

66. CONSTRUCTION PLANS – SHEET SZ-4:

A. Replace Sheet SZ-4 with the revised Sheet SZ-4 included with this Addendum. Detail S406 has been revised and Note No. 1 added to this plan sheet.

67. CONSTRUCTION PLANS – SHEET MB-1:

A. Replace Sheet MB-1 with the revised Sheet MB-1 included with this Addendum.

68. CONSTRUCTION PLANS – SHEET MD-2:

A. Replace Sheet MD-2 with the revised Sheet MD-2 included with this Addendum.

69. CONSTRUCTION PLANS – SHEET E-13:

A. Replace Sheet E-13 with the revised Sheet E-13 included with this Addendum.

70. CONSTRUCTION PLANS – SHEET E-14:

A. Replace Sheet E-14 with the revised Sheet E-14 included with this Addendum.

71. CONSTRUCTION PLANS – SHEET E-17:

A. Sheet E-17 included with this Addendum is added in its entirety.

72. CONSTRUCTION PLANS – SHEET EL-5:

A. Replace Sheet EL-5 with the revised Sheet EL-5 included with this Addendum.

73. CONSTRUCTION PLANS – SHEET EL-9:

A. Replace Sheet EL-9 with the revised Sheet EL-9 included with this Addendum.

74. CLARIFICATION – COMPRESSED AIR MIXING SYSTEM

A. An example layout of the proposed compressed air mixing system is attached to the addendum for reference only. Contractor is responsible for coordinating system design, submittals, and installation with the equipment manufacturer as described in the plans and specifications. The document provided is preliminary, not for construction, and intended for information only.

This Addendum No. 2 shall be considered as part of the Construction Plans and Detailed Specifications, Bidding and Contract Documents as if originally bound with the documents, and all provisions of the documents shall apply to Addendum No. 2.

This Addendum No. 2 includes a total of one hundred forty-two (142) pages.




Hawkins-Weir Engineers, Inc.

Joshua S. Durham, P.E.
April 22, 2025

Attachments: Specification Section 01611 Meteorological and Seismic Design Criteria
Specification Section 02945 Geotechnical Instrumentation
Specification Section 05210 Steel Joists
Specification Section 05310 Metal Decking
Specification Section 05513 Galvanizing
Specification Section 11631.01 Mixing System Rotary Screw Air Compressors
Construction Plan Sheets G-2, G-3, C-16, C-17, C-18, C-19, SA-1, A-6, SA-2, SA-3, SA-4, SA-5, SA-6, SA-7, SA-8, SA-9, SA-10, SA-11, SA-12, SA-13, SA-14, SA-15, SA-16, SA-17, SA-18, SA-19, SA-20, SA-21, SA-22, SA-23, SA-24, SA-25, SA-26, SA-27, SA-28, SA-29, SA-30, SE-3, SE-7, SH-1, SH-2, SH-3, SH-4, SH-5, SH-6, SH-7, SH-8, SH-9, SH-10, SH-11, SH-12, SH-13, SH-14, SH-15, SH-16, SH-17, SH-18, SH-19, SZ-2, SZ-3, SZ-4, MB-1, MD-2, E-13, E-14, E-17, EL-5, and EL-9
Compressed Air Mixing System Example

# SECTION 01611

# METEOROLOGICAL AND SEISMIC DESIGN CRITERIA

## PART 1 GENERAL

### 1.01 SCOPE

A. Buildings, non-structural components, and non-building structures shall be designed in accordance with this section. In the event of conflict with requirements in other sections, the more stringent criteria shall be followed.

### 1.02 MATERIALS COMPLIANCE WITH AIS

A. P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. This Project meets the definition of such work, and the Environment Protection Agency (EPA) implementation requirements for this AIS requirement are outlined within the DWSRF memorandum titled “Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014” included as part of the RLF Supplemental General Conditions.

B. All parties are required to comply with these requirements and to ensure that all qualifying iron and steel products used in this project must be produced in the United States. See RLF Supplemental General Conditions for additional details.

### 1.03 REFERENCED STANDARDS

A. American Concrete Institute (ACI), latest edition:

1. ACI 350.3 Code Requirements for Seismic Analysis and Design of Liquid Containing Concrete Structures

B. American Institute of Steel Construction (AISC), latest edition:

1. AISC 341 Seismic Provisions for Structural Steel Buildings

2. AISC 360 Specification for Structural Steel Buildings

C. American Society of Civil Engineers (ASCE):

1. ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures

D. Arkansas Fire Prevention Code (AFPC), 2021 Edition

1. 2021 AFPC based on the 2021 International Building Code

E. International Code Council Evaluation Service (ICC EA), latest edition:

1. AC 156 Seismic Certification by Shake-table Testing on Nonstructural Components

A. International Building Code (IBC), 2021 Edition

1.04 DESIGN CRITERIA

A. Buildings, non-structural, non-buildingNon-building structures, including anchorage of such items, shall be designed in accordance with the following criteria:

| | | | |
|---|---|---|---|
| 1. | General Design Data | | |
| | a. | Site elevation, above mean sea level (ft) | Finished Grade Elevation varies across the project site. Refer to Site Civil Drawings for specific finished grade elevations. Site elevation at Operations/Lab Building – 1133.00 (+/-) |
| | b. | Design flood elevation (ft) | Base Flood Elevation (BFE) varies at the project site. Project site is adjacent Town Branch Creek in Bentonville, Arkansas. BFE –1132.00(+/-) adjacent Operations/Lab Building. |
| | c. | Design groundwater elevation (ft) | 1120.5 (+/-) |
| | | | |
| 2. | Wind Design Data | | |
| | a. | Basic design wind speed, V(mph) | 115 |
| | b. | 10-year mean recurrence internal (MRI) serviceability wind speed (mph) | 75 |
| | c. | Exposure category | B |
| | d. | Risk Category | III |
| | | | |
| 3. | Snow Design Data | | |
| | a. | Ground snow load, $P_g$ (psf) | 15 |
| | b. | Importance factor (snow loads), I | 1.10 |
| | c. | Exposure factor ($C_e$) | 0.9 |
| | | | |
| 4. | Ice Design Data | | |
| | a. | Nominal ice thickness, t (in) | 2.0 |
| | b. | Concurrent wind speed, V(mph) (3-second gust) | 30 |
| | c. | Importance factor (ice loads – ice thickness), $I_i$ | 1.15 |

| | | | |
|---|---|---|---|
| | d. | Importance factor (ice loads – concurrent wind), $I_w$ | 1.0 |
| | | | |
| 5. | Seismic Design Data | | |
| | a. | Mapped MCE short period spectral response acceleration, $S_S$ | 0.153 |
| | b. | Mapped MCE one second period spectral response acceleration, $S_1$ | 0.089 |
| | c. | Design short period spectral response acceleration, $S_{DS}$ | 0.132 |
| | d. | Design one second period spectral response acceleration, $S_{D1}$ | 0.089 |
| | e. | Risk Category | III |
| | f. | Structural Importance factor, IE | 1.25 |
| | g. | Seismic Design Category | B |
| | h. | Non-Structural Components Importance Factor, $I_P$ | As indicated in the Non-Structural Components Schedule |
| | i. | Non-Structural Components Seismic Design Category | |
| | j. | Non-Building Structures Importance Factors, I | As indicated in the Non-Building Structure Schedule or in the applicable reference documents, whichever is greater. |

1.05 WIND ANCHORAGE

A. Equipment that is to be located outdoors shall have anchor bolts designed for the effects of wind forces, as determined in accordance with ASCE 7, Chapters 26-31.

1.06 SEISMIC DESIGN

A. General

1. Structural systems shall provide continuous load paths, with adequate strength and stiffness to transfer all seismic forces from the point of application to the point of final resistance.

B. Pre-Engineered Buildings

1. Pre-engineered buildings shall have sufficient strength and ductility to resist the specified seismic effects defined for buildings and shall meet all of the design, proportioning, detailing, inspection, and quality assurance provisions of the specified building code.

2. "W" for buildings shall include the total dead load, the total operating weight of permanent equipment and the effective contents of vessels, and applicable portions of other loads, as required by the specified building code.

C. Non-Structural Components

1. Non-Non-structuralcomponents are architectural, mechanical, and electrical items that are permanently attached to and supported by a structure but are not part of the structural system, as indicated in Chapter 13 of ASCE 7. The Non-Structural Components Schedule identifies the components that require seismic design. The requirements of this paragraph are applicable only to the items listed in the Non-Structural Components Schedule.

2. General

   a. Design of non-structural components shall be in accordance with all applicable provisions of ASCE 7, Chapter 13.

   b. "$W_p$" shall include the total operating weight of the component or system, including, but not limited to, any insulation, fluids, and concentrated loads such as valves, condensate traps, and similar components.

3. Submerged Components:

a. Components that are to be submerged in water shall be designed to withstand loads from the effects of water sloshing during the seismic event.

b. The calculation of the sloshing effects shall be in accordance with the latest edition of ACI 350.3.

4. Anchorage Design

   a. Every component in the Non-Structural Components Schedule shall have its anchorage to the supporting structure designed in accordance with ASCE 7, Chapter 13.

   b. Components shall be attached so that seismic forces are transferred to the structural system. Curbs that support roof-mounted equipment shall be designed to transfer forces from the equipment into the main structural roof members. All structural attachments shall be bolted, welded, or otherwise positively fastened. Frictional resistance due to gravity shall not be considered in evaluating the required resistance to seismic forces.

5. Component Design

   a. Every component in the Non-Structural Components Schedule shall be designed for seismic conditions in accordance with ASCE 7, Chapter 13.

   b. Components shall have sufficient strength and ductility to resist the specified seismic effects, and shall meet all of the design, proportioning, detailing, inspection, and quality assurance provisions of the specified building code and other referenced codes. Components shall be designed to be operable during and following a design level seismic event without collapsing, breaking away from supports, creating an ignition hazard, or releasing any contents.

c. Seismic effects that shall be analyzed in the design of piping systems include the dynamic effects of the piping system, contents, and supports. The interaction between piping systems and the supporting structures, including other mechanical and electrical equipment, shall also be considered. Where pipe supports are to be designed by the Supplier, , both the piping and support systems shall be designed to meet the applicable requirements of ASCE 7, Chapter 13.

6. Seismic Certification

a. Design of components and their anchorage shall be certified by one of the following methods.

1) Analysis and design by a design professional registered in the state of the project. Certification by analysis shall be permitted only for nonactive components and shall be based on seismic demand considering Rp/Ip equal to 1.0.

2) Shake table testing based upon a nationally recognized testing standard procedure, such as ICC-ES AC 156, acceptable to the authority having jurisdiction.

3) Experience data, based upon nationally recognized procedures acceptable to the authority having jurisdiction.

b. Components indicated in the Non-Structural Components Schedule to require special seismic certification shall be certified only by methods 2 or 3 above, except that certification for containment of hazardous materials may be by any of the three methods.

7. Construction Documents

a. Construction documents (fabrication or shop drawings) of non-structural components shall be sealed by a design professional that is registered in the state of Arkansas.

b. Documents shall be sealed whether the basis for certification is analysis and design, shake table testing, or experience data.

c. The sealing method shall clearly indicate that the component and its anchorage have been designed for the code required seismic forces.

8. Submittals

a. The construction documents, structural design calculations, shake table certification, and experience data certification, as applicable, shall be submitted in accordance with the Submittal Procedures section.

D. Non-Building Structures

1. Non-buildingNon-building structures are the items described as such in Chapter 15 of ASCE 7. The Non-Building Structures Schedule identifies the items that require seismic design.

2. The requirements of this paragraph are applicable only to the items listed in the Non-Builiding Structures Schedule.

3. General

a. Design of non-building structures shall be in accordance with all applicable provisions of ASCE 7, Chapter 15.

b. "W" shall include the total dead load and shall also include all normal operating contents of tanks, vessels, bins, and piping.

c. Non-building structures shall provide sufficient strength and ductility to resist the specified seismic effects, and shall meet all of the design, proportioning, detailing, inspection, and quality assurance provisions of the specified building code and other referenced codes.

d. The seismic design of non-building structures shall provide sufficient stiffness, strength and ductility to resist the effects of seismic ground motions during the design level earthquake.

e. Non-building structures shall be designed to be operable during and following a design level seismic event, without collapsing, breaking away from supports, creating an ignition hazard, or releasing any contents.

4. Construction Documents

a. Construction documents (fabrication or shop drawings) depicting all seismic force resisting elements of non-building structures shall be sealed by a design professional that is registered in the state of Arkansas.

5. Submittals

a. The construction documents shall be submitted in accordance with the Submittal section.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

# SECTION 02495

# GEOTECHNICAL INSTRUMENTATION

## PART 1 GENERAL

### 1.01 SCOPE OF WORK

A. The work includes, but is not limited to: furnishing, installing, monitoring by survey, reducing, plotting, reporting that same survey data to the engineer, and maintaining and protecting all the instrumentation on excavation support systems, buildings, utilities, and in the ground adjacent to the site or on the site as specified in this Section and as necessary to monitor construction performance and impacts on adjacent property.
   1. Geotechnical instrumentation monitoring is not required at the following structure locations:
      a. Maintenance Building (New Construction)
      b. Street Sweeper Clean-Out Structure

B. Furnishing, installing, and monitoring observation wells to monitor ground water levels as specified in this section.

C. Conduct vibration monitoring using the monitoring procedures and equipment specified in this Section.

D. Establish response actions to be taken if the maximum allowable instrument readings are exceeded so that existing structures and utilities are protected from damage. Implement response actions if maximum allowable instrument readings are exceeded.

E. Coordinate and obtain all permissions required, both public and private, to install geotechnical instrumentation.

F. Conduct pre-construction survey as specified herein.

G. Dispose of all instruments at the end of the project as instructed by the Engineer.

### 1.02 RELATED SECTIONS

A. Section 01300 – Submittals

B. Section 02140 – Dewatering and Drainage

C. Section 02200 - Earthwork

### 1.03 PURPOSE OF THE GEOTECHNICAL INSTRUMENTATION PROGRAM

A. The purpose of the geotechnical instrumentation program is to monitor:

   1. Groundwater levels inside and outside the limits of the excavation

2. Vertical deformation of the ground surface adjacent to the work

3. Vertical and horizontal deformation of existing utilities and structures adjacent to the work

4. Vertical and horizontal deformation of excavation support systems

5. Ground vibration levels at adjacent facilities due to Contractor activities

1.04 RESPONSIBILITIES OF CONTRACTOR

A. Prior to commencing any excavation and dewatering work, furnish components of instrumentation that are to be installed during construction and conduct pre-construction surveys.

B. Install instruments.

C. Protect from damage and maintain instruments installed by the Contractor.

D. Repair or replace damaged instruments furnished by the Contractor.

E. Collect, reduce, process, plot and report settlement-monitoring data obtained by survey, seismograph data, groundwater levels, and submit to the Engineer.

F. Coordinate with the Engineer to verify consistency of collected data.

G. Implement remedial measures based on interpretations of monitoring data program.

1.05 SUBMITTALS

A. Submit, in accordance with Section 01300, the following:

1. Personnel qualifications demonstrating compliance with Paragraph 1.05 herein

2. Shop Drawings listed below, as prepared by qualified specialists submitted above

a. Installation Plan and Schedule: Full details of the proposed plan and schedule for installing and monitoring instruments, including proposed locations, types, and installation methods of the instruments, monitoring schedule. The proposed plan and schedule shall be coordinated and updated with construction sequencing for the duration of the project.

b. Description of methods for installing and protecting all instrumentation including but not limited to surface monitoring points (SMPs), deformation monitoring points (DMPs), groundwater observation wells, and seismographs

c. Listing of instrumentation proposed to monitor vibrations complete with performance specifications and user's manuals supplied by the manufacturer

d. Layout of surface monitoring points (SMPs) and deformation monitoring points (DMPs), and description of monitoring provisions

e. Groundwater observation well construction details including casing type, filter gradation, grout mix, drilling methods, and depth of well

f. Installations Records: Within 5 days of installing each instrument, the Contractor shall submit to the Engineer the as-built instrument location as specified, and its corresponding installation record sheet. The installation record sheet shall include, but not be limited to, the installed location of each instrument with instrument identification numbers, established elevations, initial elevations, offset and stationing, initial coordinates and boring log. The Contractor shall also furnish details of installed instruments showing all dimensions and materials used, a separate statement describing installation procedures for each instrument, and as-built drawings of each instrument including depths, lengths, elevations and dimensions of key elements

g. Recent calibration certificate(s) (within the previous six months) for the proposed vibration monitoring instrumentation (seismographs). Calibration shall be over the required frequency response ranges and to a standard traceable to the National Bureau of Standards

h. Field Calibration: Within 5 working days of performing a field calibration, submit results of the calibration to the Engineer

B. Reports and Records: Provide reports of monitoring data to the Engineer.

C. Product Data and Samples: Submit all applicable manufacturer's literature describing operation and maintenance procedures for the seismographs. Provide manufacturers brochures for each product.

D. Certificates: For each seismograph instrument to be furnished submit a certificate issued by the instrument manufacturer stating that the manufacturer has inspected and tested each instrument before it leaves the factory to see that the instrument is working correctly and has no defects or missing parts.

E. Pre-Construction Survey: Submit pre-construction survey to Engineer prior to start of work.

F. Submit proposed remedial measures and actions to be taken in the event that the instrument Threshold Values are reached.

## 1.06 DEFINITIONS

A. Facility: A building, roadway, element of a utility system or other constructed structure.

B. Surface Monitoring Points: Inscribed marking or approved surveyor's nail driven flush with surface, installed into existing concrete, masonry, or asphalt at predetermined locations to measure vertical (elevation) and horizontal control of ground surface or

structural element. Vertical and horizontal controls are determined by optical survey methods.

C. Deformation Monitoring Points: Fixed markers placed on any facility, structure, railroad rails, highway pavements, at the ground surface, or below the ground surface (subsurface). Settlement reference points shall be monitored by optical survey methods to determine displacement occurring during construction.

D. Groundwater Observation Wells: Screened or slotted pipe with solid riser pipe installed in a drilled hole with the annulus around the pipe backfilled with sand. Near surface groundwater levels are measured in the well.

E. Seismographs: Electronic recording device with vibration transducer capable of monitoring and recording ground vibrations induced by construction activity.

1.07 QUALITY ASSURANCE

A. The Contractor shall be responsible for all aspects pertaining to the installation, maintenance and monitoring of the geotechnical instrumentation specified herein.

B. Personnel Qualifications for Instrument Installation:

1. Employ qualified technicians with comparable experience in the installation of geotechnical instrumentation similar to that specified herein.

2. Employ a professional engineer or engineering geologist, with specialized experience in the installation of instrumentation specified herein, to supervise and direct technicians and be responsible for instrument installation. This person is to be present at the installation site(s) to direct and supervise the installations.

C. Installation of instrumentation shall, at all times, be performed in the presence of the Engineer.

D. Each instrument specified herein shall be the product of an acceptable manufacturer currently engaged in manufacturing geotechnical instrumentation hardware of the specified types.

E. Surveyor Qualifications: The Contractor’s Professional Land Surveyors shall be registered in the State of Arkansas and with at least five (5) years of experience in surveying similar instruments. The Professional Land Surveyors shall establish the Settlement and Deformation Monitoring Points and take baseline readings.

F. The Contractor shall perform optical level surveys, instrument readings, and report data. Personnel responsible for this work shall be qualified by a minimum of three years of experience with similar work.

G. Vibration monitoring shall be conducted by persons trained in the use of a seismograph and records shall be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record.

## 1.08 TOLERANCES

A. Survey measurements for initial location of each of the monitoring points shall consist of determining the elevation and horizontal position with respect to benchmark(s) approved by the Engineer.

B. Elevations of Surface and Deformation Monitoring Points shall be determined to an accuracy of plus/minus 0.01 foot.

C. The horizontal position of settlement monitoring points shall be determined to an accuracy of plus/minus 0.1 foot.

D. The horizontal position of deformation monitoring points shall be determined to an accuracy of plus/minus 0.01 foot.

E. Should actual field conditions prohibit installation at the location and elevations specified in this Section, obtain prior acceptance from the Engineer for new instrument location and elevation.

## 1.09 DESIGN AND PROJECT REQUIREMENTS

A. Project Requirements

1. The Contractor shall install Geotechnical Instrumentation as necessary to monitor ground conditions, ground response, and facilities to achieve specified project requirements, and to prevent damage to facilities potentially affected.

2. The Contractor shall install the instrumentation presented in accordance with an approved Instrumentation Schedule provided by the Contractor. The Contractor shall locate as necessary to avoid interference including construction access, ground surface features and utilities. Proposed instrument locations shall be submitted by the Contractor at least 30 days before installation. Deformation monitoring points on structures shall be located as directed by the Engineer.

3. The Engineer's measurements and the required Monitoring Program do not relieve the Contractor of his obligation to complete the project within the requirements specified herein, and the Contractor shall take additional measurements as may be necessary.

B. Pre-Construction Survey

1. Prior to the start of excavation, installation of excavation support, and dewatering work, engage the services of an independent professional engineer, licensed in the State of Arkansas, to conduct a pre-construction survey of existing structures and conditions within 100 feet of all excavation work unless indicated otherwise.

   a. Coordinate activities, issue notices, obtain clearances and provide photographic and secretarial assistance necessary to accomplish the survey.

b. Give notice in writing to the property owner(s) and any representative of local authorities required to be present at such survey. Notify in writing the dates on which surveys are planned so that representatives are present during the examination. Provide copies of notices to the Owner and Engineer.

2. Observations shall be recorded of the existing conditions for buildings, buried utilities and other structures, which might be affected.

a. The survey shall consist of pre-construction photos and a description of interior and exterior conditions. Descriptions and photographs shall locate cracks, damage or other defects existing and shall include information and measurements to make it possible to determine the effect, if any, of the construction operations on the defect.

b. The records of each property examined shall be signed by the representatives present and, if practicable, by the property owner, whether or not they are present at the examinations.

3. The contractor's record of the pre-construction survey shall consist of written documentation, video and photographs of the conditions identified. At the completion of the survey, submit copies of the documentation to the Owner.

4. The records so obtained shall be retained in the Contractor's file for at least three years after completion of the Contract. In the event of damage claims, a report shall be prepared by the Contractor on the particular structures as requested by the Engineer from those notes and photographs and submitted to the Owner. Damage attributed to the Contractor's activity shall be repaired promptly and completely to the property owner's satisfaction to restore the conditions of the property to that existing prior to work.

C. Secure all required permits prior to the installation or removal of observation wells.

D. Provide and facilitate safe access to the instruments at all times. The Engineer may perform additional monitoring in a manner that will minimize unnecessary work delays. The Contractor shall allow and facilitate instrument monitoring as required by the Engineer.

E. Maintenance

1. All instrumentation shall be maintained by the Contractor.

2. Damaged installations shall be replaced by the Contractor within 24 hours. Report all damaged or non-functional instrumentation to the Engineer within 24 hours.

F. Availability of Data

1. Interpretations developed by Engineer will be available to Contractor. Contractor may observe readings at any time or take his own supplementary readings, at no additional cost to Owner.

2. Monitoring data shall be the property of the Owner and are not to be disclosed to third parties or published without permission of the Owner.

3. Contractor is expected to make his own interpretations for his own purposes at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: All instrument materials, including readout units, will be returned to the Contractor and shall remain the property of the Contractor following completion of the Contract.

B. Locations of instruments shall be determined by the Contractor and approved by the Engineer.

2.02 GROUNDWATER OBSERVATION WELLS

A. Observation wells will be used to monitor the groundwater levels inside and adjacent to the excavations.

B. Pipe shall consist of 2-inch minimum inside diameter Schedule 40 PVC pipe.

C. Maximum screen size shall be 0.020-in unless otherwise approved by the Engineer.

2.03 MONITORING POINTS

A. Establish system of control points and monitor in accordance with the requirements herein.

1. Deformation Monitoring Points (DMPs)

a. DMP’s will be used to monitor vertical and horizontal movement of adjacent utilities and structures.

b. DMP’s shall consist of nails, screws, reinforcing bars, bolts and similar materials with well-defined measurement points as approved by the Engineer. DMP's shall be firmly attached and shall be protected from damage and vandalism. Remove or cover with a protective box or cap as approved by the Engineer all elements of DMP's protruding more than 0.25-in. Clearly identify all DMP's with permanent easily readable letters and numbers as approved by the Engineer.

2. Surface Monitoring Points (SMPs)

a. SMPs will be used to monitor vertical deformation at or near the ground surface. Clearly identify all points with permanent easily readable letters and numbers as approved by the Engineer.

b. SMPs in paved areas shall consist of a 2-inch-long masonry nail. The nail shall be manufactured from hardened zinc–plated steel. The masonry nail shall be driven into an asphalt covered surface. Each nail shall be individually identified by an identification tag or surface marking.

c. SMPs in non-paved areas shall consist of a 3 ft. long, ¾ inch diameter steel rod. The rod shall be driven into the ground or set in concrete in the ground such that no more than 3 inches of the rod is exposed above the ground surface. The top of the rod shall be rounded and punch-marked at its center. Each rod shall be individually identified by a surface marking.

d. SMP's on utility manholes shall consist of an observable cross mark or welded bead on the top horizontal surface of utility manhole rims. The surface within 3 inches of the point shall be cleaned and / or marked to permit easy identification of the exact point. The point shall also be clearly identified using fluorescent spray paint adjacent to the point.

B. Non-Shrink Cement Grout - Suitable for intended application.

## 2.04 SEISMOGRAPHS

A. Provide portable seismographs and monitor the velocities of ground vibrations resulting from construction activities when necessary. Provide for full-time use on the project during installation of sheeting, foundation excavation or other vibration-causing construction activities. Provide a minimum of two seismographs which have been calibrated within the previous six months to a standard that is traceable to the National Bureau of Standards. Required characteristics of seismographs are listed below:

1. Measure the three mutually perpendicular components of particle velocity in directions vertical, radial, and perpendicular to the vibration source.

2. Measure and display the maximum peak particle velocity.

3. Have a flat velocity frequency response with a minimum broad band of 6 Hz to 150 Hz with a tolerance equal to or better than plus or minus 10 percent.

4. Self-triggering wave form capture mode that provides the following information: plot of wave forms, peak particle velocities, peak overpressure, frequencies of peaks.

5. Continuous monitoring mode must be capable of recording single-component peak particle velocities, and frequency of peaks with an interval of 1 minute or less.

# PART 3 EXECUTION

## 3.01 GENERAL REQUIREMENTS

A. Perform a pre-construction survey prior to any dewatering, excavation or installation of excavation support.

B. Install instruments at locations selected by the Contractor and approved by the Engineer in accordance with the approved installation procedures. The Engineer may modify instrument locations depending on field conditions and monitoring objectives. Install all instrumentation in accordance with the approved installation schedule. Instruments shall be installed and baseline data, acceptable to the Engineer, obtained before construction starts.

C. Existing Conditions: Locate conduits and underground utilities in all areas where wells are to be drilled and installed. Call utility companies prior to any drilling. Well locations shall be modified, as approved by the Engineer, to avoid interference with the existing conduits and utilities. Repair damage to existing utilities resulting from instrument installations at no additional cost to the Owner.

D. All instruments shall be clearly marked, labeled, and protected to avoid being obstructed or otherwise damaged by construction operations or the general public. Both, protective housing and box or vault covers shall be marked.

E. A unique instrument identification number shall be assigned to each instrument and each point. The instrument identification number shall be clearly marked on each instrument in a weather-proof manner.

F. Surveying: Immediately following installation, the location of the top of all instruments shall be surveyed to provide horizontal and vertical coordinates. Resurveying shall be required at least monthly or as required by the Engineer.

G. Drilling from the Ground Surface: Obtain necessary permits for each such instrument and conform to the permit requirements during drilling and installation.

H. Initial Reading: Immediately following instrument installation, the Contractor, jointly with the Engineer, shall take two sets of initial readings to provide baseline readings and to demonstrate the adequacy of the completed installation.

3.02 MONITORING POINTS

A. Monitoring Points shall include but not be limited to SMPs and DMPs. Monitor these control points using surveying methods.

B. The Contractor shall submit a plan of the proposed settlement monitoring points for approval by the Engineer.

C. SMP Locations:

1. SMPs shall be installed on the rim of existing manhole covers of utilities located within 100 ft of excavation, or as directed by the Engineer. In addition, SMPs shall be installed in the pavement or ground surface overlying sensitive utilities located within 100 ft of the excavation and at not more than 50 ft spacing, or as directed by the Engineer. Locations may be modified to meet site constraints with the approval of the Engineer.

D. DMP Locations:

1. DMPs shall be installed on the exterior walls of buildings or structures located within 100 ft of excavations, or as directed by the Engineer. As much as practical, DMPs shall be installed on supporting walls or columns. Avoid installation in brick unless absolutely necessary.

2. As a minimum, four (4) DMPs shall be installed on the exterior wall corners of buildings, structures, or properties boundary walls and at not more than 25 ft spacing. The Engineer may require additional DMPs be installed to monitor building movement at other locations.

3. Install DMPs in cooperation with property Owners so that installations are inconspicuous and acceptable to the property Owners. Existing features of building foundations that are permanent and can be repeatedly surveyed may substituted for DMPs, if approved by the Engineer.

4. As a minimum, four (4) DMPs shall be installed on excavation support system interior corners and at not more than 25 ft spacing. The Engineer may require additional DMPs be installed to monitor excavation support system movement at other locations.

E. Install and obtain settlement monitoring point readings prior to installing excavation support, beginning excavation, or commencing operation of groundwater control systems at the site. The Contractor shall obtain two sets of measurements for each SMP and DMP to establish the baseline data within three days of installation. These measurements shall be made at least 24 hours apart but not more than 48 hours apart. DMPs with initial surveyed elevations (or offsets as appropriate) differing by more than 2 mm shall be checked for secure installation and resurveyed.

F. The survey measurements shall consist of determining the elevation and horizontal position of each of the monitoring points and other instrumentation elements with respect to benchmark(s) approved by the Engineer.

G. Clearly identify all monitoring points with permanent easily readable letters and numbers in the field as approved by the Engineer.

H. At a minimum, daily monitoring shall be required for all SMP and DMP within 100 feet of active work and at least once per week until all excavation, dewatering and backfill has been completed. Within 24 hours of each survey, submit to the Engineer the latest survey elevations at each monitoring point along with all previous survey information.

3.03 INTERPRETATION AND RESPONSE VALUES – MONITORING POINTS

A. The Contractor shall make its own interpretations of the data resulting from monitoring programs.

B. Threshold and Limiting Values for monitoring points:

| Monitoring Target | Threshold Value | Limiting Value |
|---|---|---|
| Structures (DMP) | 0.25 inch | 0.5 inch |
| Pavement and Utilities (SMP) | 0.5 inch | 1.0 inch |
| Excavation Support System (DMP) | 1.0 inch | 2.0 inch |

C. These values are subject to adjustment by the Engineer as indicated by prevailing conditions and/or circumstances.

D. If a Threshold Value is reached:

1. Engineer and Contractor shall meet to discuss remedial measures.

2. Contractor shall increase the instrument monitoring frequency as directed by the Engineer.

3. Contractor shall install and monitor additional instruments as directed.

4. Contractor shall implement the remedial measures in the event the Threshold Value is reached, so the Limiting Value is not reached.

E. If a Limiting Value is reached, all work shall stop, and the site secured until remedial measures have been submitted and approved by the Engineer.

1. Contractor to take all necessary steps so that the Limiting Value is not exceeded. Contractor may be directed to suspend activities in the affected area with the exception of those actions necessary to avoid exceeding the Limiting Value.

3.04 GROUND WATER OBSERVATION WELLS

A. Install observation wells as required under this Section or in accordance with the approved submittal to monitor groundwater levels beneath and around the excavated area until adjacent structures and pipelines are completed and backfilled.

B. Observation Well Locations and Depths:

1. A minimum of two (2) observation wells shall be installed. They shall be located in critical areas with respect to groundwater control (i.e. deep excavations, deep foundation installations) to monitor performance of dewatering systems designed by the Contractor's Engineer.

2. Observation wells required shall be installed to a depth of at least 5-ft below the deepest level of excavation, unless otherwise approved by the Engineer, and to whatever depth is necessary to indicate that the groundwater control system designed by the Contractor’s Engineer is performing as intended. Additional observation wells may be required by the Engineer if deemed necessary to monitor the performance of the Contractor's groundwater control system.

3. Locations and depths of observation wells are subject to approval by the Engineer.

C. Using approved drilling methods, drill 6-in minimum diameter holes for observation wells of the size and depth required, and case with temporary casing. Bentonite drilling mud shall not be used in drilling holes for the observation wells.

D. Flush all cased holes with clean water through an approved bit. Flush until the discharge water is free of soil particles.

E. Observation Well Construction

1. Construct 2-in minimum inside diameter observation well using slotted PVC well screen, filter sand, solid PVC casing, couplings, a pipe cap, and a locking hole cover. Maximum screen size shall be 0.02-in unless otherwise approved by the Engineer.

2. Install a sand filter below the proposed base of the well screen approximately 2-ft thick by pouring sand down the borehole while withdrawing the casing 2-ft. Measure and record the depth of the sand.

3. Assemble and install the observation well pipe and screen. Well tip must be fitted with a threaded or slip on plug. All pipe sections shall be connected by dry threading of the joints. No glue, solvents, or lubricating compound shall be used to make up the connections. The well pipe assembly must be carefully lowered into the borehole to ensure centering of the well in the hole. After installation, the Contractor shall measure the depth to the well tip and record the measurement on the well log.

4. Install sand filter around the well screen to at least 2-ft above the screen.

5. Withdraw the casing and install a bentonite clay seal approximately 2-ft thick above the sand filter.

6. Insert a tremie pipe and backfill the remainder of the hole with cement bentonite grout until it flows at the surface.

7. Square cut the well pipe stick-up at 2-ft above grade.

8. Install a 5-ft section of metal pipe (3 or 4-in diameter) equipped with a lockable cap, 3-ft into the borehole and cement grouting the pipe in place

9. If well head completions must be flush with the ground surface, a street box or lockable valve gate box may be installed in lieu of the metal pipe. Installation consists of square cutting the riser pipe 2in below grade and cement grouting the box in place.

10. Observation wells shall be developed so as to provide a reliable indication of groundwater levels. Wells shall be re-developed if well-clogging is observed, in the event of apparent erroneous readings, or as directed by the Engineer.

11. Provide two copies of keys for each padlock to the Engineer for access to each well.

F. Observation Well Maintenance

1. The Contractor shall maintain each observation well until adjacent structures and pipelines are completed and backfilled. Replace damaged or destroyed observation wells within 48 hours, unless approved otherwise by the Engineer, at no additional cost to the Owner.

2. It is the Contractor's obligation to maintain observation wells and repair or replace them at no additional cost to the Owner, whether or not the observation wells are damaged by the Contractor's operations or by third parties.

G. Monitoring and Reporting of Observation Well Data

1. The Contractor shall begin daily monitoring of groundwater levels in work areas prior to initial operation of drainage and dewatering systems. Monitoring in areas where groundwater control is in operation shall continue until the time that adjacent structures and pipelines are completed and backfilled, and until the time that groundwater control systems are turned off.

2. The Contractor is responsible for processing and reporting observation well data to the Engineer on a daily basis. Data is to be provided to the Engineer on a form, and shall include at a minimum the following information: observation well number, depth to groundwater, total depth of well, top of casing elevation, groundwater level elevation and date and time of reading.

3.05 VIBRATION MONITORING

A. Vibration Limit Criteria - The Contractor shall limit construction vibrations to prevent damage to any adjacent building, structure, utilities, pipes or other features near the site. The Contractor is solely responsible to determine the maximum vibration tolerable at each location. However, in no case shall the following be exceeded.

1. Peak Particle Velocity (PPV) limits at the ground surface at existing residences, structures and utilities:

| Frequency (Hz) | Maximum Peak Particle Velocity (in. per. sec.) |
|---|---|
| Over 40 | 2.0 |
| 30 to 40 | 1.5 |
| 20 to 30 | 1.0 |
| Less than 20 | 0.5 |

B. Vibration Monitoring

1. The Contractor shall monitor peak particle velocities using a minimum of two seismographs operated by personnel trained in their use during all excavation activities as well as during installation of all excavation support systems and deep

foundations. Seismograph locations shall be mutually agreed upon by the Engineer and Contractor.

2. The Engineer may direct that additional vibration monitoring be performed if conditions warrant such action.

3. Vibration monitoring shall be on a continuous basis during excavation using vibration or impact methods as well as during installation of all excavation support systems and deep foundations.

C. The use of vibratory or impact equipment shall not be permitted within 100-ft of locations where concrete has been placed in the preceding 24 hours. The use of vibratory or impact equipment shall not be permitted within 40-ft of concrete structures until the concrete has attained the specified design strength and specified curing period.

3.06 INSTRUMENT PROTECTION, MAINTENANCE AND REPAIR

A. Protect the instruments from damage. Damaged instruments shall be replaced or repaired prior to continuing construction activities, or as required by the Engineer.

B. Maintain the instruments by draining water and flushing debris from under protective covers and keeping covers locked and sealed at all times.

3.07 MONITORING

A. Monitoring frequency may be modified as directed and approved by the Engineer.

B. Provide data from readings of monitoring points, monitoring wells and seismographs to the Engineer within 24 hours of reading. Communicate orally with the Engineer immediately after visual observations or data collection if excessive movements or other anomalies are indicated. Provide initial support deformation monitoring data to the Engineer on a weekly basis.

C. The Engineer will review data from readings taken by the Contractor within 24 hours of receiving data. The Engineer will also make interpretations of the data available to the Contractor. The Contractor may make his own interpretations of monitoring data for his own purposes. Data or interpretations shall not be published or disclosed to other parties without advance written permission of the Owner.

D. The Contractor shall make visual observations of ground conditions and building conditions in the vicinity of the site and communicate immediately with the Engineer if signs of ground or building movements are observed.

E. The Engineer may take independent instrumentation measurements. Cooperate with the Engineer during instrumentation monitoring by providing access to the instrumentation locations in a timely manner and by providing and maintaining safe means of access to all instrumentation locations for data collection. Data acquired by the Engineer will be made available to the Contractor in a timely manner.

F. The Contractor may make his/her own interpretations of monitoring data for his/her own purposes. Data or interpretations shall not be published or disclosed to other parties without advance written permission of the Owner.

3.08 DISPOSITION OF INSTRUMENTS

A. Surface Control Points: All surface control points on public property shall be removed during the cleanup and restoration work, unless directed otherwise by the Engineer.

B. Following the completion of construction and upon approval from the Engineer, abandon observation wells, unless as directed by the Engineer to leave in place. Observation wells shall be abandoned by removing all material within the original borehole, including the casing, filter, and grout seal in accordance with local permit. Using approved tremie methods completely fill the hole and all voids with non-shrink cement grout prior to removal of the drill casing such that formation materials do not move into the hole prior to grouting. Restore the ground surface to its original condition. Abandon wells within paved areas by removing the vaults and well caps to the pavement subgrade. Remove wells as discussed above and repair or patch pavement with the same surface type.

C. Seismographs: Units shall be returned to the Contractor following completion of the excavation.

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# SECTION 05210

# STEEL JOISTS

## PART 1 GENERAL

### 1.01 SCOPE OF WORK

A. Furnish all materials, equipment, and labor necessary for the installation steel joists as shown on the Drawings, and as specified herein.

B. Steel joists are shown on the Drawings, including general layout and type of joists required.

C. Contractor is responsible for coordinating all related work specified in other sections including steel joist supports, field painting, fireproofing, flashing, and other miscellaneous items.

D. This Section includes the following:

1. K-series steel joists
2. KCS – series joists
3. LH-series long-span steel joists
4. Joist Bridging
5. Joist Accessories

### 1.02 MATERIALS COMPLIANCE WITH AIS

A. P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. This Project meets the definition of such work, and the Environment Protection Agency (EPA) implementation requirements for this AIS requirement are outlined within the DWSRF memorandum titled “Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014” included as part of the RLF Supplemental General Conditions.

B. All parties are required to comply with these requirements and to ensure that all qualifying iron and steel products used in this project must be produced in the United States. See RLF Supplemental General Conditions for additional details.

1.03 RELATED SECTIONS

A. Division 04 – Masonry

B. Section 05120 – Structural Steel

C. Section 05310 – Metal Decking

D. Section 05500 – Miscellaneous Metals

E. Section 05513 – Galvanizing

F. Division 09 – Finishes

1.04 REFERENCED STANDARDS

A. American Iron and Steel Institute (AISI), latest edition:

1. AISI S100 North American Specification for Design of Cold-Formed Steel Structural Members, latest edition

B. ASTM International (ASTM), latest edition:

1. ASTM A36 Standard Specification for Carbon Structural Steel

2. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

3. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

4. ASTM A307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength

5. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

6. ASTM F3125 Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

C. American Welding Society (AWS), latest edition:

1. AWS D1.1 Structural Welding Code – Steel

D. Steel Joist Institute (SJI), latest edition:

1. Standard Specification for K-Series, LH-series, and DLH-Series Open Web Steel Joists and for Joist Girders - SJI 100

2. Code of Standard Practice for Steel Joists and Joist Girders – SJI COSP

1.05 DEFINITIONS

A. SJI "Specifications" : Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."

B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.06 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated.

B. Design special joists to withstand design loads with live load deflections no greater than the following:

1. Floor Joists: Vertical deflection of 1/360 of the span

2. Roof Joists: Vertical deflection of 1/360 of the span

1.07 SUBMITTALS

A. General: Submit each item in this section according to the conditions of the contract and Section 01300, Submittals.

B. Qualification Data: Submit manufacturer’s qualifications and certificates.

C. Product Data: Submit manufacturer's specification and installation instructions for each steel joist type and specified accessories. Include manufacturer’s shop applied prime coating product information and certify compatibility with field applied coatings for steel joists and accessories indicated to receive field applied coatings.

D. Shop Drawings: Submit detailed steel joist placement drawings showing layout for each type of joist, connections, anchorage details, extensions, and accessories. Include length, camber, mark, number, type, location, spacing of joists and bridging.

E. Mill Certificates: Submit mill reports for the structural steel used in the joists and for the bolts certifying compliance with specified requirements.

F. Certification that welders are qualified in accordance with AWS D1.1, on the shop and field welding procedures to be used.

1.08 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables of SJI “Standard Specification.” Provide qualifications and certificates of compliance with submittal.

1. The steel joist manufacturer shall be a firm experienced in manufacturing joists similar to those indicated for this Project and with a record of successful in-service performance for a minimum of 2 years.

B. SJI Specifications: Comply with standard specifications in SJI's "Specifications" that are applicable to types of joists indicated on the Drawings.

C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."

D. Joists shall be designed in accordance with these specifications as simply supported uniformly loaded trusses supporting a floor or roof deck so constructed as to brace the top chord of the joists against lateral buckling. Where any applicable design feature is not specifically covered herein, the design shall be in accordance with the following specifications of latest adoption:

1. American Institute of Steel Construction Specification for Design, Fabrication and Erection of Structural Steel for Buildings (Allowable Stress Design), where the material used consists of plates, shapes or bars.

2. American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members AISI S100, for members which are formed from sheet or strip material.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI “Specifications.”

B. Protect joists and accessories from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel: Comply with SJI “Specifications” for chord and web members.

B. Steel Bearing Plates: ASTM A36

C. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.

1. Finish: Plain, uncoated where joists are scheduled to receive field applied coating system. Hot-dipped galvanized where joists are indicated to be hot-dipped galvanized.

D. High-Strength Bolts, Nuts, and Washers: ASTM F 3125, Grade A325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

1. Finish: Plain, uncoated where joists are scheduled to receive field applied coating system. Hot-dipped galvanized where joists are indicated to be hot-dipped galvanized.

E. Welding Materials: Comply with the requirements of SJI “Specifications” and AWS D1.1 for the materials being welded.

F. Shop Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15. Primer paint shall be light grey color unless noted otherwise on the drawings; compatible with finish coats on exposed joists scheduled to receive field applied coating system.

G. Galvanized Steel Repair Paint: ASTM A 780 Zinc-rich paint

2.02 K-SERIES STEEL JOISTS

A. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.

1. Joist Type: K-series steel joists and KCS-type K-series steel joists

B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.

C. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.

D. Splices in Chord Members: All splices shall be designed and provided in accordance with SJI “Specifications.”

1. Shop splices shall be permitted to occur at any point in chord members.

2. Field splices shall be designed by the manufacturer and shall be either bolted or welded. Splices shall be designed for the member force, but not less than 50 percent of the member strength.

E. Holes in Chord Members: Provide holes in chord members where required for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member per AISC Section 1.14.

F. Extended Ends: Extend bearing ends of joists where indicated, complying with manufacturer's standards and the requirements of applicable SJI "Specifications" and load tables.

G. Camber joists according to SJI's "Specifications" unless noted otherwise on the drawings.

H. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.03 LONG-SPAN STEEL JOISTS

A. Manufacture steel joists according to "Standard Specifications for Longspan Steel Joists, LHSeries in SJI's "Specifications," with steel-angle top- and bottom-chord members; of joist type and end and top-chord arrangements as indicated.

1. Joist Type: LH-series steel joists

B. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.

C. Splices in Chord Members: All splices shall be designed and provided in accordance with SJI "Specifications."

1. Shop splices shall be permitted to occur at any point in chord members.

2. Field splices shall be designed by the manufacturer and shall be either bolted or welded. Bolted field splices shall be provided where steel joists are indicated to be galvanized. Splices shall be designed for the member force, but not less than 50 percent of the member strength.

D. Holes in Chord Members: Provide holes in chord members where required for securing other work to steel joists; however, deduct area of holes from the area of chord when calculating strength of member per AISC Section 1.14.

E. Camber long-span steel joists according to SJI's "Specifications."

F. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.04 JOIST ACCESSORIES

A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size,

spacing, and span. Provide bridging anchors for ends of bridging lines terminating at walls or beams. Furnish additional erection bridging if required for stability.

B. Steel bearing plates with integral anchorages are specified in Section 05500, Miscellaneous Metals.

C. Supply miscellaneous accessories, including splice plates and bolts required by joist manufacturer to complete joist installation.

2.05 CLEANING AND SHOP PAINTING

A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2 or power-tool cleaning, SSPC-SP 3.

B. Do not prime paint joists and accessories to receive galvanized coatings or sprayed fire-resistive materials.

C. Apply one shop coat of primer to steel joists and accessories by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 1.0 mil.

2.06 GALVANIZING

A. Galvanize steel joists and accessories by hot-dipped galvanizing in accordance with ASTM A123 where indicated on the Drawings.

1. Fasteners and hardware shall be hot-dipped galvanized in accordance with ASTM A153 when steel joists are indicated to be galvanized.

2.07 INSPECTION

A. Joists shall be inspected by the manufacturer before shipment to ensure compliance of materials and workmanship with the requirements of these specifications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to starting erection of steel joists, examine supporting structural framing, substrates, embedded bearing plates, and field connections for compliance with requirements and installation tolerances and other conditions affecting performance of work of this section.

1. Proceed with erection and installation only after any unsatisfactory conditions have been corrected

3.02 INSTALLATION – GENERAL

A. Do not start installation of joists until supporting construction is in place and secured.

B. Handle, place, and secured steel joists in accordance with SJI "Specifications," SJI Code of Standard Practice, approved placement plans, joist manufacturer's written recommendations, and requirements of this section.

C. Care shall be exercised at all times to avoid damage to the joists and accessories through careless handling during unloading, storing and erecting.

D. Comply with all applicable OSHA, State, and Local rules for erection.

E. Place joists on supporting work, space, adjust, and align joists accurately in location before permanently fastening.

F. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.

G. Provide minimum bearing requirements specified by SJI.

H. All field welding shall be performed in a work-man-like manner to ensure that the joists are not damaged by such welding. All field welds shall conform to the requirements of AWS D1.1 for the material being welded. Field welding shall not damage the joists.

I. Do not field cut or otherwise alter structural members of the joists.

3.03 INSTALLATION OF BRIDGING

A. Install and connect bridging concurrently with joist erection. All bridging and bridging anchors shall be completely installed before construction loads are placed on the joists.

B. Bridging shall support the top chords against lateral movement during the construction period and shall hold the steel joists in the approximate position as shown on the plans.

C. The ends of all bridging lines terminating at walls or beams shall be anchored thereto.

3.04 END ANCHORAGE

A. Anchor joists resting on steel bearing plates on masonry or concrete with welds, bolts, or a combination of the two in accordance with the SJI "Specifications" for type of joists used.

B. Anchor steel joists to supporting framework with welds, bolts, or a combination of the two in accordance with SJI "Specifications" for type of joist used.

C. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

## 3.05 ERECTION STABILITY AND HANDLING

A. When it is necessary for the erector to climb on the joists, extreme caution must be exercised since unbridged joists may exhibit some degree of instability under the erector's weight.

B. During the construction period, the Contractor shall provide means for adequate distribution of concentrated loads so that the carrying capacity of any joist is not exceeded.

C. No construction loads shall be allowed on the steel joists until all bridging is installed and anchored, and all joist bearing ends are attached.

D. Erection stability and handling of joists and joist girders shall be in accordance with SJI “Specifications” and requirements of this section.

1. Stability Requirements

a. One end of all joists shall be attached to its support before allowing the weight of an erector on the joists.

b. When bolted connections are used, the bolts must be snug tightened.

c. Bolted diagonal bridging shall be installed in accordance with SJI “Specifications.”

d. Hoisting cables shall not be released until this bolted diagonal bridging is completely installed.

e. No loads other than the weight of one erector are allowed on the joist until all bridging is completely installed and all joist ends are attached.

f. In the case of bottom chord bearing joists, the ends of the joist must be restrained laterally before releasing the hoisting cables.

g. After the joist is straightened and plumbed, and all bridging is completely installed and anchored, the ends of the joists shall be fully connected to the supports.

## 3.06 REPAIRS AND PROTECTION

A. Touchup Painting for Joists that are to Receive Finish Coat: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime painted joists, bearing plates, abutting structural steel, and accessories.

1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.

2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

B. Field repair to joists must be performed only in accordance with written direction from the joist manufacturer. The contractor shall submit all repair drawings to the Engineer.

C. Field modifications to joists are not permitted without the written approval from the joist manufacturer. The contractor shall submit all correspondence to the Engineer.

END OF SECTION

# SECTION 05310

# METAL DECKING

## PART 1 GENERAL

### 1.01 SCOPE OF WORK

A. Furnish all materials, equipment, and labor required to install metal decking as shown on the Drawings, and as specified herein.

B. Contractor is responsible for coordinating all related work specified in other sections including structural deck supports, field painting, fireproofing, roof sumps, flashings, drains, collars, gutters, downspouts, and other miscellaneous items.

### 1.02 MATERIALS COMPLIANCE WITH AIS

A. P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. This Project meets the definition of such work, and the Environment Protection Agency (EPA) implementation requirements for this AIS requirement are outlined within the DWSRF memorandum titled “Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014” included as part of the RLF Supplemental General Conditions.

B. All parties are required to comply with these requirements and to ensure that all qualifying iron and steel products used in this project must be produced in the United States. See RLF Supplemental General Conditions for additional details.

### 1.03 RELATED SECTIONS

A. Section 05120 – Structural Steel

B. Section 05210 – Steel Joists

C. Section 05500 – Miscellaneous Metals

D. Section 05513 – Galvanizing

E. Division 07 – Thermal and Moisture Protection

F. Division 09 – Finishes

## 1.04 REFERENCED STANDARDS

A. ASTM International (ASTM), latest edition:

1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

2. ASTM A924 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

3. ASTM 1008 Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable

B. American Iron and Steel Institute (AISI), latest edition:

1. AISI S100 North American Specification for Design of Cold-Formed Steel Structural Members, latest edition

C. American Welding Society (AWS), latest edition:

1. AWS D1.1 Structural Welding Code – Steel

2. AWS D1.3 Structural Welding Code – Sheet Steel

D. Steel Deck Institute (SDI), latest edition:

1. ANSI/SDI SD Standard for Steel Roof Deck

2. ANSI/SDI QA/QC Standard for Quality Control and Quality Assurance for the Installation of Steel Deck

## 1.05 SUBMITTALS

A. General: Submit each item in this section according to the conditions of the contract and Specification Section 01300, Submittals.

B. Product Data: Submit manufacturers' specification and installation instructions for each type of metal decking and specified accessories. Include steel deck dimensions and finishes.

C. Shop Drawings: Submit metal deck placement drawings showing layout for each type of deck panels, deck attachment details, sump pans, cut openings and accessories specified in the contract documents.

D. Welder certificates: If field welding is performed, welder certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance", or if mechanical fasteners are used, certification from the manufacturer evidencing compliance of mechanical fasteners with design requirements based upon comprehensive testing.

1.06 QUALITY ASSURANCE

A. Codes and Standards: Comply with applicable provisions of the following unless otherwise indicated.

1. American Iron and Steel Institute (AISI) Specification for Design of Cold Formed Steel Structural Members, latest edition

2. ANSI/SDI SD Standard for Steel Deck

3. American Welding Society (AWS) D1.3 Structural Welding Code/Sheet Metal, latest edition

4. Steel Deck Institute (SDI) Design Manual, latest edition

B. Welding Qualifications: Certify that each welder has satisfactorily passed AWS qualification test for the welding process involved, and if applicable, has undergone recertification.

1. AWS D1.3 Structural Welding Code – Sheet Steel

C. Mechanical Fasteners: If required by the fastener manufacturer, certify that each mechanical fastener installer has satisfactorily passed certification tests as required by the fastener manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage and handling.

B. If ground storage is needed, the deck bundles must be stored off the ground, with one end elevated to provide drainage. Bundles must be protected against condensation with a ventilated waterproof covering. Bundles must be stacked so there is no danger of tipping, sliding, rolling, shifting or material damage. Bundles must be periodically checked for tightness and retightened as necessary (so wind cannot loosen sheets) to prevent damage caused by the wind.

C. Deck bundles placed on the building frame must always be placed near a main supporting beam at a column or wall. In no case are the bundles to be placed on unbolted frames or unattached and unbridged joists. The structural frame must be properly braced to receive the bundles.

## PART 2 PRODUCTS

### 2.01 MANUFACTURER

A. A manufacturer offering steel roof deck products to be incorporated into the work must be a member of the Steel Deck Institute.

### 2.02 MATERIALS

A. Steel deck shall be designed and fabricated to comply with ANSI/SDI SD Standard for Steel Deck. Deck profile, gauge, finish, and side-lap configuration shall be as indicated on the Drawings.

B. Sheet steel for galvanized roof deck shall conform to ASTM A653 Structural Steel (SS), Grade 50 (50 ksi)or higher.

1. Galvanizing shall conform to ASTM A924 with a minimum coating class of G60 (Z180) as defined in A653.

C. Sheet steel for uncoated steel shop primer painted roof deck shall conform to ASTM A1008, Structural Steel (SS) Grade 50 (50 ksi)minimum .

1. Steel deck shall have a coat of manufacturers standard rust-inhibitive shop primer paint applied to top and bottom sides. Primer on bottom side of roof deck shall be compatible with finish coating systems where applicable.

### 2.03 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. The deck manufacturer shall furnish ridge and valley plates, flat plates at change of deck direction and sump pans, as shown on plans to provide a finished surface for the application of roof installation and roof covering.

C. Column Closures, End Closures, Z-Closures, Cover Plates, Ridge and Valley Plates, and other Miscellaneous Sheet Metal Deck Accessories: Galvanized steel sheet, minimum yield strength of 33,000 psi, not less than 0.0358-inch (20 gage) design uncoated thickness of profile indicated or required for application.

D. Pour Stops and Girder Fillers: Galvanized Steel sheet, minimum yield strength of 33,000 psi, and of thickness and profile recommended by SDI for overhang and slab depth.

E. Sump Pans: Single-piece steel sheet, 0.0747 inch (14 gauge) thick galvanized steel sheet. For drains, cut holes in the field.

F. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch (16 gauge) thick, with factory-punched hole of 3/8-inch minimum diameter.

G. Mechanical Support Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws. Size and fastening pattern as indicated.

H. Screws for Side-Lap Fastening: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, diameter and spacing or quantity as indicated on structural drawings.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine support framing and field conditions for compliance with requirements and installation tolerances and other conditions affecting performance of Work of this section. All OSHA, State and Local rules for erection must be followed.

### 3.02 PREPARATION

A. Place deck in accordance with approved placement plans.

B. Locate deck bundles to prevent overloading of support members.

### 3.03 INSTALLATION – GENERAL

A. Install deck panels and accessories according to SDI Specifications, SDI Manual of Construction with Steel Deck, structural drawings, and in accordance with the installation drawings marked for field use, and requirements of this section.

B. Place deck panels on structural supports and adjust to final position with ends lapped or butted over structural supports. Install deck ends over supports with a minimum end bearing of 2 inches, or as indicated on the approved installation drawings. Lapped or butted end joints shall be 3 inches minimum at open-web steel joists or 2 inches at other structural supports. Attach the deck panels firmly to the supports immediately after placement in order to form a safe working platform.

C. Cut and neatly fit deck and accessories at skew conditions, around openings and other work projecting through or adjacent to the decking.

D. Trades that subsequently cut unscheduled openings through the roof deck are responsible for reinforcing those openings in accordance with the requirements of the Engineer.

### 3.04 ATTACHMENT

A. Anchor deck units to steel supporting members by arc spot puddle welds or approved mechanical fasteners.

1. Arc seam welds shall be 3/8-inch by 1-1/4-inch minimum visible dimensions with the attachment pattern shown on placement drawings. Welds shall comply with AWS

requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

2. Mechanical fasteners, either powder actuated, pneumatically driven, or self-drilling screws may be used in lieu of welding, provided product data has been submitted and approved.

B. Side lap attachment: Fasten side laps of deck units with spans greater than 5 feet at mid span or 36-inch intervals, whichever distance is smaller, or as shown on design drawings using one of the following methods:

1. #10 self-drilling screws unless indicated otherwise on the design drawings

2. Crimp or button punching

3. Arc seam welds 3/8-inch by 1-1/4-inch minimum visible dimensions

C. Perimeter Edge Attachment: Fasten perimeter edges of deck units at minimum 36-inch intervals or as shown on design drawings using one of the following methods:

1. Arc seam welds 3/8-inch by 1-1/4-inch minimum visible dimensions

2. Mechanical fasteners, either powder actuated, pneumatically driven or self-drilling screws may be used in lieu of welding, provided product data has been submitted and approved

D. Deck accessories shall be installed and fastened to supporting members by in accordance with ANSI/SD Standard for Steel Deck using arc seam welds or self-drilling screws at 12-inch maximum intervals or as shown on design drawings.

E. Roof Sump Pans: Install where indicated in architectural details in openings cut in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.

1. Install reinforcing members as indicated to span between supports and weld or mechanically fasten

## 3.05 REPAIRS

A. Before placement of roof insulation and roof covering, the deck shall be inspected for tears, dents or other damage that may prevent the deck from acting as a structural roof base. The need for repair of the damaged deck shall be determined by the Architect or Engineer of Record.

## 3.06 CONSTRUCTION GUIDELINES

A. Do not use deck units as a working platform or storage area until units are permanently attached in position.

B. Construction loads must not exceed load carrying capacity of deck.

## 3.07 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck in accordance with quality-assurance inspection requirements of ANSI/SDI QA/QC.

    a. Perform inspection of field welds and other inspections as indicated on structural drawings.

    b. Perform inspection of the side lap screw connections to ensure that the proper size and number of screw attachments per span have been installed between supports.

    c. Perform inspection of the support connections to ensure that the proper size and number of attachments per deck sheet have been installed. Ensure that the fasteners are installed per the manufacturer's instructions and quality assurance requirements.

    d. Inspect other attachments of deck and accessories according to manufacturer's instructions and quality assurance requirements, or per industry standards.

END OF SECTION

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# SECTION 05513

# GALVANIZING

## PART 1 GENERAL

### 1.01 SCOPE OF WORK

A. Furnish all labor, equipment, and materials required to provide hot dip galvanizing of structural and miscellaneous steel members, steel fabrications, assemblies, and hardware in accordance with this specification.

B. Materials to be galvanized are to be furnished under other Sections, as applicable.

### 1.02 MATERIALS COMPLIANCE WITH AIS

A. P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. This Project meets the definition of such work, and the Environment Protection Agency (EPA) implementation requirements for this AIS requirement are outlined within the DWSRF memorandum titled “Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014” included as part of the RLF Supplemental General Conditions.

B. All parties are required to comply with these requirements and to ensure that all qualifying iron and steel products used in this project must be produced in the United States. See RLF Supplemental General Conditions for additional details.

### 1.03 RELATED SECTIONS

A. Section 05120 – Structural Steel

B. Section 05310 – Metal Decking

C. Section 05500 – Miscellaneous Metals

D. Division 09 – Finishes

### 1.04 REFERENCE STANDARDS

A. American Galvanizers Association, Inc. (AGA), latest edition:

1. The Design of Products to be Hot Dip Galvanized after Fabrication
2. Recommended Details for Galvanized Structures
3. Inspection of Products Hot Dip Galvanized after Fabrication

B. ASTM International (ASTM), latest edition:

1. ASTM A53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

2. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

3. ASTM A143 Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement

4. ASTM A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

5. ASTM A384 Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies

6. ASTM A385 Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)

7. ASTM A563 Standard Specification for Carbon and Alloy Steel Nuts

8. ASTM A780 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

9. ASTM D6386 Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting

10. ASTM F3125 Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

## 1.05 QUALITY ASSURANCE

A. Hot-dip galvanizing shall be performed in accordance with ASTM A385 and the recommendations of the AGA.

## 1.06 DELIVERY, STORAGE AND HANDLING

A. Handling and Storage: Handle and protect galvanized materials from damage to zinc coating. Space surfaces of galvanized materials to permit free circulation of air to avoid humid storage stain.

B. Damaged Material: Repair material showing evidence of damage to zinc coating. If not repairable, material with damaged coating will be subject to rejection.

## PART 2 PRODUCTS

### 2.01 MATERIALS TO BE GALVANIZED

A. Materials to be galvanized shall be suitable for galvanizing as specified in ASTM A384 and A385.

B. Inspect materials and assemblies before galvanizing and determine whether they are suitable for galvanizing. Replace, or modify as required, items with are not suitable for galvanizing.

### 2.02 GALVANIZING

A. Steel members, fabrications, and assemblies specified to be galvanized shall be hot-dip galvanized after fabrication in accordance with ASTM A123.

B. Safeguard against embrittlement in accordance with ASTM A143.

C. Safeguard against warpage or distortion of steel members in accordance with ASTM A384. Notify the Engineer of potential warpage problems that may require modification in design, before proceeding with steel fabrications.

D. Bolts, nuts, and washers, and iron and steel hardware components specified to be galvanized shall be hot-dip galvanized in accordance with ASTM A153. Nuts shall be tapped after galvanizing as specified in ASTM A563. Coat nuts with waterproof lubricant, clean and dry to the touch. High strength bolts for structural steel joints shall be hot-dip galvanized in accordance with ASTM F3125.

E. Pipe specified to be galvanized shall be hot-dip galvanized in accordance with ASTM A53.

F. Metal deck shall be galvanized as specified in Section 05310, Metal Decking.

### 2.03 PROTECTIVE TREATMENTS

A. Galvanizing materials subject to extended periods of storage in open, exterior locations shall be given either a passivating treatment or a light oiling to prevent humid storage stain. Treatment, solution, and process shall be submitted for approval by the Engineer. However, chromate passivation should not be used on items that are to be painted.

B. Method of protective treatment shall be confirmed for compatibility with subsequent treatments and applications of coatings, prior to application of protective treatment.

### 2.04 PAINTED GALVANIZED SURFACES

A. Prepare galvanized metal surfaces to be shop or field painted in accordance with ASTM D6386.

B. Where specified, shop coat galvanized metal surfaces in accordance with Division 09, Painting.

## PART 3 EXECUTION

### 3.01 FIELD INSPECTION

A. Installed galvanized materials, fabrications, and assemblies shall be visually inspected in conformance with the AGA inspection guidelines.

### 3.02 TOUCH-UP AND REPAIR

A. Repair damaged galvanized surfaces in accordance with ASTM A780 using organic zinc-rich paint.

B. Dry film thickness of applied repair materials shall not be less than the galvanized coating thickness required by ASTM A53, A123, or A153, as applicable.

END OF SECTION

# SECTION 11631.01

# MIXING SYSTEM ROTARY SCREW AIR COMPRESSORS

## PART 1 GENERAL

### 1.01 SCOPE

A. This section covers the furnishing of the compressed air system with rotary screw compressors to be installed as indicated on the Drawings and as required herein. The system shall be sized and provided by the Mixing System Supplier (MSS) in accordance with Compressed Air Mixing Systems section. Compressed air mixing will be located in the Influent Electrical Building and will serve the BNR Basins. The compressed air system shall be sized to provide enough air to the entire BNR system.

B. Each compressor unit shall be furnished complete with all accessories and appurtenances specified or otherwise required for proper operation.

C. Each compressor and drive unit along with standard accessories shall be mounted on a common baseplate with an acoustical enclosure as indicated on the Drawings.

### 1.02 MATERIALS COMPLIANCE WITH AIS

A. P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel (AIS)” requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works. This Project meets the definition of such work, and the Environment Protection Agency (EPA) implementation requirements for this AIS requirement are outlined within the DWSRF memorandum titled “Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014” included as part of the RLF Supplemental General Conditions.

B. All parties are required to comply with these requirements and to ensure that all qualifying iron and steel products used in this project must be produced in the United States. See RLF Supplemental General Conditions for additional details.

### 1.03 GENERAL

A. Equipment furnished under this section shall be fabricated and assembled in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Engineer.

B. General Equipment Stipulations

1. The Special Provisions section shall apply to all equipment furnished under this section. If requirements in this specification differ from those in the Special Provisions section, the requirements specified herein shall take precedence.

C. Seismic Design Requirements

1. Seismic design requirements for products specified herein shall be as indicated in the Meteorological and Seismic Design Criteria section.

D. Governing Standards

1. Except as modified or supplemented herein, all work covered by this section shall be performed in accordance with all applicable municipal codes and ordinances, laws, and regulations. In case of a conflict between these specifications and any state law or local ordinance, the latter shall govern.

2. All work shall comply with Underwriters' Laboratories (UL) safety requirements.

E. Power Supply

1. Unless otherwise indicated, power supply to the equipment shall be 480 volts, 60 Hz, 3 phase.

F. Dimensional Restrictions

1. Layout dimensions will vary between manufacturers and the layout area indicated on the Drawings is based on typical values. The supplier shall review the Drawings, the manufacturer's layout drawings, and installation requirements and shall make any modifications required for proper installation subject to acceptance by Engineer. At least 3 feet of clear access space shall be provided on all sides of each compressor unit and 3.5 feet clear access space on the side with the control panel.

G. Tagging

1. Each item of equipment and each part shipped separately shall be tagged and identified with indelible markings for the intended service. Tag number shall be clearly marked on all shipping labels and on the outside of all containers.

H. Identification

1. All equipment tagged on the drawings, except for submerged equipment shall be provided with number plates bearing the equipment tag number identified on the Drawings.

2. Number plates shall be beveled, 1/8th inch 3 mm thick laminated black phenolic plastic engraving stock with white core. Lettering on number plates shall be capitalized block letters ¾ inch 20 mm high.

3. Number plate height shall be twice the letter height. Number plate length shall be as needed, with suitable margins all around.

4. Lettering shall be placed in one row where practicable; however, where necessary due to excessive length, lettering shall be placed on more than one row and centered.

5. Number plates shall be attached with stainless steel panhead screws, rivets, or drive screws.

6. When a number plate cannot be installed due to the physical size, space, or mounting surface geometry of the equipment, the Contractor shall provide a 12-gauge 2 mm stainless-steel tag with engraved or imprinted equipment tag number. Lettering on tags shall be 1/4-inch, 6.5 mm high. Tags shall be rectangular with smooth edges and shall be fastened to the equipment with stainless steel mechanical fasteners or with a stainless-steel chain.

## 1.04 SUBMITTALS

A. Drawings and Data

1. Complete assembly and installation drawings, together with detailed specifications and data covering materials, drive unit, parts, devices, and accessories forming a part of the equipment furnished, shall be submitted in accordance with the Submittals section. Electrical schematics, wiring diagrams, and panel layout drawings for compressor controls shall be included. The following data shall be submitted:

   a. Compressor Packages

      1) Statement from the manufacturer verifying the minimum specified system cycle time will not result in excessive oil carryover greater than published values.
      2) Manufacturer
      3) Type and model
      4) Compressor rotative speed
      5) Dimensions
      6) Weight including motor
      7) Performance data at variable discharge pressures, including brake horsepower
      8) The required operating pressure and maximum rated compressor pressure
      9) Bearing data
      10) Filter and silencer details
      11) Accessory details
      12) Piping schematic showing pipe sizes and instrument and valve locations
      13) Control equipment
      14) Sequence of operation
      15) Heat rejection data
      16) Cooling air flow data
      17) Flow and pressure capabilities and set points
      18) Noise level at 3 feet away from unit
      19) Calculation showing system pressure requirements
      20) Refrigerant air dryer

   b. Refrigerant air dryer

      1) Material of construction

2) Model
3) Dimensions
4) Connection sizes and locations
5) Capacity
6) Pressure drop at rated capacity
7) Pressure rating
8) Dew point
9) Motor size if applicable
10) Clear space required for air circulation and maintenance access

c. Receiver:

1) Manufacturer
2) Materials of construction
3) Capacity
4) Pressure rating
5) Integral instrumentation product data
6) Dimensions
7) Connection size and locations
8) Color selection chart
9) Verification of ASME Code stamp

d. Coalescing Oil Removal Filter

1) Manufacturer
2) Materials of construction
3) Model
4) Capacity
5) Pressure drop at rated capacity
6) Efficiency

e. Oil Mist Eliminator:

1) Manufacturer
2) Materials of construction
3) Model
4) Capacity
5) Pressure drop at rated capacity
6) Pressure rating
7) Connection sizes and locations
8) Guaranteed element life
9) Efficiency

f. Accessories:

1) Manufacturer
2) Materials of construction
3) Model
4) Pressure rating
5) Size

g. Motors:

1) As specified in the Electric Motors section

h. Seismic Design Requirements

1) Seismic design requirements for products specified herein shall be as indicated in the Meteorological and Seismic Design Criteria section.

B. Operation and Maintenance Manuals

1. Operation and maintenance manuals shall be supplied as required in the Submittals section. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered.

1.05 SPARE PARTS

A. The following spare parts and accessories shall be furnished in substantial wooden boxes with identifying labels and delivered to the vicinity of the project site or the Owner as directed:

| Spare Parts | Quantity |
|---|---|
| Intake air filters, per compressor. | 2 |
| Lubricant filters, per compressor. | 2 |
| Air-oil separator filter elements, per compressor. | 1 |

PART 2 PRODUCTS

2.01 SERVICE CONDITIONS

A. The compressed air package and accessories shall be suitable for the following service conditions:

| | |
|---|---|
| Seismic design requirements and site elevation. | See Meteorological and Seismic Design Criteria Section |
| Barometric pressure. | 14.21 psia |
| Location. | Indoor |
| Inlet ambient air temperature range. | 60° F to 104° F |
| Design relative humidity at maximum ambient air temperature. | 50% |

B. Parts shall be interchangeable between units of similar size and capacity to extent practical.

C. All equipment furnished shall be designed to meet all specified conditions and to operate satisfactorily at the specified elevation.

## 2.02 PERFORMANCE AND DESIGN REQUIREMENTS

A. The compressed air equipment shall be designed for the operating conditions and requirements as listed in Mixing System Rotary Screw Air Compressors Schedule at the end of this section.

## 2.03 MATERIALS

A. Compressor:

1. Rotors: Steel or high strength ductile iron

2. Housing: Cast iron

3. Bearings: ABMA $L_{10}$ rating of 40,000 hours minimum

   a. Radial: Roller
   b. Thrust: Per manufacturer's recommendation
   c. Baseplate: Cast iron or fabricated steel

4. Rust-Preventive Compound: As recommended by manufacturer

## 2.04 PACKAGE CONSTRUCTION

A. Each compressor package shall consist of, but not necessarily be limited to, an inlet air filter, compressor, motor, air/oil separator reservoir, oil cooler, aftercooler, separator, integral refrigerant dryer, controls, control panel, enclosure, base, valves, piping, and unloading system. An inlet valve shall not be provided and the compressor shall run in a load/unload manner.

B. The oil cooler and aftercooler shall be air cooled and shall reduce the discharge air temperature to within 15 degrees of the specified summer indoor air temperature.

C. The refrigerant dryer shall have a maximum dew point of 40 F.

D. The air compressor package components shall be standard products of the manufacturers. The packages shall be completely factory assembled requiring only field connection of electrical power, air, and condensate drain piping.

E. A centrifugal moisture separator shall be provided on each aftercooler. The moisture separator shall be provided with an electric “No-Loss” type condensate drain trap powered by the compressor power panel.

F. Compressors:

1. The compressors shall be of the single stage, positive displacement, oil-flooded, rotary screw type.

2. Compressor rotors shall have integral shafts and shall be dynamically balanced. Rotors and housings shall be precision machined for accurate bearing positioning

and running clearances. The male rotor shall be connected to the drive motor with a flexible coupling, belt drive, or gear drive in a manner which will ensure permanent alignment.

3. Positive pressure lubrication shall be provided. Lubricant shall be provided as recommended by the manufacturer. A lubricant filter shall be provided with a 10 micron absolute rating.

4. An air/oil separator reservoir shall be provided. The reservoir shall be designed and constructed in accordance with the ASME Code for Unfired Pressure Vessels and shall bear the code stamp. The reservoir shall include two-stage filtration to remove oil from air stream. Oil carry-over downstream of the separator shall not exceed 3 ppm by weight.

5. Compressors shall be manufactured by Sullivan Palatek without exception.

G. Baseplate

1. Each baseplate shall be designed for no measurable deflection with the equipment mounted thereon and the baseplate supported around its perimeter. Each base shall be designed so that all equipment bolted to it can be removed without access to the underside of the plate. Structural stiffeners shall be located under the compressors at the compressor anchor points.

H. Enclosures

1. Each compressor and all its accessories and appurtenances shall be completely enclosed within an acoustic enclosure. The enclosures shall be sheet metal with acoustic lining designed to reduce noise levels at 3.3 feet to 86 dB. The enclosure shall provide easy access to all maintenance items within the enclosure, utilizing hinged access doors or removable panels.

I. Refrigerant Air Dryer

1. Refrigerant air dryers shall be of the air-cooled, noncycling refrigerant type capable of providing a 33° F to 39° F pressure dew point at the dryer exit when operating continuously at the design conditions.

2. Sized for full flow, pressure, and temperature operating range of each compressor

3. Aftercooler Cold Temperature Difference (CTD) selected based on design of downstream air drying components and ambient conditions.

4. Dryers shall consist of a refrigerant-to-air heat exchanger, separator, hermetically sealed refrigeration unit, and self-regulating hot gas bypass valve. Each dryer shall include an integral pre-cooling/reheat air-to-air heat exchanger. Dryers shall be furnished with manual motor "OnOff" switch, running light, and electric “No-Loss” type condensate drain trap. Each dryer shall be furnished with an evaporator performance gauge and an intake air thermometer.

5. Dry contact outputs from the dryer controls shall be provided for a “Compressed Air Dryer Common Alarm” or “High Pressure Dewpoint Alarm”. Contacts shall be rated 5 amperes at 120 VAC.

6. The air dryer shall be rated for a 460 volts, 60 Hz, 3 phase power supply.

J. Filtration

1. Inlet Air Filters

a. Inlet air filters shall have minimum 1 micron pore size with replaceable filter elements.

K. Valves and Piping

1. Valves and piping within the enclosure shall be the compressor manufacturer's standard. Relief valves shall be provided for equipment protection on the air and coolant systems.

2. All piping and tubing shall be run in vertical and horizontal planes and shall not contact the baseplate. Piping shall be arranged to ensure that undue stresses from thermal expansion are not transmitted to equipment components. All control and instrument tubing shall be continuously supported.

3. Compressor discharge piping shall be sloped to drain to the receiver to prevent condensate in the discharge piping from draining back to the compressor.

4. Oil and condensate drain lines from each compressor package shall be piped to the edge of the baseplate.

5. Each compressor shall be provided with a dry type intake filter. Intake filters shall have replaceable filter element(s). Particle arrestance shall be not less than 99 percent at 5 micron size.

6. MSS shall provide control, regulating, and relief valves as indicated on the Drawings, or that are integral to the design and performance of the Compressed Air Mixing System.

7. The system shall be provided with pressure reducing valves as shown on the Drawings. The valves shall be sized and provided by the MSS.

## 2.05 AIR RECEIVERS

A. Air receivers shall be of all-welded construction with semi-ellipsoidal heads, with leg supports for vertical mounting on a concrete base. Receivers shall be designed and constructed in accordance with the ASME Code for Unfired Pressure Vessels and shall bear the code stamp.

B. Receivers shall be furnished with openings for inlet, outlet, drain, compressor control, instrumentation, and vent piping connections. Additional openings shall be provided as needed. All receiver connections 2-1/2 inches or larger shall be flanged.

C. Receivers shall be furnished with a safety relief valve, globe vent valve, electric “No-Loss” type condensate drain trap, and pressure gauge.

D. Air receivers shall be manufactured by Steel Fab, Brunner, Hanson, Manchester Tank, or equal.

2.06 OIL MIST ELIMINATORS

A. A mist eliminator shall be provided and shall be rated to meet the capacity of the air compressors.

B. The mist eliminator shall be capable of removing 100 percent of particles three (3) microns and larger, and 99.98 percent of particles 0.1 microns and larger. The mist eliminator element shall have a minimum life of eight (8) years before needing replacement.

C. The mist eliminator shall be provided with an electric “No-Loss” type condensate drain trap.

D. The mist eliminator shall be rated for a 120 volts, 60 Hz, single phase power supply.

2.07 OIL REMOVAL FILTERS

A. Oil removal filters shall be the coalescing type with replaceable filter elements. The filters shall remove 100 percent of the solids and liquids 0.025 micron or larger. Each filter shall be furnished with a differential pressure indicator to indicate the need for service or replacement of the elements. Each filter shall be furnished with a manual drain valve and all necessary prefilters. The filter and prefilter shall be oversized to fit the piping sizes. Oil removal filters shall be manufactured by Gardner-Denver, Hankison, Kaeser, Pioneer, Sullair, or equal.

2.08 CONTROLS

A. Each compressor shall be controlled by a solid-state electronic controller. All controls shall be suitable for operation throughout the ambient temperature range.

B. All control equipment for each air compressor package shall be furnished as needed for a complete installation. All connections between components on baseplates shall be made in the manufacturer's shop with only field connection of electrical power supply and remote alarm required.

C. All control equipment for the compressor package shall be housed in a control panel mounted on the package. All system wiring shall be shop installed to terminal blocks in the control panel.

D. Control Panel

1. All control devices shall be rigidly mounted within a NEMA Type 4 enclosure except for breaker handles, selector switches, push buttons, and indicating lights, which shall be mounted on the panel face.

2. Motor starters shall be full voltage, non-reversing, circuit breaker combination magnetic motor starters sized as needed by equipment manufacturer. Starters shall be furnished with thermal over-loads, dry type control power transformer if required by the manufacturer, and a magnetic motor circuit protector disconnect. Starters shall be mounted inside the control panel. Control power transformers shall be sized to handle all simultaneous loads.

3. Magnetic motor circuit protectors shall be molded-case circuit breakers with instantaneous trip elements. The breakers shall be manually operated with quick-make, quick-break, trip-free toggle mechanism.

4. One thermal overload relay shall be provided in each phase lead. Each starter shall be provided with an external manual reset push button for reset of the thermal overload relays.

5. An external manual breaker operating handle with provisions for up to three padlocks shall be provided on each starter. The access door shall be interlocked with the motor circuit protector so the door cannot be opened while the breaker is closed, except by an interlock override.

6. Control power transformers shall have both primary leads fused, one secondary lead fused, and one secondary lead grounded.

7. Internal panel tubing shall be run in horizontal and vertical planes and shall be rigidly supported to withstand handling and shipped without damage. Compression type bulkhead fitting shall be provided through the panel for all connections.

8. Internal panel wiring shall be neatly bundled and tied and shall be identified with suitable wire markers. Terminal blocks for external connections shall be furnished complete with marking strips, covers, and pressure connectors. A terminal shall be provided for each conductor of external circuits. All wiring shall be grouped or cabled and securely attached to the panel. Clearance for field wiring shall be provided between the terminal strips and base.

9. Each compressor shall be provided with a “Hand-Off-Auto” selector switch or equivalent controls within the solid-state compressor controller. Controls shall be the manufacturer’s standard. A separately adjustable pressure switch or transducer shall be furnished for loading and unloading each compressor, and shall be located at each compressor control panel. Pressure shall be sensed on each compressor package.

10. In the “Hand” position, the system shall operate continuously (without shutting off) in the “Load/No load” mode as controlled by pressure switches or transducers.

11. In the "Auto" position, the control system (MCP) shall control capacity and/or load and unload the lead and lag compressor at the specified pressures. Compressors provided with inlet valves as standard equipment shall be capable of automatic capacity control.

E. Air Dryer Control

1. Dryers shall consist of a refrigerant-to-air heat exchanger, separator, hermetically sealed refrigeration unit, and self-regulating hot gas bypass valve. Each dryer shall include an integral pre-cooling/reheat air-to-air heat exchanger. Dryers shall be furnished with manual motor “On-Off” switch, running light, and electric “No-Loss” type condensate drain trap. Each dryer shall be furnished with an evaporator performance gauge and an intake air thermometer.

2. Dry contact outputs from the dryer controls shall be provided for a “Compressed Air Dryer Common Alarm” and for “Compressed Air Dryer in Operation”. Contacts shall be rated 5 amperes at 120 VAC.

F. Compressor Control

1. The compressor control system shall automatically start, stop, load, unload, and control capacity to provide constant downstream air pressure within preset limits specified by MSS.

2. Control range shall be recommended by the MSS to provide a minimum 5 min loaded run time for the lead compressor. MSS shall provide sizing calculations for review by Owner’s Engineer.

3. Capacity control shall be by cycling. After the compressor has operated for an adjustable time while unloaded, it shall automatically stop. The continuous run timer adjustment range shall be 0 to 60 minutes, with an initial setting of 15 minutes. The capacity control system shall be designed to prevent oil foaming and carry-over with a minimum system cycle time of 10 seconds. Capacity may be controlled either through the compressor’s control panel, or separate MCP.

4. The control system shall indicate the following conditions:

   a. Elapsed time of operation in hours, non-resettable
   b. Delivered air pressure
   c. Power on

5. The control system shall stop the compressor, alarm the condition, and indicate the condition on the control panel for each of the following:

   a. High discharge air temperature, oil temperature or air/oil mixture temperature. Controls shall be provided to indicate any problems in the lubrication or cooling system
   b. Motor overload

6. A common "Reset" shall be provided so the alarm indicators are displayed until manually reset. Controls shall be designed to allow testing of the alarm indicators without actuating the remote alarm.

7. Dry contact outputs from the compressor controls shall be provided for the following:

   a. Compressor running

b. Compressor in auto or operating based on remote signal from MCP
c. Compressor common alarm, includes alarm conditions specified above and as recommended by the manufacturer, including separate signals for WARNING and FAULT/ALARM wherever applicable
d. Capability of dry contact outputs from the compressor controls to be hardwired to the MCP

8. A multi-position selector switch shall be provided to select the starting order of each unit. The selector switch shall be installed in a NEMA 1 enclosure for field mounting on the wall or a pedestal. Mounting will be by the installing contractor under the Hangers and Support section.

9. Each compressor shall be provided with an elapsed time meter mounted on the front of the control panel.

G. Multiple Unit Controls:

1. A solid-state electronic controller or equivalent electromechanical Master Control Panel (MCP) shall be furnished for automatically starting, stopping and adjusting capacity of each compressor to maintain the system pressure required.

2. MCP shall be capable of accepting discrete and analog signals from field instrumentation (e.g. pressure, temperature) provided by the MSS.

3. MCP shall use MSS-supplied field instruments to control blower operation within target operating pressure band of at least 20 psi.

4. MCP shall have output signal capability for:

a. Pressure
b. Compressor Run Status
c. Compressor Fault

5. MCP shall have the ability to control single and multiple-compressor operation independently of any other input from field instrumentation or other source not provided by the MSS.

## 2.09 BALANCE

A. All rotating parts shall be accurately machined and shall be in as nearly perfect rotational balance as practicable. Excessive vibration shall be sufficient cause for rejection of the equipment. The mass of the unit and its distribution shall be such that resonance at normal operating speeds is avoided. In any case, the unfiltered vibration displacement (peak-to-peak), as measured at any point on the machine, shall not exceed 5 mils.

B. At any operating speed, the ratio of rotative speed to the critical speed of a unit or its components shall be less than 0.8 or more than 1.3.

## 2.010 DRIVE UNITS

A. Each compressor shall be driven by an electric motor directly or through a belt drive or gear reducer as needed by the compressor manufacturer's design. The nominal input power rating of each gear or speed reducer shall be at least equal to the nameplate power rating of the drive motor. Drive units shall be designed for 24-hour continuous service. Gearmotors shall not be used.

B. Belt Drive

1. Belt drives shall be either V-belt or cogged timing belt. Vbelt and sheave groove dimensional tolerances shall be in accordance with the "Engineering Standards Multiple VBelt Drives" published by the Multiple VBelt Drive and Mechanical Power Transmission Association. Belt drives shall have a service factor of at least 1.6 at maximum speed based on the nameplate power rating of the drive motor. The speed reduction ratio of belt drives shall not exceed 4 to 1. Each belt drive shall include a sliding base or other suitable means of tension adjustment.

C. Gear Reducers

1. Gear reducers shall be as specified herein, except that permanently sealed, grease lubricated bearings will not be acceptable.

2. Each gear reducer shall be a totally enclosed unit with oil or grease lubricated, rolling element, antifriction bearings throughout.

3. Unless superseded by individual specification requirements each helical, spiral bevel, combination bevel helical, and worm gear reducers shall have a service factor of at least 1.50 based on the nameplate horsepower kilowatts of the drive motor. Cycloidal gear reducers shall have a service factor of at least 2.0 based on the nameplate horsepower kilowatts of the drive motor. Shaft mounted and flange mounted gear reducers shall be rated AGMA Class III. Helical gear reducers shall have a gear strength rating to catalog rating of 1.5. Each gear reducer shall be designed and manufactured in compliance with applicable most current AGMA standards, except the L10 bearing life shall be 200, 000 hours.

4. The thermal horsepower kilowatts rating of each unit shall equal or exceed the nameplate horsepower kilowatts of the drive motor. During continuous operation, the maximum sump oil temperature shall not rise more than 100°F 38°C above the ambient air temperature in the vicinity of the unit and shall not exceed 200°F 93°C.

5. Each grease lubricated bearing shall be installed in a bearing housing designed to facilitate periodic regreasing of the bearing by means of a manually operated grease gun. Each bearing housing shall be designed to evenly distribute new grease, to properly dispose of old grease, and to prevent over greasing of the bearing. The use of permanently sealed grease lubricated bearings will not be acceptable in large sized reducers. In small reducers, similar to basin equipment, permanently sealed grease lubricated bearings rated L10 200,000-hour life may be provided at the manufacturer’s option. An internal or external oil pump and appurtenances shall be provided if required to properly lubricate oil lubricated bearings. A dipstick or a sight

glass arranged to permit visual inspection of lubricant level shall be provided on each unit.

6. Gear reducers which require the removal of parts or the periodic disassembly of the unit for cleaning and manual regreasing of bearings will not be acceptable.

7. Certification shall be furnished by the gear reducer manufacturer indicating that the intended application of each unit has been reviewed in detail by the manufacturer and that the unit provided is fully compatible with the conditions of installation and service.

D. Electric Motors

1. The electric motors shall be designed as specified in the Electric Motors.

2.011 ACCESSORIES

A. At a minimum all accessories shall be installed in the locations indicated on the Drawings. Any additional accessories required by the manufacturer of the MSS for proper operation of the air compressor shall be furnished and installed as recommended.

B. Safety Valves

1. Safety valves in the compressor discharge piping shall be capable of protecting the compressors from damage when operating against a closed discharge valve and shall be suitable for the maximum compressor discharge air temperature.

C. Pressure Gauges

1. Each pressure gauge shall have a stainless-steel rotary geared movement. Each gauge shall be accurate to within 2 percent of full scale. Gauges shall have a range equal to approximately twice the normal operating pressure at the point of installation. The units of measurement shall be indicated on the dial face. Pressure readout shall be available in “psi” or “psig.”

2. Panel-mounted gauges shall have a 1/4 inch, minimum, NPT connection. All other gauges shall have a 1/2 inch, minimum, NPT connection. Each gauge shall be provided with a shutoff valve.

D. Differential Pressure Gauges

1. Differential pressure gauges shall be furnished for monitoring the pressure differential across each inlet filter. The gauge shall be permanently mounted and shall be furnished with a mounting bracket, tubing and all required fittings. Unless otherwise indicated, the installation hardware shall be Type 316 stainless steel. Tubing shall be ½ inch SS tubing, unless otherwise indicated, properly supported and braced for a permanent installation. The differential shall read the pressure in the suction pipe and the atmospheric pressure outside the building.

E. Pressure Switches and Indicators

1. Each pressure switch shall have spdt contacts rated 10 amperes at 120 volts ac and shall be complete with shutoff valve. Pressure switches mounted inside the control panel shall have NEMA Type 1 housings.

2. Panel-mounted switches shall have a 1/4 inch, minimum, NPT connection. All other switches shall have a 1/2 inch, minimum, NPT connection.

3. Pressure indicators shall be in conformance with the Instrumentation Products section. Analog signal output shall be hardwired, 4-20mA. Materials of construction shall be compatible with full operating temperature and pressure range of the application while maintaining accuracy requirements.

F. Thermometers

1. Thermometers shall be of the direct reading, bimetallic type. Thermometers shall be accurate to within one percent of full scale. Thermometers shall be furnished complete with a uniformly graduated dial indicator, temperature sensor, and thermowell. Thermometer ranges shall be such that the normal operating reading will be near the midpoint of the range. The units of measurement shall be indicated on the dial face.

G. Temperature Switches and Indicators

1. Temperature switches shall be remote bulb type with spdt contacts rated 10 amperes at 120 volts ac. Temperature switches shall have NEMA Type 1 housings, stainless steel thermowell assemblies, and armored capillaries. Capillary tubing shall be sufficient length for mounting the switch inside the control panel. Spare length of capillary tubing shall be neatly coiled and tied.

2. The diameter of air piping shall be increased at the thermowell location, so that the area between the well and pipe is not smaller than the cross-sectional area of the original piping. The entire sensitive portion of the temperature sensor shall be installed within the airflow stream.

3. Temperature indicators shall be in conformance with the Instrumentation Products section. Analog signal output shall be hardwired, 4-20mA. Materials of construction shall be compatible with full operating temperature and pressure range of the application while maintaining accuracy requirements.

H. Each compressor shall be provided with an elapsed time meter mounted on the front of the control panel.

I. Flexible Connections

1. Braided stainless steel flexible connections shall be furnished and installed on the compressor discharge piping connection to limit the transmission of vibration to the connecting piping.

## 2.10 SHOP TEST

A. Prior to shipment each compressor unit shall be operated to check alignment; faulty equipment and controls; proper wiring; leaks in piping, seals, or wells; and proper operation of the safety and operating controls. Compressor pressure controls shall be adjusted to the specified pressures. Defective equipment and controls disclosed by such tests shall be replaced and the package placed in satisfactory operating condition before shipping. A statement from the package supplier certifying that the specified shop test has been performed shall be submitted to Engineer prior to shipment.

# PART 3 EXECUTION

## 3.01 INSTALLATION

A. Each compressed air package shall be installed in accordance Special Provisions section.

B. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Anchor bolts shall be set in accordance with the manufacturer's recommendations and setting plans.

## 3.02 FIELD QUALITY CONTROL

A. Installation Check

1. An installation check by an authorized representative of the manufacturer is not required.

B. Installation Supervision

1. Installation supervision by the manufacturer is not required.

## 3.03 TRAINING

A. The manufacturer's representative shall provide training of Owner's personnel as described in the Demonstration and Training specification. All costs for training services shall be included in the Contract Price.

Schedule 1: Mixing System for Centrate Basin

| | |
|---|---|
| Location | Electrical Building |
| Service Location | BNR Basin No 1<br>BNR Basin No 2 |
| Compressors | |
| Tag Numbers | 2401-BNR-COMP<br>2402-BNR-COMP |
| Minimum Number of Compressors | Two (2)[B] |
| Operation | Lead/Lag[G] |
| Compressor Rated Discharge Pressure. | As required by MSS[C] |
| Maximum Motor Rating. | 75 hp |
| Drive Motor Speed. | As required by MSS[D] |
| Compressor Cooling. | Air cooled |
| Oil Mist Eliminators | |
| Minimum Number of Oil Mist Eliminators | Two (2) |
| Design Minimum Air Inlet Temperature | As required by MSS |
| Design Air Inlet Pressure | As required by MSS |
| Air Receiver | |
| Tag Numbers | 2403-BNR-REC<br>2404-BNR-REC |
| Minimum Number of Receivers | Two (2) |
| Minimum Design Pressure | 25 psi greater than lead compressor stop pressure |
| Minimum Nominal Volume | As required by MSS[A] |
| Pressure Switch Low-Pressure Setting | As required by MSS |

Notes:

A. Total receiver volume shall allow for a minimum of 5 minutes of loaded run time for the duty/lead air compressor at maximum capacity and minimum system demand or 2 gallons per nozzle, whichever is larger.

B. MSS is responsible for selecting the number of compressors and their capacity based on maximum total required system air demand plus. One additional compressor shall be provided. All compressors supplied and installed for this system shall be identical.

C. Discharge pressure needs to account for all system losses, including piping, fittings, valves, filters, dryers, and all accessories in the system. To account for system losses in the piping provided by the contractor two psi shall be added to system losses. In additional the losses noted the compressors selected shall be capable of at least 25 psi more than the max compressor pressure requirement for the mixing system, i.e., the lead compressor shutoff pressure, for the purpose of keeping the motor from operating into its service factor at the rated operating point. The rated operating point and corresponding brake horsepower shall be submitted to the Engineer for review and acceptance.

D. Motor shall be sized for rated pressure and flow required by MSS and motor shall not operate into service factor at these conditions.

E. Standard cubic feet per minute, scfm, is defined as air at 14.7 psia, 68° F and 36 percent relative humidity.

F. The motor nameplate rating shall be not less than the combined total of the maximum power required at the compressor input shaft and the belt or gear losses.

G. The lead compressor shall provide the total system air requirements and the lag unit normally serving as standby.

END OF SECTION

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1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

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FOR: BENTONVILLE WASTEWATER UTILITIES

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## VOLUME 4

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E-2 EXISTING HEADWORKS AND GRIT REMOVAL PHOTOS AND DEMOLITION NOTES
E-3 EXISTING ANOXIC BASIN PHOTOS AND DEMOLITION NOTES
E-4 EXISTING AERATION BASINS PHOTOS AND DEMOLITION NOTES
E-5 EXISTING SLUDGE PUMPING AND CLARIFIERS PHOTOS AND DEMOLITION NOTES
E-6 EXISTING MAINTENANCE BUILDING AND UV/EFFLUENT PHOTOS AND DEMOLITION NOTES
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EA-3 INFLUENT ELECTRICAL BUILDING MCC-INF AERATION ROTOR AND RECYCLE PUMP CONTROL DIAGRAMS
EA-4 INFLUENT SUBMERSIBLE PUMP CONTROLS CONTROL DIAGRAM AND RISER DIAGRAMS
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EA-8 INFLUENT ELECTRICAL BUILDING DETAIL AND SECTION
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EB-3 EAST INTERNAL RECYCLE PUMP STATION ELECTRICAL DETAILS AND SECTIONS
EB-4 BNR AND RECYCLE PUMP STATIONS RISER DIAGRAMS, EQUIPMENT RACKS, AND LIGHTING SCHEDULE
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EG-2 WAS/SCUM PUMP BUILDING CLARIFICATION AND WAS/SCUM PUMPING MCC-WAS ELEVATION AND SCHEDULES
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EG-6 WASTE METER VAULT DETAIL AND SECTIONS
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EH-2 TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME LIGHTING DETAIL
EH-3 TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTION
EH-4 TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTION
EH-5 TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTION
EH-6 TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SAMPLER BUILDING
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EI-2 EFFLUENT ELECTRICAL BUILDING FILTRATION, UV, POST AERATION, AND EFFLUENT MCC-EFF ELEVATION AND SCHEDULES
EI-3 EFFLUENT ELECTRICAL BUILDING VERTICAL TURBINE PUMPS CONTROL AND RISER DIAGRAMS
EI-4 EFFLUENT ELECTRICAL BUILDING LIFT STATION, LIGHTING, AND EXHAUST FAN CONTROL DIAGRAMS
EI-5 ELECTRICAL BUILDING AND EFFLUENT PUMP STATION DETAIL
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EL-7 ADMINISTRATION BUILDING ROOF PLAN
EL-8 ADMINISTRATION BUILDING BREAKER PANEL SCHEDULES I
EL-9 ADMINISTRATION BUILDING BREAKER PANEL SCHEDULES II
EM-1 NEW MAINTENANCE BUILDING LIGHTING PLAN
EM-2 NEW MAINTENANCE BUILDING HVAC AND POWER PLAN
EM-3 NEW MAINTENANCE BUILDING ELECTRICAL SITE PLAN
EM-4 NEW MAINTENANCE BUILDING ELECTRICAL SCHEDULES AND DETAILS
EZ-1 ELECTRICAL LEGENDS AND ABBREVIATIONS
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I-2 HEADWORKS AND DEWATERING BUILDING REMOTE I/O AND NETWORKING STATION BOM AND LAYOUT
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IA-2 INFLUENT ELECTRICAL BUILDING CONTROL PANEL PLC-INF I/O LAYOUT
IA-3 PUMPED INFLUENT METER AND LIFT STATION NO. 4 CONTROL STATIONS BOM AND LAYOUT
IA-4 INFLUENT BUILDING UPPER REMOTE I/O PANEL RIO-INFU ELEVATION, LAYOUT, AND BOM
IA-5 INFLUENT BUILDING LOWER LEVEL REMOTE I/O PANEL RIO-INFL ELEVATION, LAYOUT, AND BOM
IA-6 INFLUENT BUILDING REMOTE I/O PANELS RIO-INFU/INFL I/O MODULE LAYOUT
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IC-1 AERATION BASIN REMOTE I/O AND CONTROL STATIONS BOM AND LAYOUT
IG-1 WAS/SCUM PUMP BUILDING CONTROL PANEL PLC-WAS ELEVATION, LAYOUT, AND BOM
IG-2 WAS/SCUM PUMP BUILDING CONTROL PANEL PLC/WAS I/O LAYOUT
IG-3 AERATION, CLARIFICATION, AND RAS PUMPING SUBMERSIBLE PUMP CONTROL STATIONS BOM AND LAYOUT
IH-1 SAMPLER BUILDING REMOTE I/O AND INSTRUMENTATION BOM AND LAYOUT
II-1 EFFLUENT ELECTRICAL BUILDING CONTROL PANEL PLC-EFF ELEVATION, LAYOUT, AND BOM
II-2 EFFLUENT ELECTRICAL BUILDING CONTROL PANEL PLC-EFF I/O LAYOUT
II-3 FILTRATION, POST AERATION, AND EFFLUENT SUBMERSIBLE PUMP CONTROL STATIONS BOM AND LAYOUT
IK-1 BLOWER BUILDING CONTROL PANEL PLC-BLR PLC RETROFIT IN EXISTING ENCLOSURE

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| ⚠1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
JOSHUA S. DURHAM
No. 15397

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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

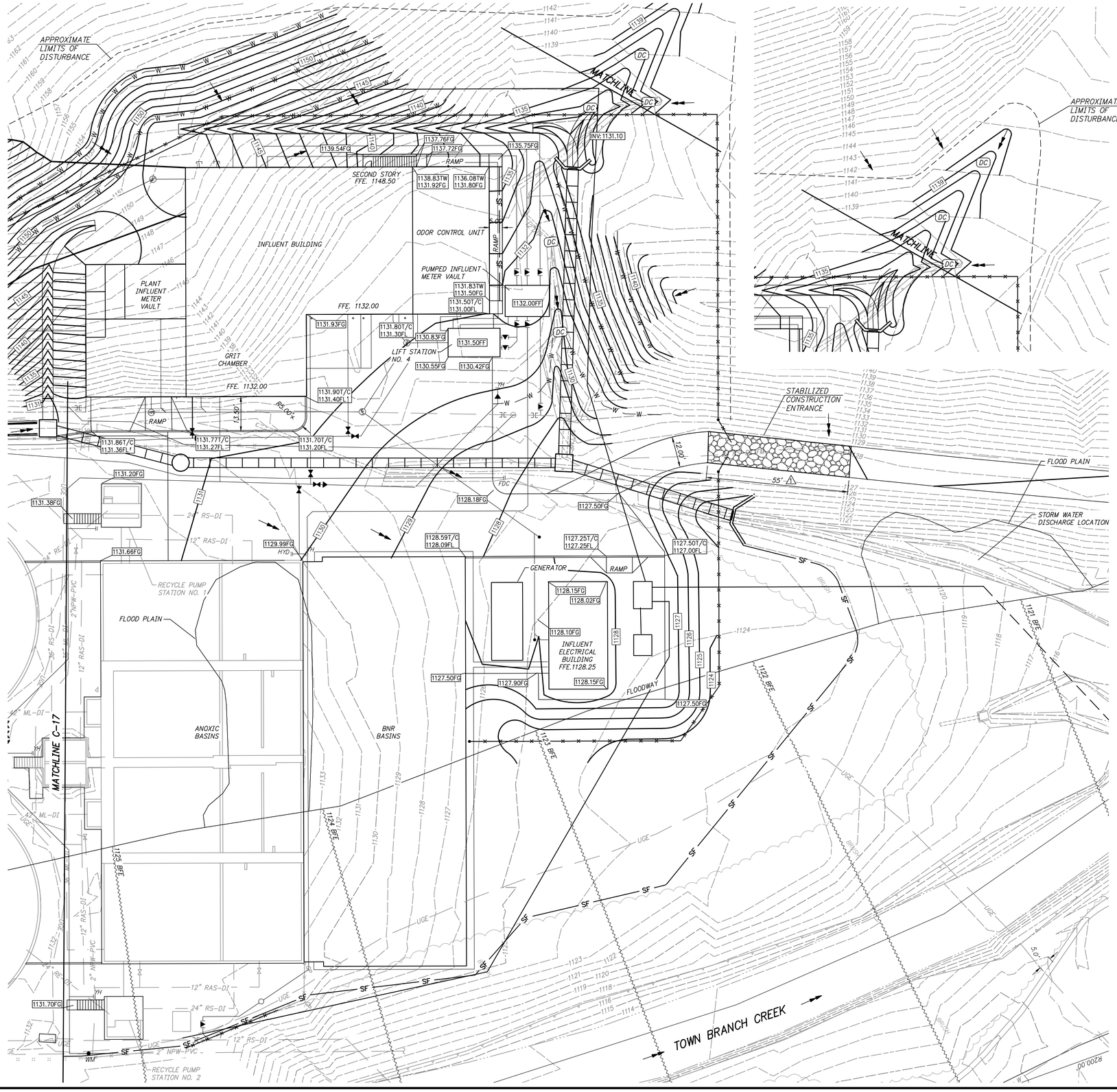
# INDEX II

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: N.T.S
DESIGNED BY: JSD
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: G-03 INDEX

SHEET NO.
G-3

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\G-03 INDEX.DWG, 4/22/2025 10:09 AM, MATT WEIR, LAYOUT1







## LEGEND

| | |
|---|---|
| 1152.10T/C | PROPOSED SPOT ELEVATION TOP OF CURB |
| 1152.10E | PROPOSED SPOT ELEVATION FLOWLINE |
| 1153 | FINISHED CONTOUR |
| | SURFACE FLOW DIRECTION |

20 10 0 20
SCALE IN FEET

## LEGEND

| | | |
|---|---|---|
| W — W | STRAW WATTLE | C605 |
| SF | SILT FENCE | C604 |
| | DIRECTION OF STORMWATER FLOW | |
| DC | DITCH CHECK | C602 |
| 000000 | INLET PROTECTION | C607 |

EROSION CONTROL NOTES:

1. STORM WATER POLLUTION PREVENTION PLAN (SWP3) WILL BE PRODUCED BY THE OWNER (OPERATOR) FOR THE PROJECT TO BE COVERED UNDER THE ARKANSAS GENERAL PERMIT ARR150000. THE CONTRACTOR SHALL BE REQUIRED TO SIGN A COPY OF THE SWP3 AS FILED BY THE OWNER TO CONFIRM ASSOCIATION AND COMPLIANCE WITH THE REQUIREMENTS.
2. THE CONTRACTOR SHALL BE REQUIRED TO IMPLEMENT THE SWP3 ACCORDING TO THE REQUIREMENTS OF THE GENERAL PERMIT. THE CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS) SHOWN ON THE SWP3 AS A MINIMUM. ADDITIONAL MEASURES MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENT DISCHARGES FROM THE SITE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL PAY ALL COSTS ASSOCIATED WITH FINES OR PENALTIES THAT MAY BE IMPOSED BY THE GOVERNMENTAL AUTHORITY FOR THE FAILURE OF THE CONTRACTOR, THE CONTRACTOR'S SUBCONTRACTORS, THE CONTRACTOR'S SUPPLIERS OR THE CONTRACTOR'S AGENTS HAVING ACCESS TO THE SITE TO COMPLY WITH THE REQUIREMENTS OF THE GENERAL PERMIT AND/OR TO COMPLY WITH THE STORM WATER POLLUTION PREVENTION PLAN. THE OWNER SHALL BE ENTITLED TO WITHHOLD SUCH FROM CONTRACT FUNDS THAT MAY BE DUE TO THE CONTRACTOR AND/OR CLAIM THROUGH THE APPROPRIATE COURT HAVING JURISDICTION.
4. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE THE POSTING AND MAINTENANCE OF NOTICES IN THE AREA OF THE CONSTRUCTION WITH INFORMATION AS REQUIRED BY ADEQ REGULATION.
5. THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN AND UPDATE RECORDS AND INSPECTION REPORTS REQUIRED BY THE GENERAL PERMIT FOR STORM WATER DISCHARGES AND THE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN. COPIES OF ALL DOCUMENTS SHALL BE AVAILABLE AT ALL TIMES AND PROVIDED TO THE OWNER AND/OR THE OWNER'S REPRESENTATIVE UPON DEMAND AND SHALL BE DELIVERED TO THE OWNER PRIOR TO FINAL PAYMENT.
6. INFORMATION REGARDING THE STORM WATER POLLUTION PREVENTION PLAN AND THE PERTINENT REGULATION MAY BE ACCESSED AT www.adeq.state.ar.us
7. SILT FENCES SHALL BE PLACED ALONG THE LIMITS OF CONSTRUCTION SLOPES TO PREVENT SOIL FROM LEAVING THE CONSTRUCTION AREA.
8. WORK SHALL NOT COMMENCE UNTIL EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.
9. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCE AS NEEDED TO MAINTAIN EFFECTIVENESS OF THE STRUCTURE. AS A MINIMUM, SILT SHALL BE REMOVED WHEN SEDIMENT DEPTH EXCEEDS HALF THE FABRIC HEIGHT. AFTER THE SILT FENCE IS NO LONGER NEEDED, THE SILT FENCE AND ALL DEPOSITED SEDIMENT SHALL BE REMOVED AND DISPOSED OF OFF SITE BY THE CONTRACTOR.
10. THE EXCAVATION AND MOVING OF SOIL MATERIALS, SHALL BE SCHEDULED SO THAT THE SMALLEST POSSIBLE AREAS WILL BE UNPROTECTED FROM EROSION FOR THE SHORTEST TIME FEASIBLE.
11. TEMPORARY SEEDING AND MULCH SHALL BE APPLIED TO PROTECT DISTURBED AREAS FROM EROSION. FINAL RESTORATION SHALL BE PER LANDSCAPE PLAN AND SPECIFICATIONS.
12. THE LOCATIONS OF THE SWP3 BOX AND CONCRETE WASHOUT AND THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE DETERMINED BY THE CONTRACTOR.
13. STREET SHALL BE SWEPT AS NECESSARY TO MINIMIZE OFFSITE TRACKING OF SEDIMENT.
14. PER FEMA MAP NUMBER 05007C0090J, PORTIONS OF THE PROJECT ARE LOCATED IN FLOOD HAZARD ZONE "A".
15. CONTRACTOR SHALL PROVIDE DIVERSION DITCHES AS CONSTRUCTION PROGRESS DICTATES FOR THE ROUTING OF OFFSITE WATER AROUND THE PROJECT SITE.
16. TOWN BRANCH CREEK IS LISTED ON THE ARKANSAS 303(D) LIST AND HAS A TOTAL MAXIMUM DAILY LOAD (TMDL) ESTABLISHED FOR TOTAL PHOSPHOROUS.

NOTES:

1. CONTACT BEUD AT 479-271-3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLES.
2. BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLANS.
3. ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.
4. FOR ALL RIGHTS-OF-WAY OPEN TO VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A PEDESTRIAN AND BICYCLE ACCESSIBLE ROUTE DURING ALL PHASES OF CONSTRUCTION. LIMITED CLOSURES OF 24 HOURS OR LESS MAY BE APPROVED BY THE CITY ENGINEER.

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED FOR BID SET | 03/21/2025 |
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS — CHRISTOPHER A. JOHNSON — REGISTERED PROFESSIONAL ENGINEER — No. 11788 — RANKIN, PE

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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

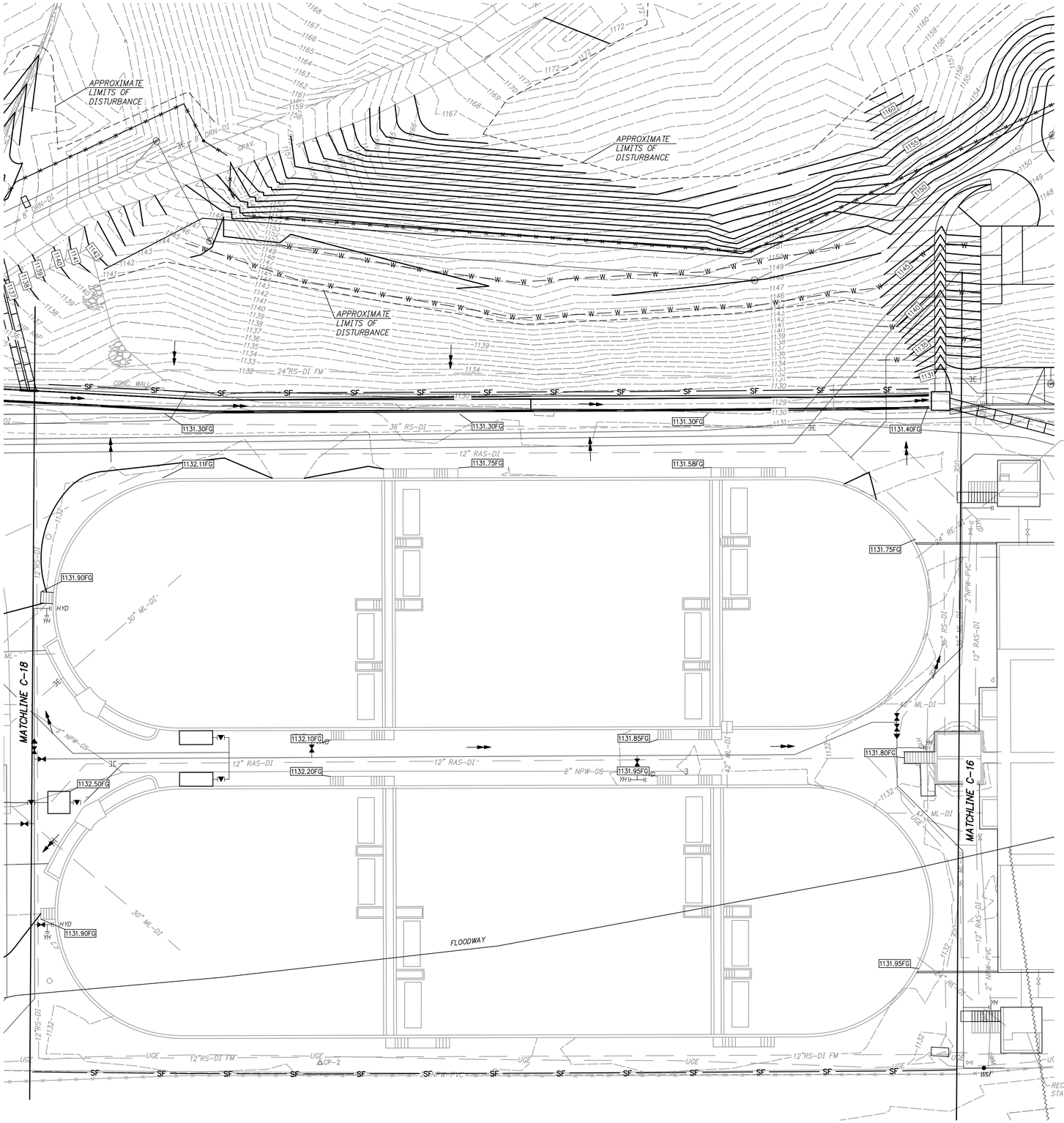
GRADING AND EROSION CONTROL PLAN I

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1"=20'
DESIGNED BY: BAP
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: C-16

SHEET NO.
C-16

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\C-16.DWG, 4/22/2025 10:29 AM, MATT WEIR, LAYOUT1







## LEGEND

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|---|---|
| 1152.10T/C | PROPOSED SPOT ELEVATION TOP OF CURB |
| 1152.10E | PROPOSED SPOT ELEVATION FLOWLINE |
| 1153 | FINISHED CONTOUR |
| | SURFACE FLOW DIRECTION |

## LEGEND

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|---|---|
| W — W | STRAW WATTLE C605 |
| SF | SILT FENCE C604 |
| | DIRECTION OF STORMWATER FLOW |
| DC | DITCH CHECK C602 |
| 000000 | INLET PROTECTION C607 |

NOTES:

1. CONTACT BEUD AT 479-271-3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLES.
2. BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLANS.
3. ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.
4. FOR ALL RIGHTS-OF-WAY OPEN TO VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A PEDESTRIAN AND BICYCLE ACCESSIBLE ROUTE DURING ALL PHASES OF CONSTRUCTION. LIMITED CLOSURES OF 24 HOURS OR LESS MAY BE APPROVED BY THE CITY ENGINEER.

1"

ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# GRADING AND EROSION CONTROL PLAN II

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1"=20'
DESIGNED BY: BAP
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: C-17

SHEET NO.
C-17

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\C-17.DWG, 4/22/2025 10:29 AM, MATT WEIR, LAYOUT1

## LEGEND

| | |
|---|---|
| 1152.10T/C | PROPOSED SPOT ELEVATION TOP OF CURB |
| 1152.10E | PROPOSED SPOT ELEVATION FLOWLINE |
| 1153 | FINISHED CONTOUR |
| | SURFACE FLOW DIRECTION |

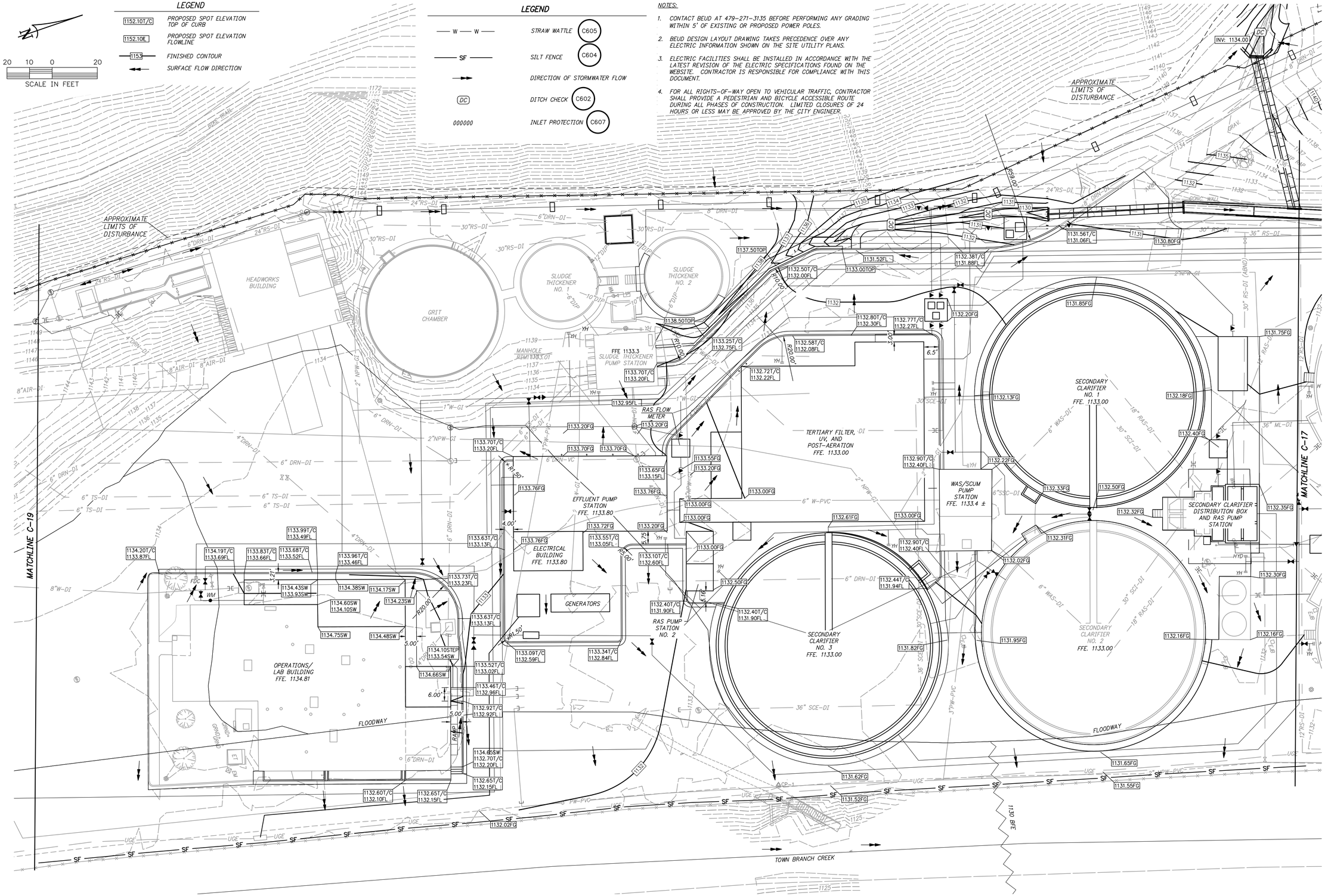
20 10 0 20
SCALE IN FEET

## LEGEND

| | |
|---|---|
| W W | STRAW WATTLE C605 |
| SF | SILT FENCE C604 |
| | DIRECTION OF STORMWATER FLOW |
| DC | DITCH CHECK C602 |
| 000000 | INLET PROTECTION C607 |

NOTES:

1. CONTACT BEUD AT 479-271-3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLES.
2. BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLANS.
3. ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.
4. FOR ALL RIGHTS-OF-WAY OPEN TO VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A PEDESTRIAN AND BICYCLE ACCESSIBLE ROUTE DURING ALL PHASES OF CONSTRUCTION. LIMITED CLOSURES OF 24 HOURS OR LESS MAY BE APPROVED BY THE CITY ENGINEER.




| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 11788 — BLAKE A. PEDDICORD

HAWKINS WEIR ENGINEERS, INC.

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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

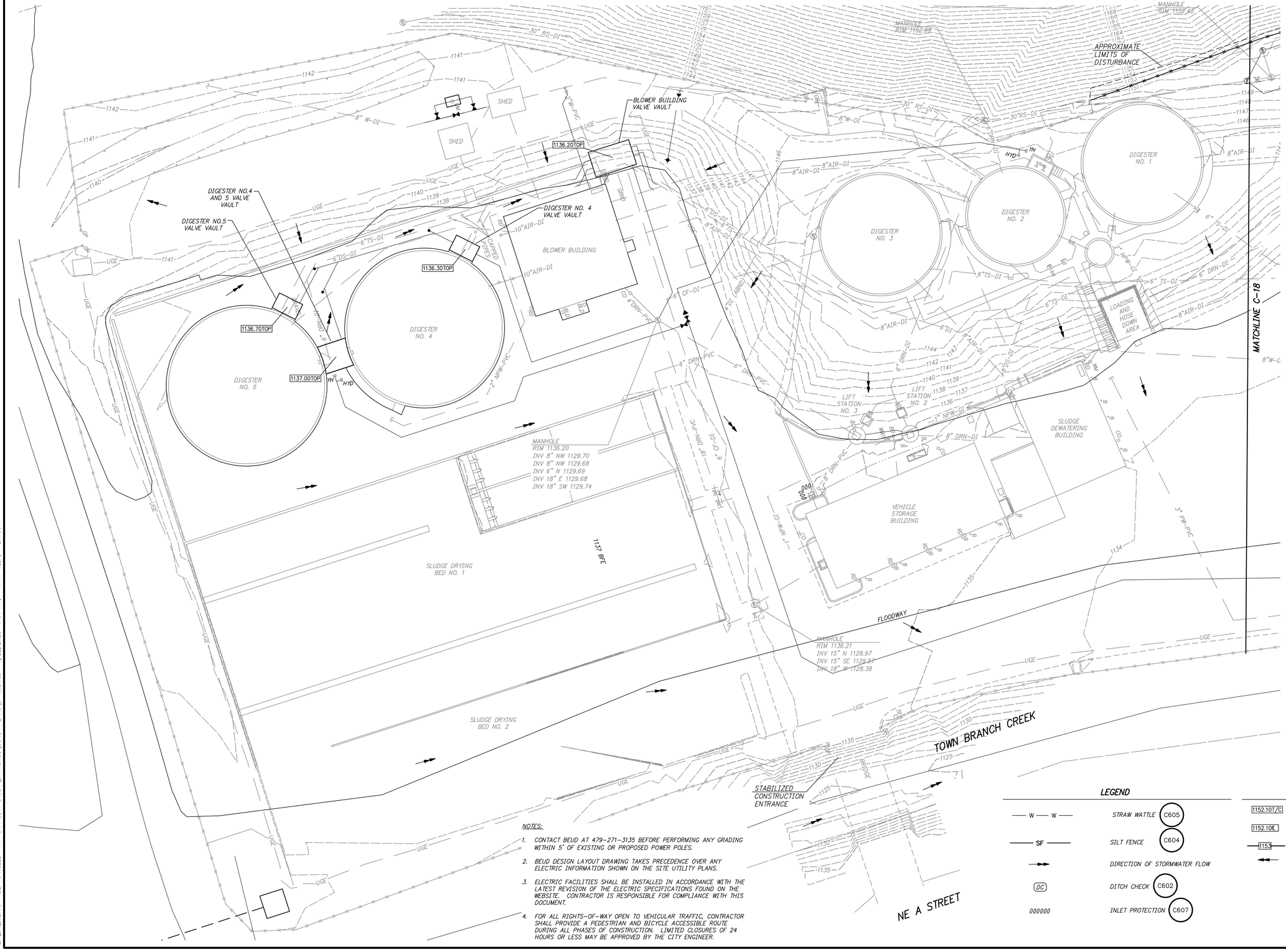
# GRADING AND EROSION CONTOL PLAN III

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1"=20'
DESIGNED BY: BAP
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: C-18

SHEET NO.
C-18

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\C-18.DWG, 4/22/2025 10:29 AM, MATT WEIR, LAYOUT1




NOTES:

1. CONTACT BEUD AT 479-271-3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLES.
2. BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLANS.
3. ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.
4. FOR ALL RIGHTS-OF-WAY OPEN TO VEHICULAR TRAFFIC, CONTRACTOR SHALL PROVIDE A PEDESTRIAN AND BICYCLE ACCESSIBLE ROUTE DURING ALL PHASES OF CONSTRUCTION. LIMITED CLOSURES OF 24 HOURS OR LESS MAY BE APPROVED BY THE CITY ENGINEER.

LEGEND

| | |
|---|---|
| W W | STRAW WATTLE C605 |
| SF | SILT FENCE C604 |
| | DIRECTION OF STORMWATER FLOW |
| DC | DITCH CHECK C602 |
| 000000 | INLET PROTECTION C607 |

LEGEND

| | |
|---|---|
| 1152.10T/C | PROPOSED SPOT ELEVATION TOP OF CURB |
| 1152.10FL | PROPOSED SPOT ELEVATION FLOWLINE |
| 1153 | FINISHED CONTOUR |
| | SURFACE FLOW DIRECTION |

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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BENTONVILLE, ARKANSAS
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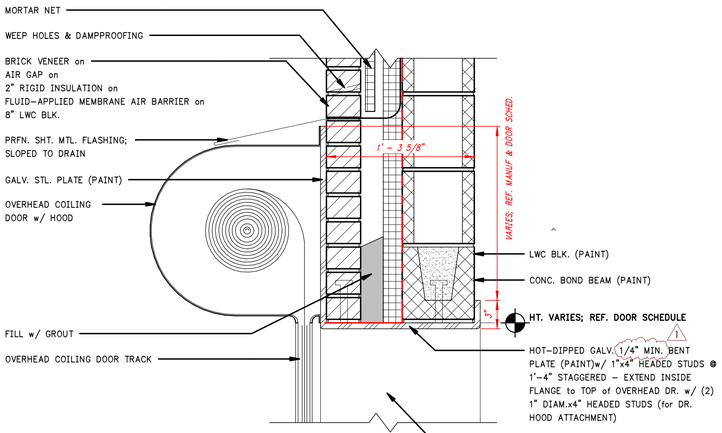
# GRADING AND EROSION CONTROL PLAN IV

FOR: BENTONVILLE WASTEWATER UTILITIES

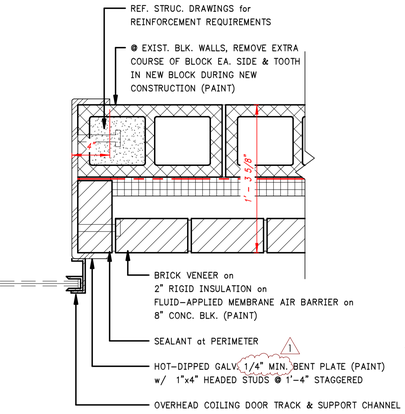
DATE: MARCH 2025
SCALE: 1"=20'
DESIGNED BY: BAP
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: C-19

SHEET NO.
C-19

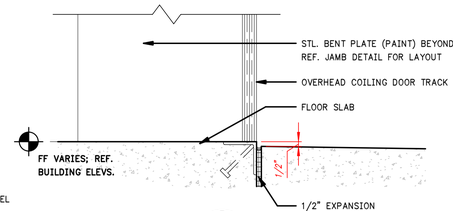
Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\C-19.DWG, 4/22/2025 10:30 AM, MATT WEIR, LAYOUT1



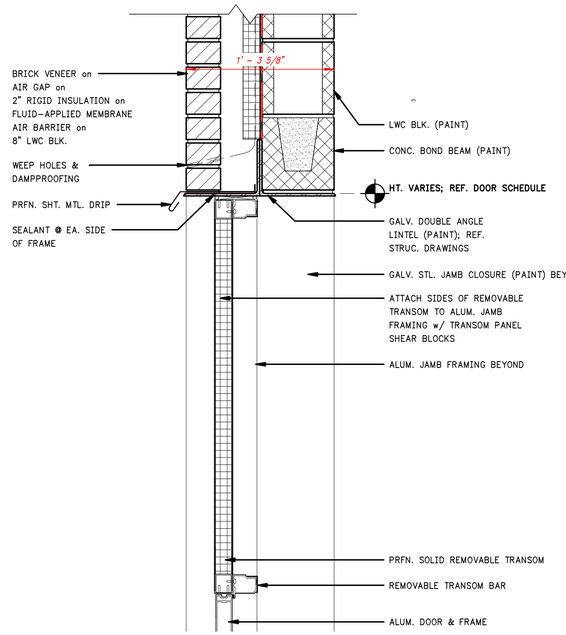

HEAD 1 A-6
1 1/2" = 1'-0"



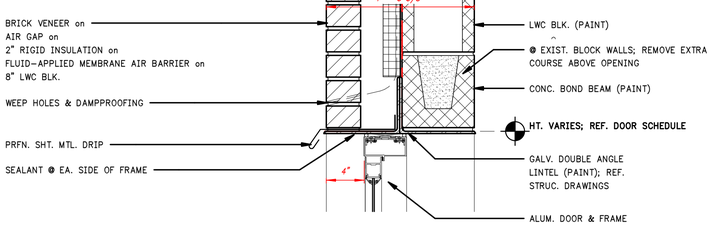

JAMB 2 A-6
1 1/2" = 1'-0"




SILL 3 A-6
1 1/2" = 1'-0"

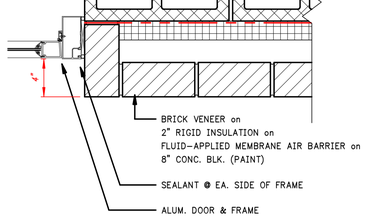



HEAD 7 A-6
1 1/2" = 1'-0"



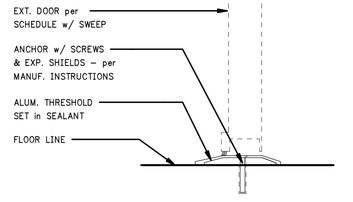

HEAD 4 A-6
1 1/2" = 1'-0"

**NOTE:**
DETAIL FOR DUTCT/LOUVER PENETRATION SIMILAR

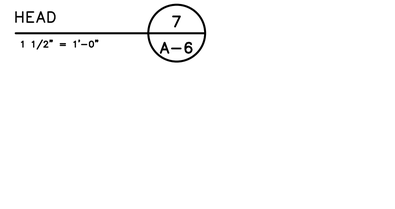



JAMB 5 A-6
1 1/2" = 1'-0"

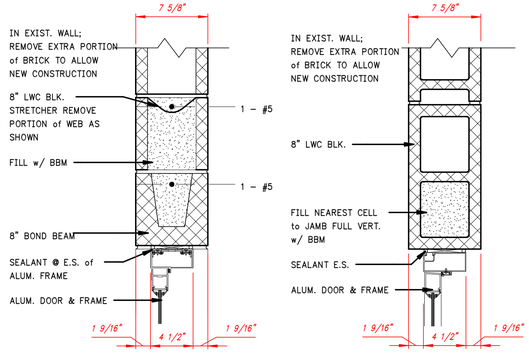
**NOTE:**
DETAIL FOR DUTCT/LOUVER PENETRATION SIMILAR




SILL 6 A-6
3" = 1'-0"

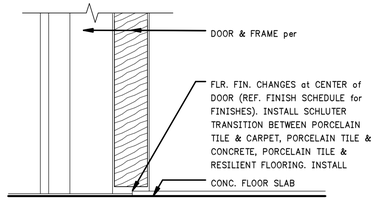



HEAD 7 A-6
1 1/2" = 1'-0"

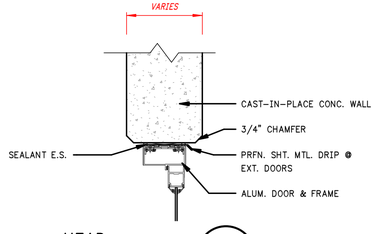



HEAD 8 A-6
1 1/2" = 1'-0"

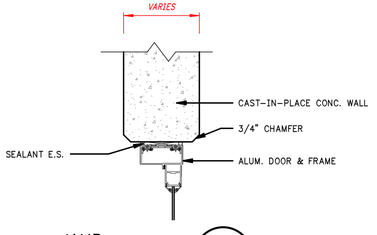
JAMB 9 A-6
1 1/2" = 1'-0"




SILL 10 A-6
3" = 1'-0"




HEAD 11 A-6
1 1/2" = 1'-0"




JAMB 12 A-6
1 1/2" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

mahg architecture

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 Addendum 02 | 4.22.2025 |

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MAHG ARCHITECTURE, INC.
REGISTERED ARCHITECT
NO. C-98
3.21.2025
ARKANSAS

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BLACK & VEATCH

BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

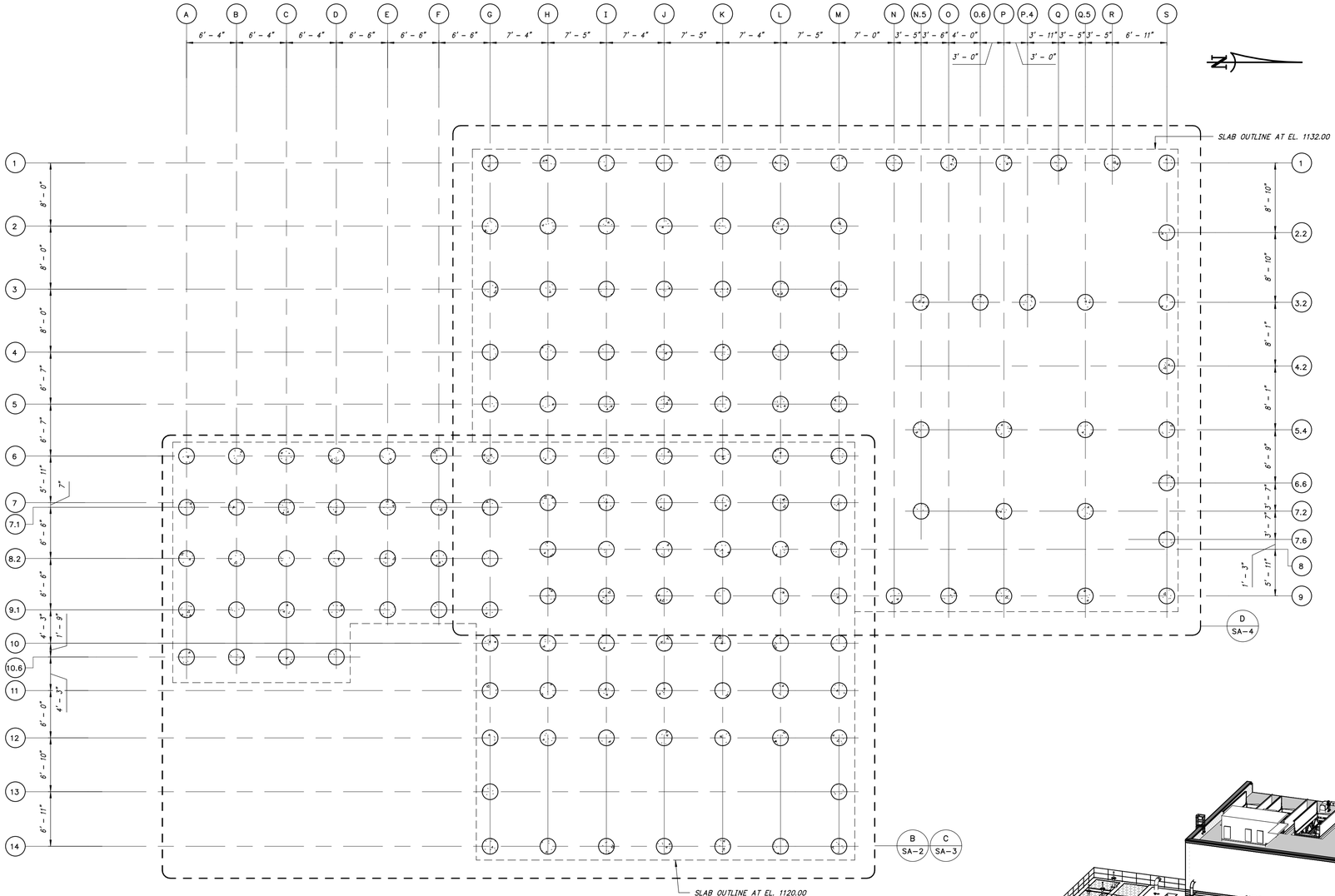
# DOOR DETAILS

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 21, 2025
SCALE: As indicated
DESIGNED BY: NJD
DRAWN BY: NJD
HWEI NO.: 2021037
FILENAME:

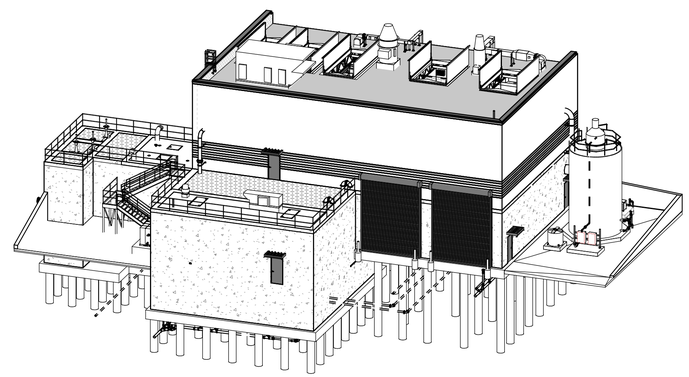
SHEET NO.
A-6

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/A-MASTER MODEL.rvt
4/24/2025 7:23:43 AM / Author / DOOR DETAILS




OVERALL PIER PLAN

DETAIL A
1/8" = 1'–0"



ISOMETRIC/3D
N.T.S.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
LARRY C. HAWKINS
NO. 13205
11/21/25

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

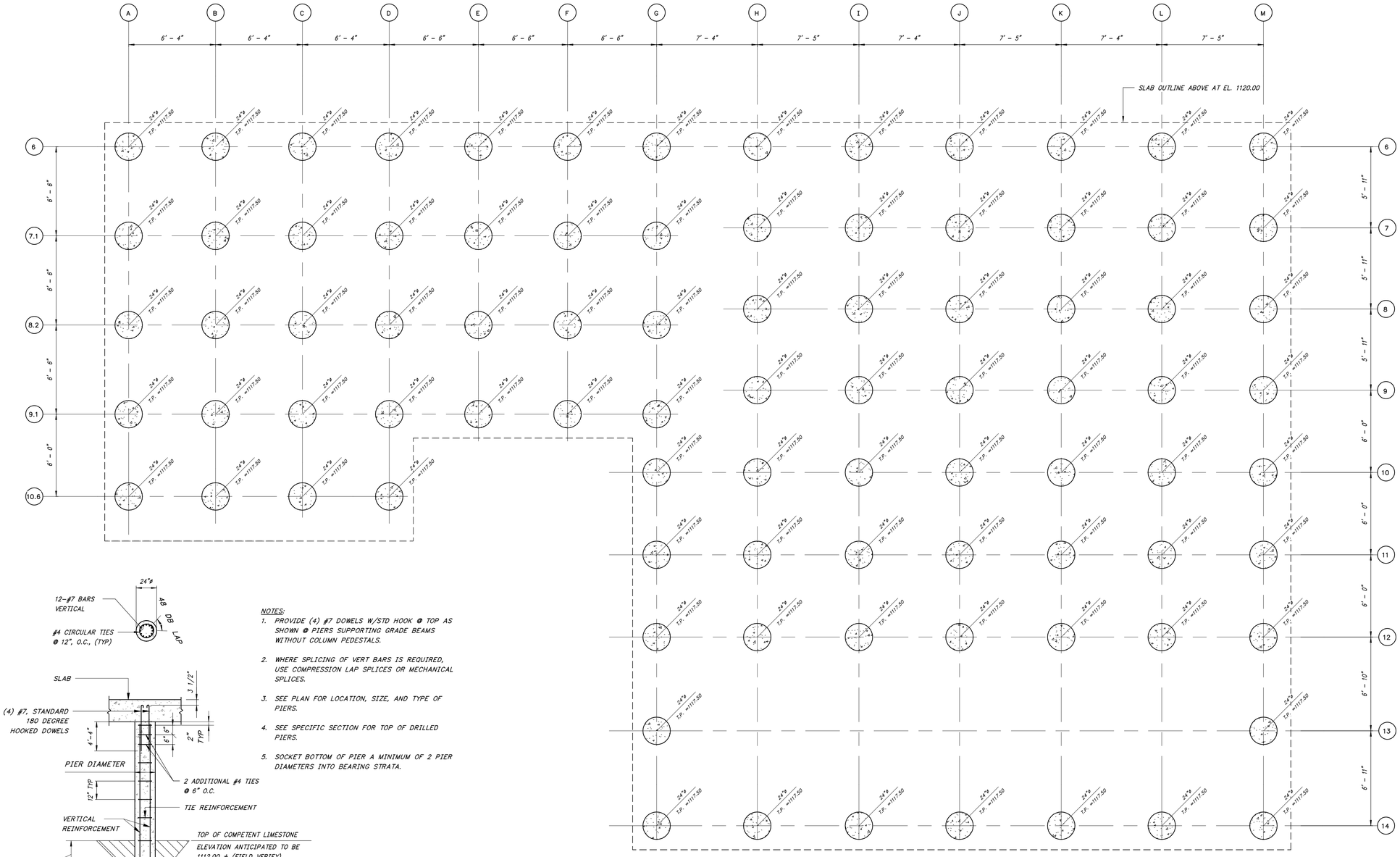
# INFLUENT BUILDING OVERALL PIER PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/8" = 1'–0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037–ST

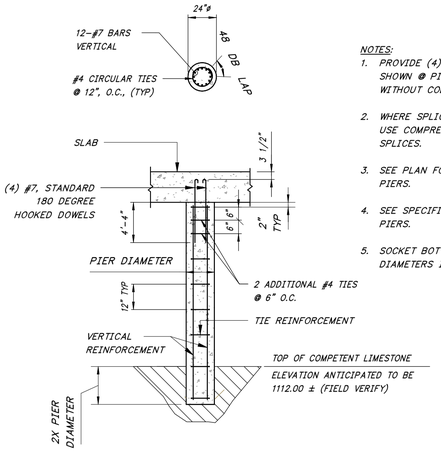
SHEET NO.
1 SA–1

Autodesk Docs://410144 – Bentonville Water Resource Recovery Facility Improvements/WWRF21037–ST.rvt 4/24/2025 10:31:04 AM / CES / INFLUENT BUILDING OVERALL PIER PLAN




PIER PLAN AT 1118.00'

DETAIL B — 1/4" = 1'–0"




**STRAIGHT SHAFT DRILLED PIER DETAIL**

DETAIL 1 — N.T.S

*NOTES:*

1. *PROVIDE (4) #7 DOWELS W/STD HOOK @ TOP AS SHOWN @ PIERS SUPPORTING GRADE BEAMS WITHOUT COLUMN PEDESTALS.*
2. *WHERE SPLICING OF VERT BARS IS REQUIRED, USE COMPRESSION LAP SPLICES OR MECHANICAL SPLICES.*
3. *SEE PLAN FOR LOCATION, SIZE, AND TYPE OF PIERS.*
4. *SEE SPECIFIC SECTION FOR TOP OF DRILLED PIERS.*
5. *SOCKET BOTTOM OF PIER A MINIMUM OF 2 PIER DIAMETERS INTO BEARING STRATA.*

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — LARRY C. HARRIS — NO. 13205 — 11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING PARTIAL AREA PIER PLAN AT EL. 1118.00

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: As indicated
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037–ST

SHEET NO.
1 SA–2

Autodesk Docs://410144 – Bentonville Water Resource Recovery Facility Improvements/WWRF21037–ST.rvt 4/24/2025 10:31:05 AM / CES / INFLUENT BUILDING PARTIAL AREA PIER PLAN

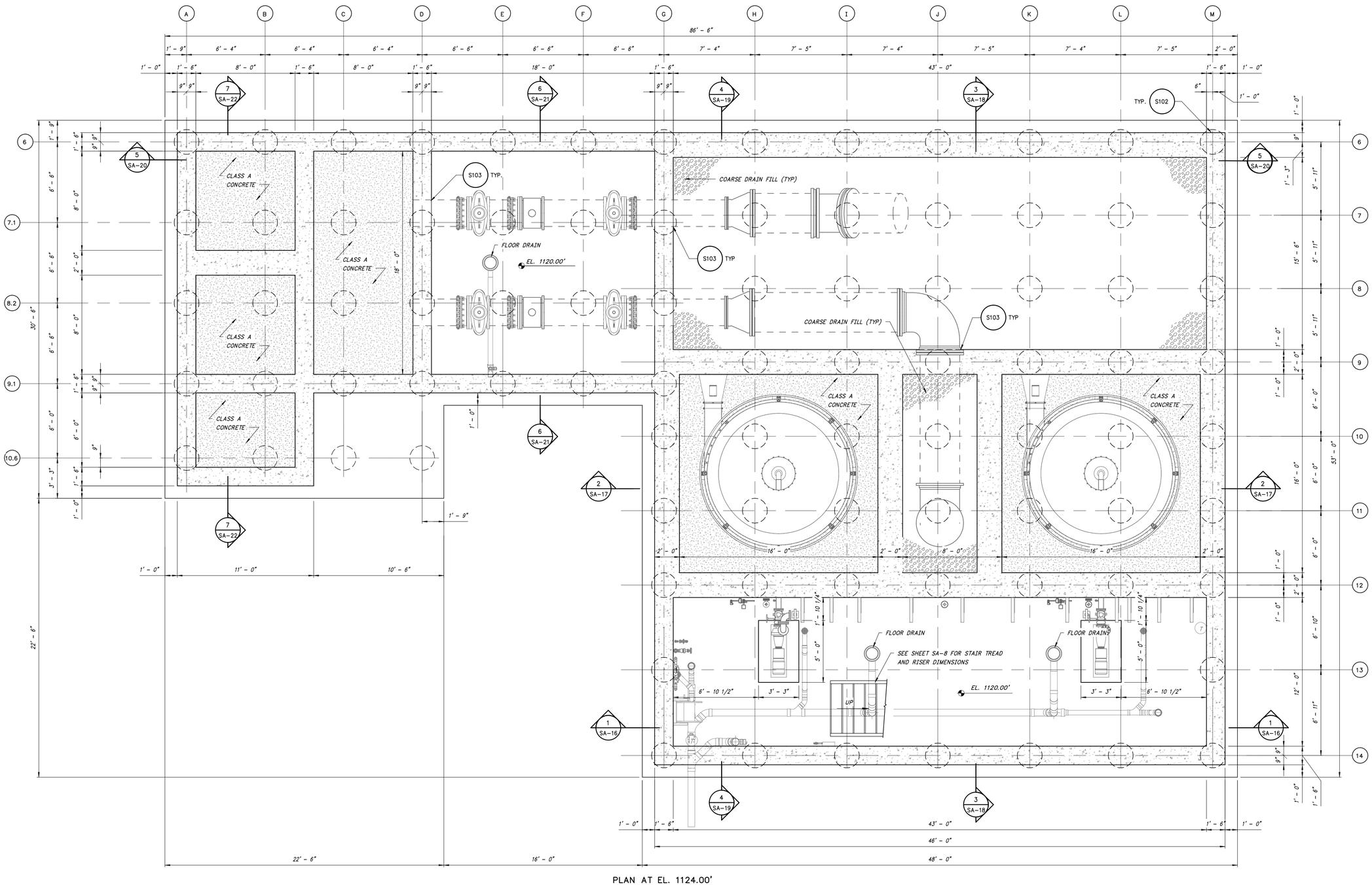
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:15 AM / CES / INFLUENT BUILDING PARTIAL BOTTOM PLAN

**NOTES:**

1. COORDINATE STRUCTURAL DRAWINGS WITH OTHER DISCIPLINE DRAWINGS.
2. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.

**KEYED NOTES:**

1. ACCESS DOOR SHALL BE HALLIDAY PRODUCTS NO. W1R3636, OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING.
2. ACCESS DOOR SHALL BE HALLIDAY PRODUCTS NO. W2R6036, OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING.




PLAN AT EL. 1124.00'

DETAIL C
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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REGISTERED PROFESSIONAL ENGINEER
LARRY C. HASTY
NO. 13205
11/22/2025

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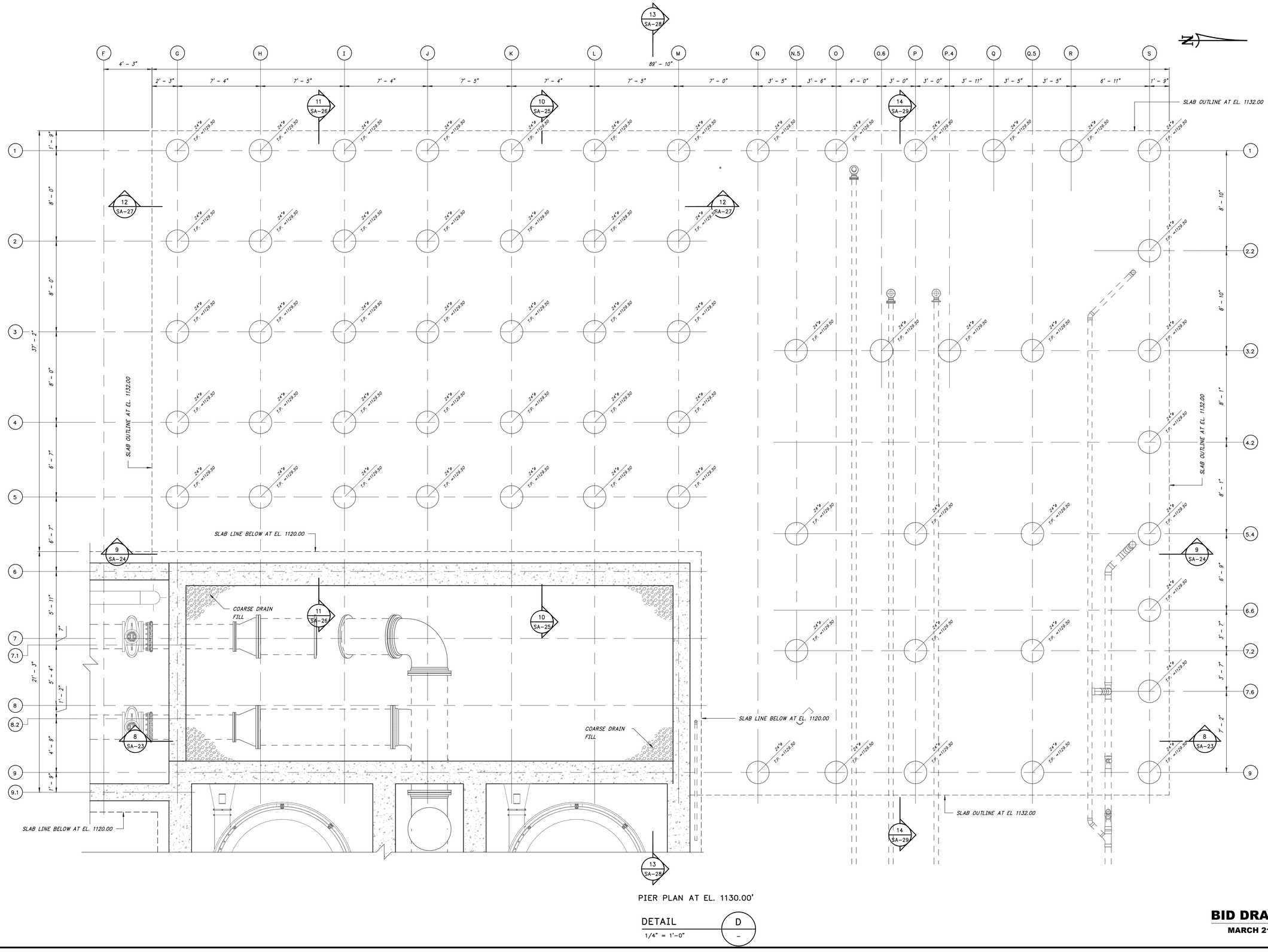
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING PARTIAL BOTTOM PLAN AT EL. 1124.00

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO
SA-3




PIER PLAN AT EL. 1130.00'

DETAIL D
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HASTY
NO. 13205
11/22/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

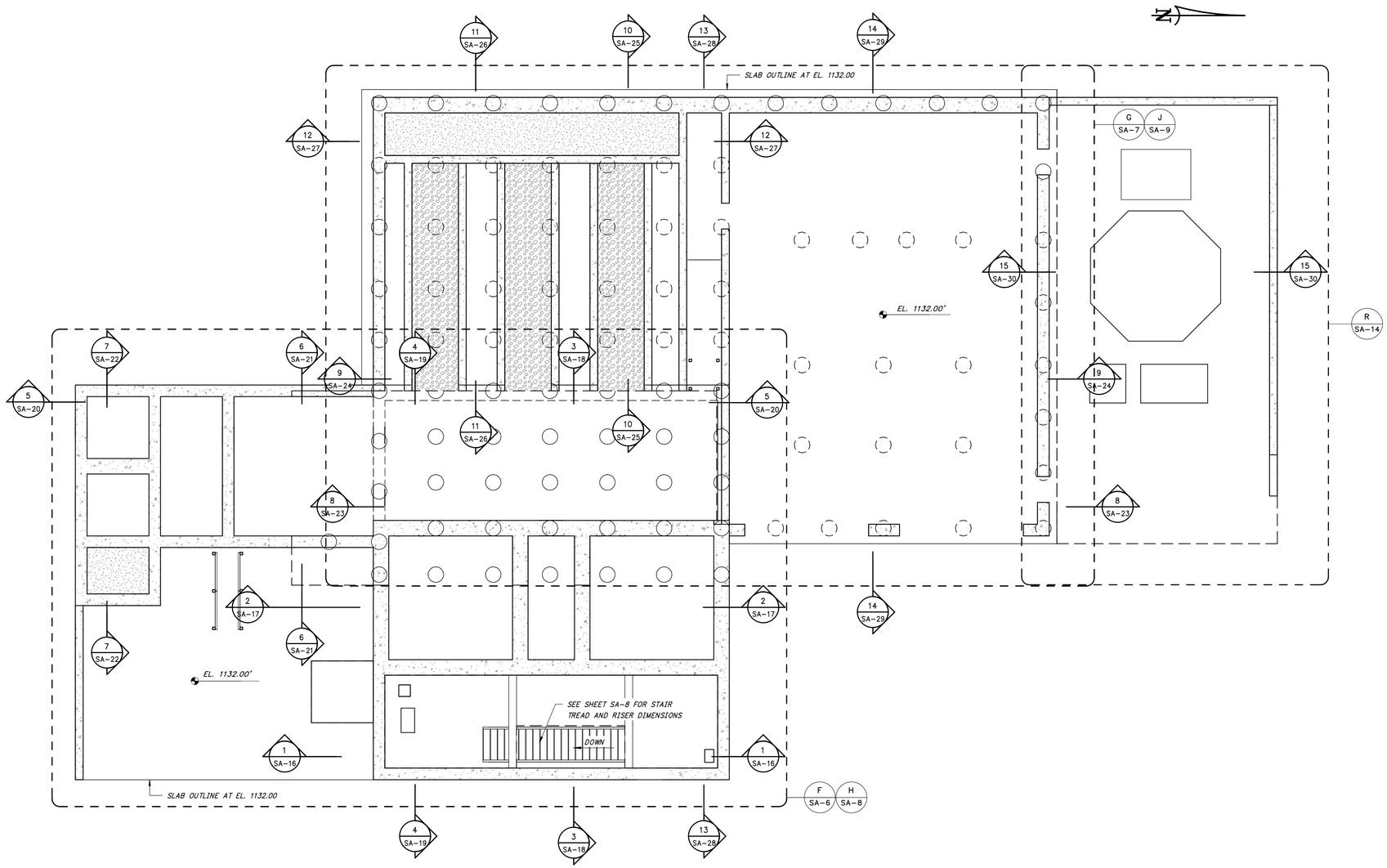
INFLUENT BUILDING PARTIAL AREA PIER PLAN AT EL. 1130.00

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
1 SA-4

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:19 AM / CES / INFLUENT BUILDING PARTIAL AREA PIER PLAN




OVERALL PLAN AT EL. 1134.50'

DETAIL E
1/8" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
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LARRY C. HARDIN
NO. 13205
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING OVERALL PLAN EL. 1134.50

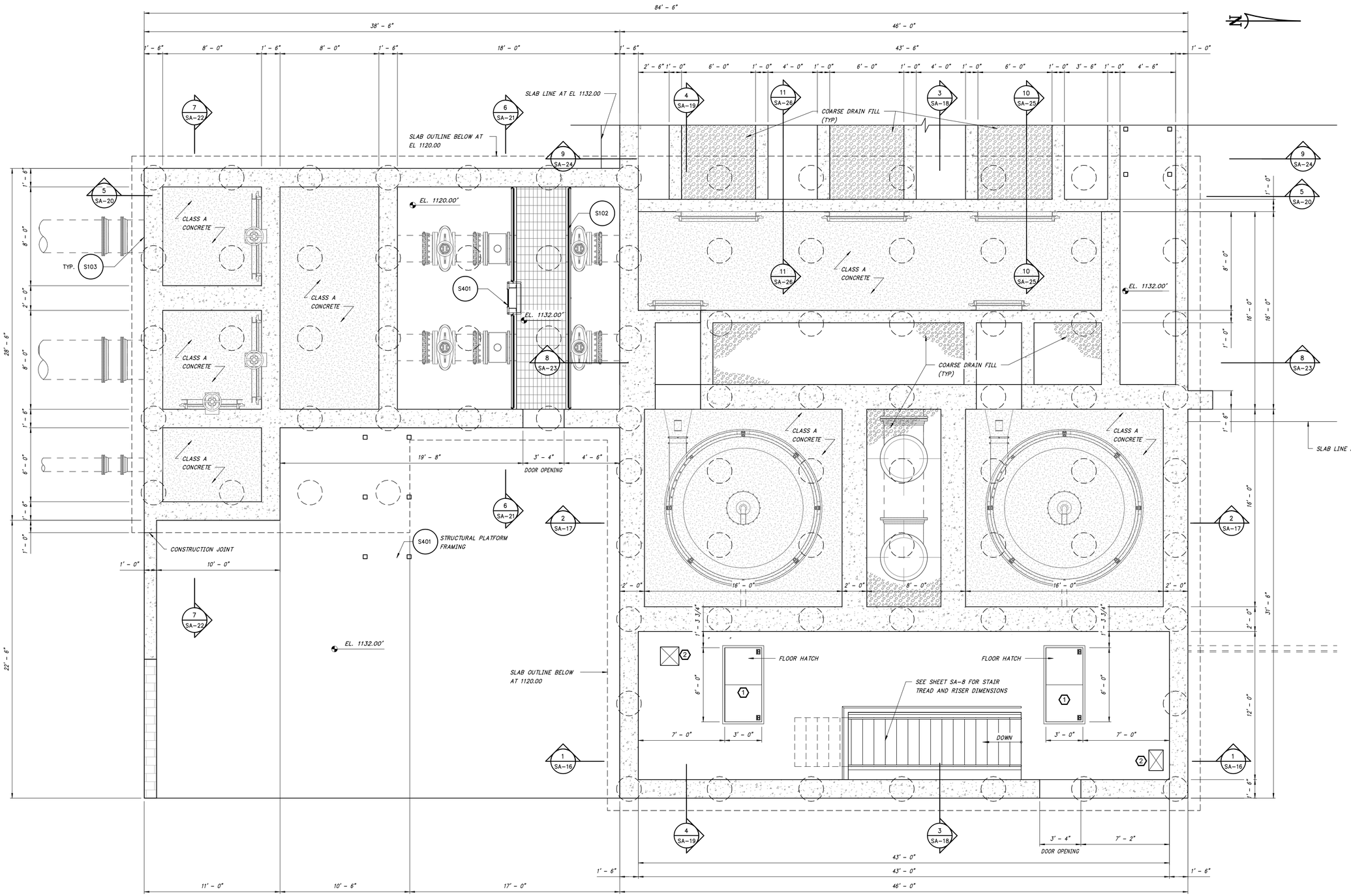
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/8" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. 1 SA-5

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:20 AM / CES / INFLUENT BUILDING OVERALL PLAN

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:30 AM / CES / INFLUENT BUILDING PARTIAL BOTTOM PLAN




PLAN AT EL. 1134.50'

DETAIL F
1/4" = 1'-0"

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH UNLESS INDICATED OTHERWISE.

KEYED NOTES:

1. ACCESS DOOR SHALL BE HALLIDAY PRODUCTS S2R7236 OR EQUAL, AND INCLUDE OPTIONAL FALL PROTECTION GRATING.
2. COORDINATE SIZE AND LOCATION OF HVAC PENETRATIONS WITH HVAC DRAWINGS.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HARTLEY
NO. 13205
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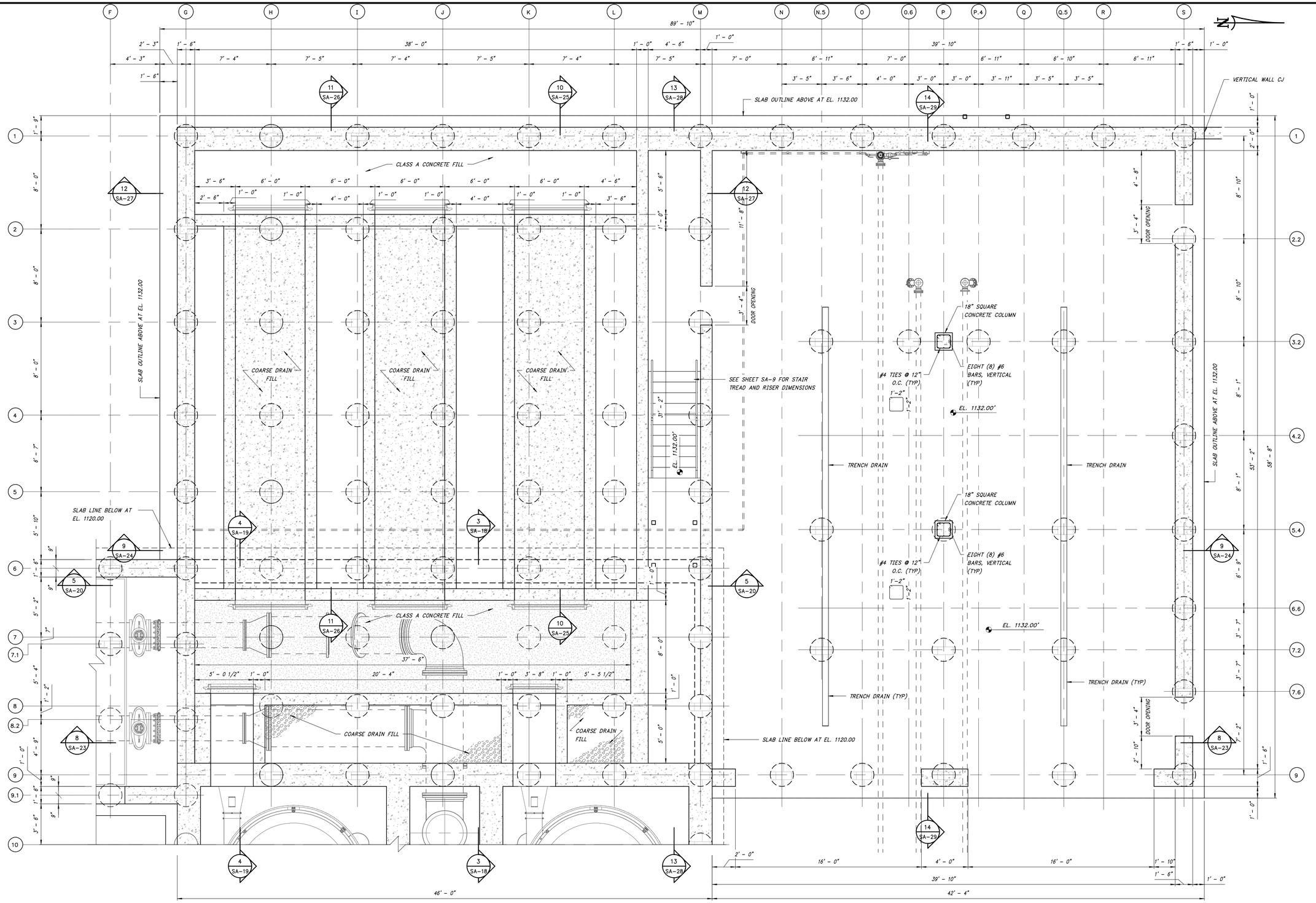
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING PARTIAL BOTTOM PLAN AT EL. 1134.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. 1 SA-6




PLAN AT EL. 1134.50'

DETAIL G
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HAWKINS
NO. 13205
11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

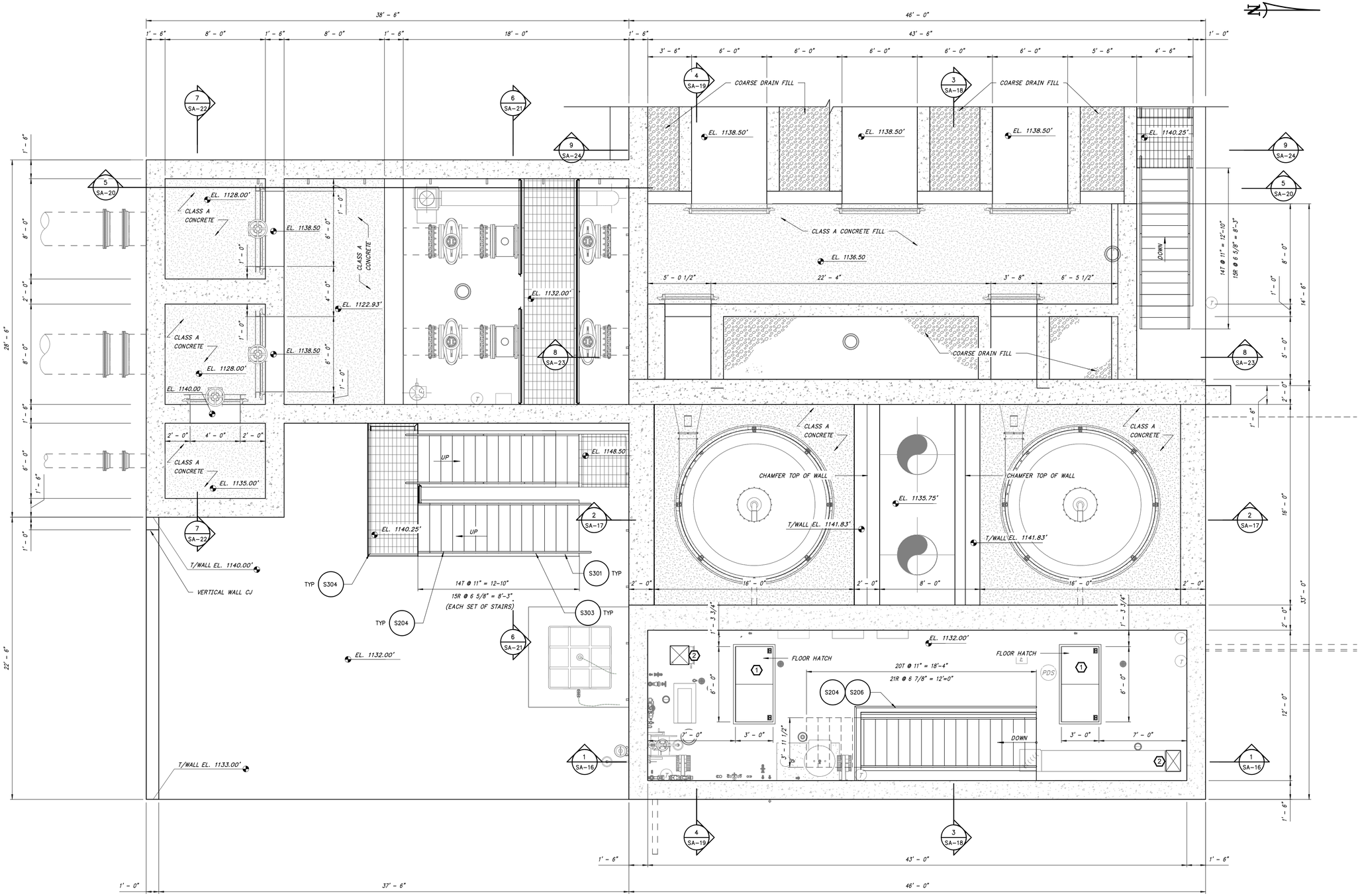
# INFLUENT BUILDING PARTIAL BOTTOM PLAN AT EL. 1134.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SA-7

Autodesk Docs://4101144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:35 AM / CES / INFLUENT BUILDING PARTIAL BOTTOM PLAN




PLAN AT EL. 1144.50'

DETAIL H
1/4" = 1'-0"

*NOTES:*

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH UNLESS INDICATED OTHERWISE.

*KEYED NOTES:*

(1) ACCESS DOOR SHALL BE HALLIDAY PRODUCTS S2R7236 OR EQUAL, AND INCLUDE OPTIONAL FALL PROTECTION GRATING.

(2) COORDINATE SIZE AND LOCATION OF HVAC PENETRATIONS WITH HVAC DRAWINGS.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
LARRY C. HAWKINS
NO. 13205
11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

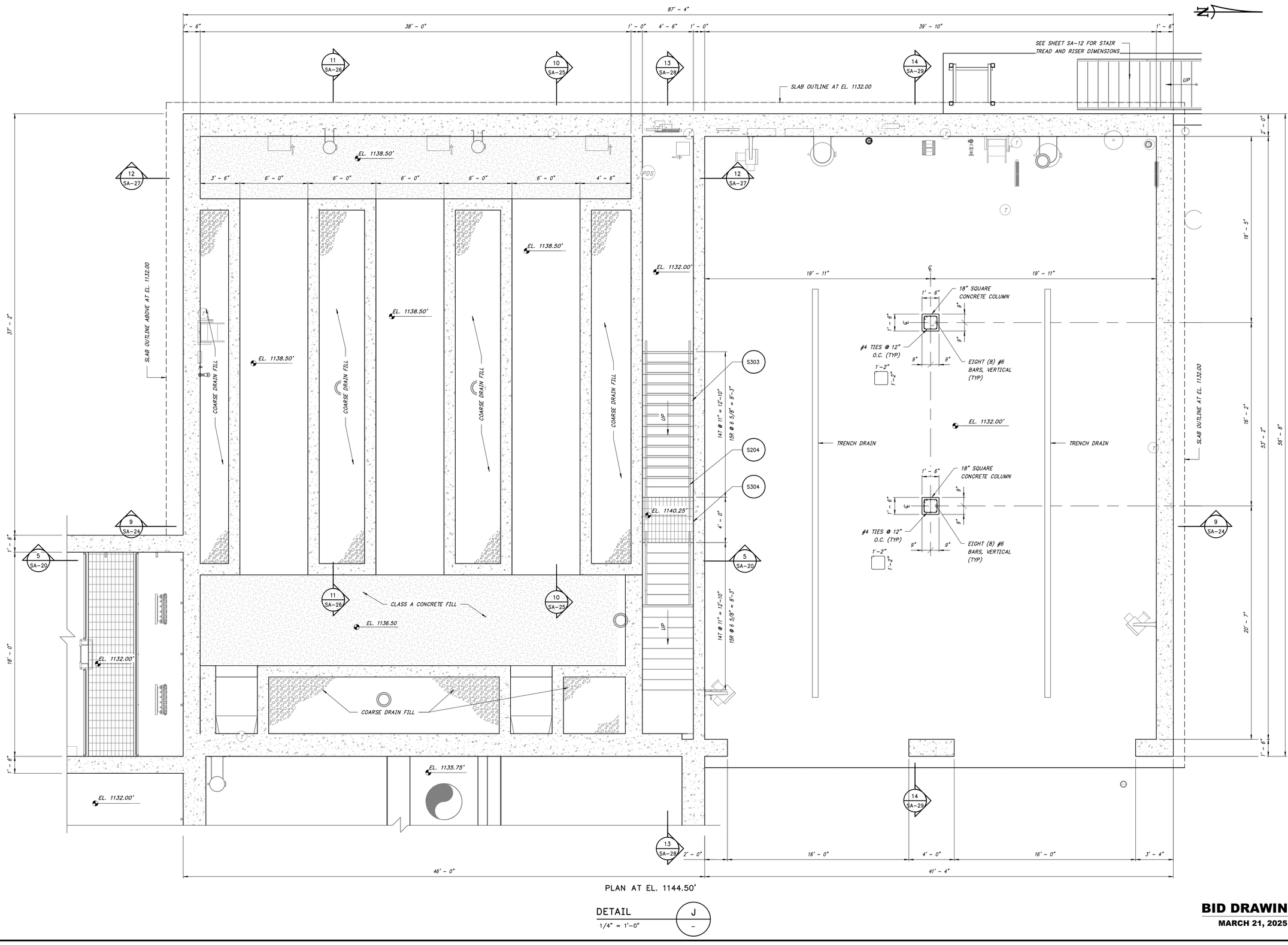
# INFLUENT BUILDING PARTIAL INTERMEDIATE PLAN AT EL. 1144.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SA-8

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:45 AM / CES / INFLUENT BUILDING PARTIAL INTERMEDIATE PLAN




PLAN AT EL. 1144.50'

DETAIL J
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER LARRY C. HARRIS NO. 13205 11/21/2025

HAWKINS WEIR ENGINEERS, INC.
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

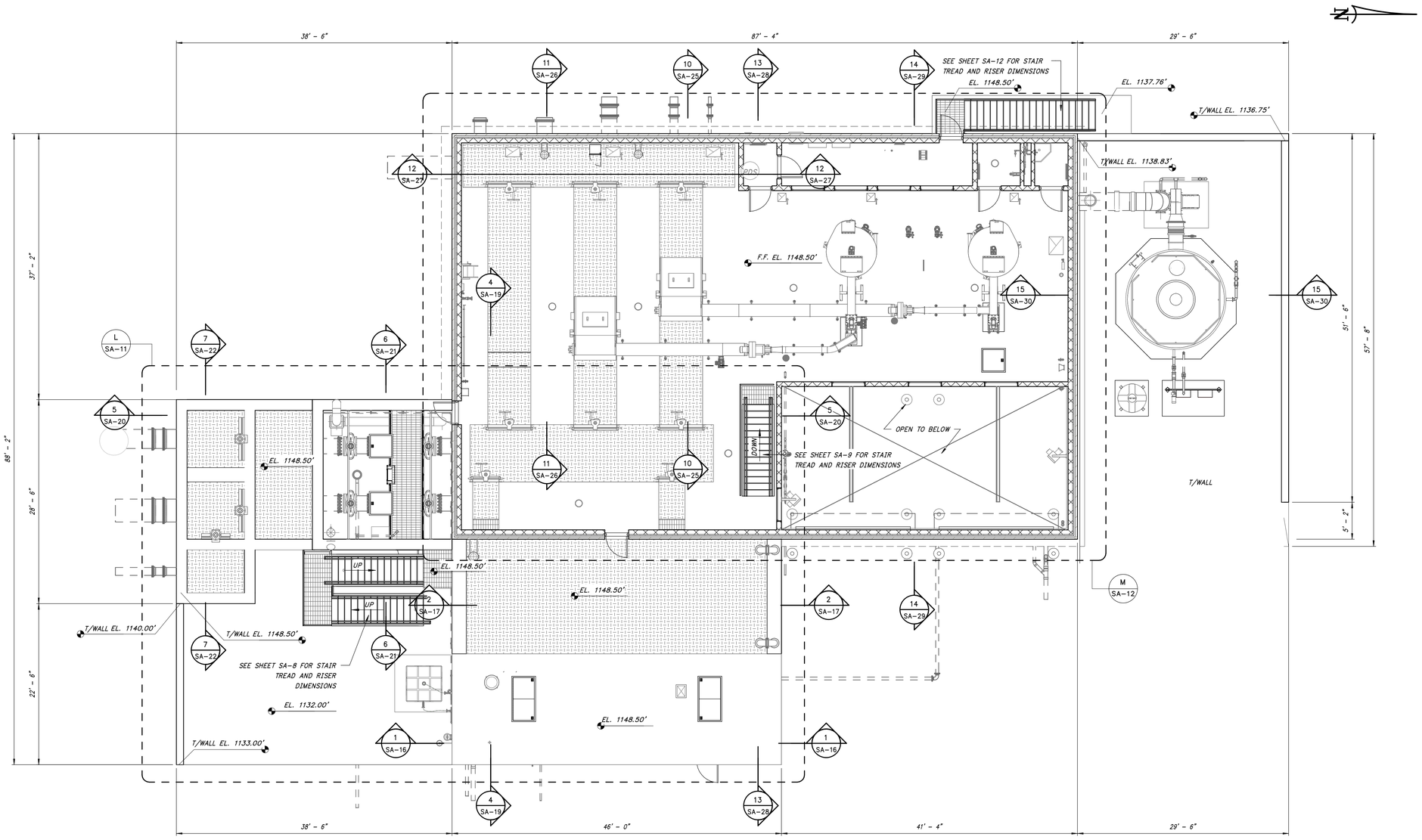
# INFLUENT BUILDING PARTIAL INTERMEDIATE PLAN AT EL. 1144.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SA-9

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:46 AM / CES / INFLUENT BUILDING PARTIAL INTERMEDIATE PLAN




OVERALL PAN AT EL. 1149.50

DETAIL K
1/8" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
LARRY C. HAWKINS
NO. 13205
11/12/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

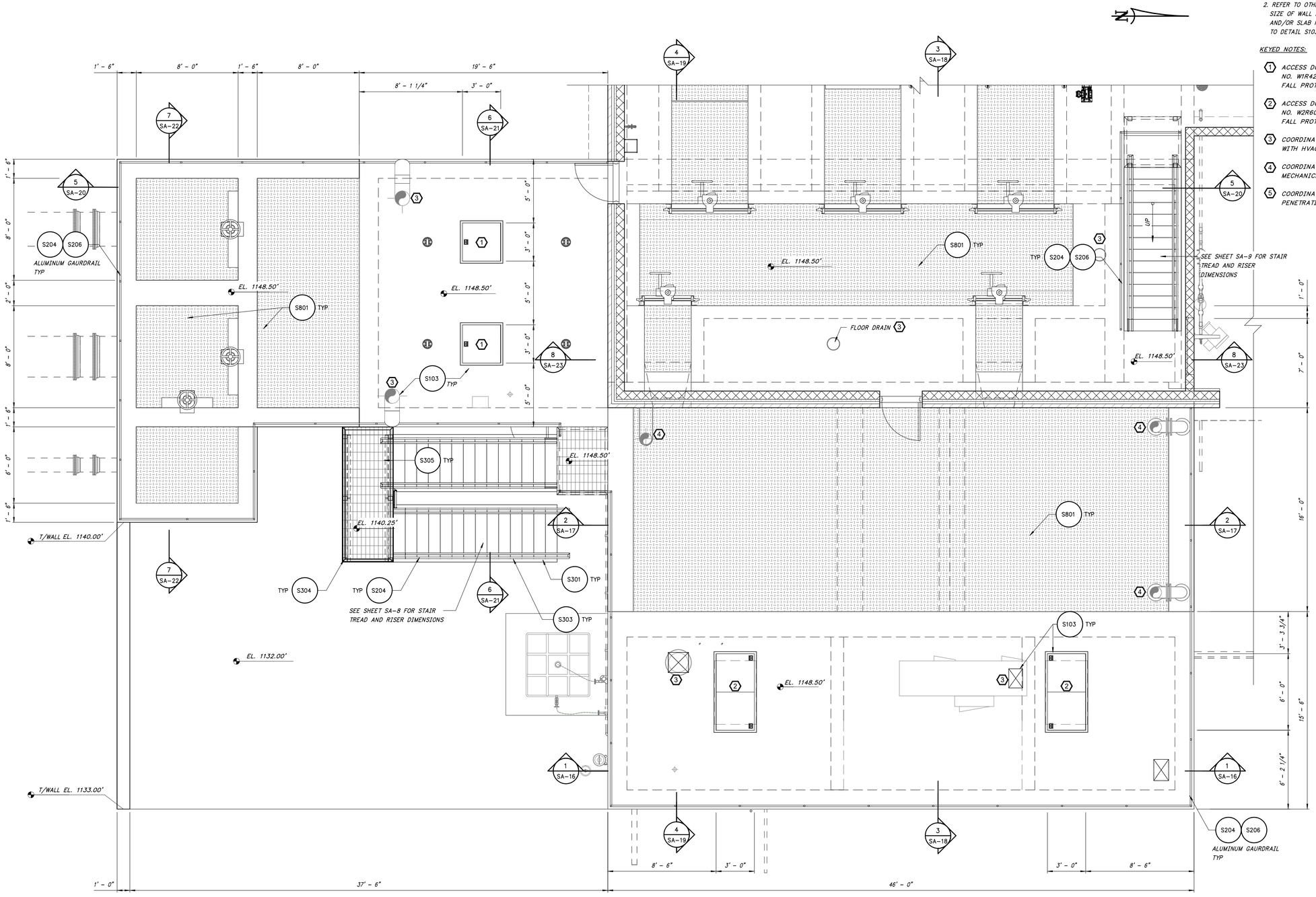
INFLUENT BUILDING OVERALL PLAN AT EL. 1149.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/8" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SA-10

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:31:50 AM / CES / INFLUENT BUILDING OVERALL PLAN




PLAN AT EL. 1149.50'

DETAIL L
1/4" = 1'–0" –

*NOTES:*

1. *COORDINATE STRUCTURAL DRAWEINGS WITH OTHER DISCIPLINE DRAWINGS.*
2. *REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10–INCHES, REFER TO DETAIL S103.*

*KEYED NOTES:*

1. *ACCESS DOOR SHALL BE HALLIDAY PRODUCTS NO. W1R4242, OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING.*
2. *ACCESS DOOR SHALL BE HALLIDAY PRODUCTS NO. W2R6036, OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING.*
3. *COORDINATE SIZE AND LOCATION OF HVAC PENETRATION WITH HVAC DRAWINGS TYPICAL.*
4. *COORDINATE SIZE AND LOCATION OF PENETRATION WITH MECHANICAL DRAWINGS TYPICAL.*
5. *COORDINATE SIZE AND LOCATION OF PLUMBING PENETRATION WITH PLUMBING DRAWINGS TYPICAL.*

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
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LARRY C. HASTY
NO. 13205
11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

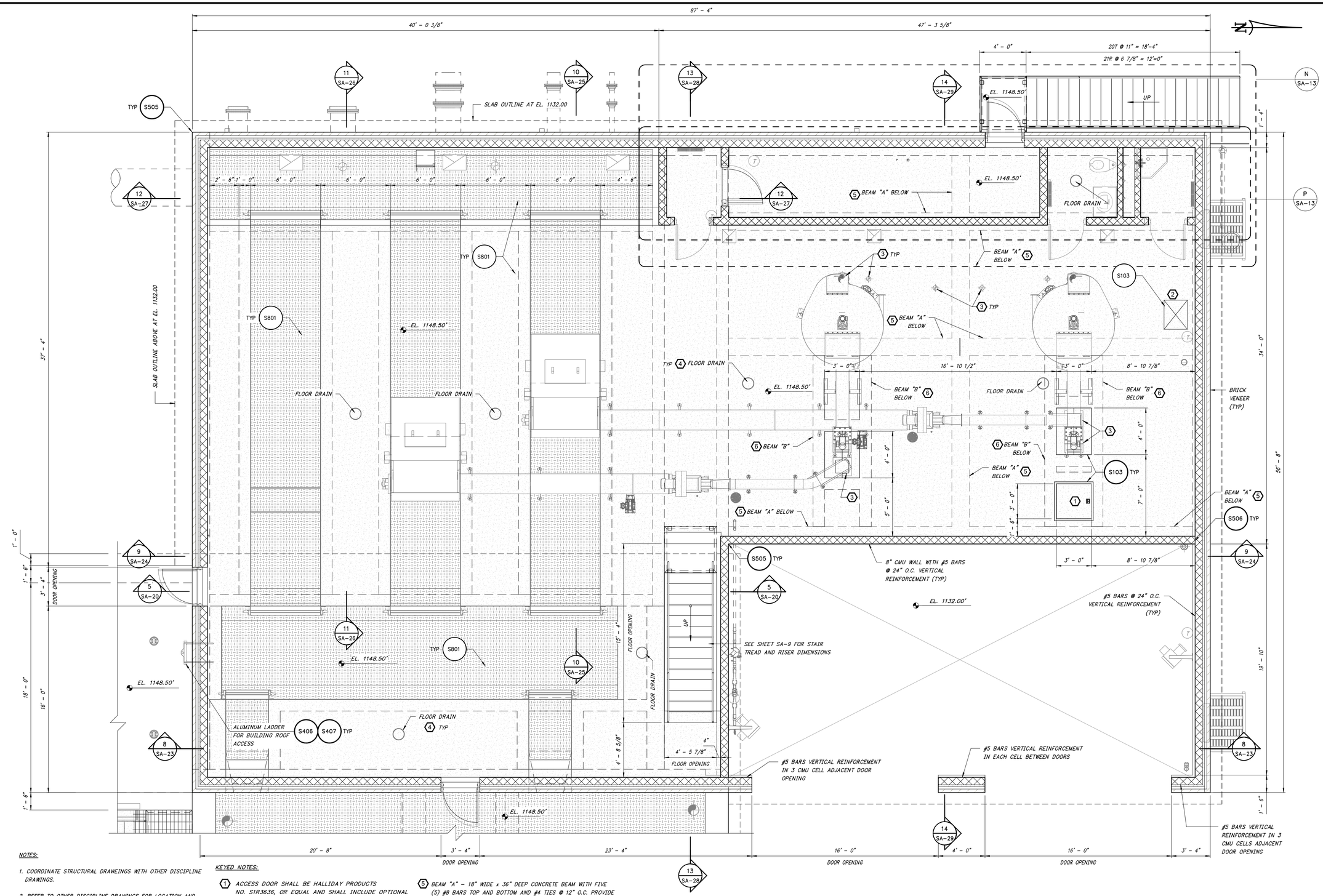
INFLUENT BUILDING PARTIAL PLAN AT EL. 1149.50

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'–0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037–ST

SHEET NO.
1 SA–11

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PLAN AT EL. 1149.50'

DETAIL M
1/4" = 1'-0" –

NOTES:

1. COORDINATE STRUCTURAL DRAWINGS WITH OTHER DISCIPLINE DRAWINGS.
2. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
3. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET S2-5 FOR CMU REINFORCEMENT.
4. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ANY MASONERY CONTROL JOINTS.

KEYED NOTES:

1. ACCESS DOOR SHALL BE HALLIDAY PRODUCTS NO. S1R3636, OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING.
2. COORDINATE SIZE AND LOCATION OF HVAC PENETRATION WITH HVAC DRAWINGS TYPICAL.
3. COORDINATE SIZE AND LOCATION OF PENETRATION WITH MECHANICAL DRAWINGS TYPICAL.
4. COORDINATE SIZE AND LOCATION OF PLUMBING PENETRATION WITH PLUMBING DRAWINGS TYPICAL.
5. BEAM "A" – 18" WIDE x 36" DEEP CONCRETE BEAM WITH FIVE (5) #8 BARS TOP AND BOTTOM AND #4 TIES @ 12" O.C. PROVIDE TWO (2) #5 BARS HORIZONTAL EQUALLY SPACED VERTICALLY EACH SIDE FACE OF BEAM. PROVIDE #8 AND #5 L-SHAPED BARS EACH END OF BEAM TYPICAL. REFER TO SECTION 14 SHEET SA-29 FOR SIMILAR BEAM "A" PROFILE.
6. BEAM "B" – 12" WIDE x 12" DEEP CONCRETE BEAM WITH THREE (3) #5 BARS TOP AND BOTTOM AND #4 TIES @ 4" O.C. FOR THE FIRST 3'-0" AT EACH END.

**BID DRAWINGS**
**MARCH 21, 2025**

1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

INFLUENT BUILDING PARTIAL PLAN AT EL. 1149.50

FOR: BENTONVILLE WASTEWATER UTILITIES

| | |
|---|---|
| DATE: | MARCH 2025 |
| SCALE: | 1/4" = 1'-0" |
| DESIGNED BY: | LCH |
| DRAWN BY: | CES |
| HWEI NO.: | 2021037 |
| FILENAME: | WWRF21037-ST |

SHEET NO. 1 SA-12

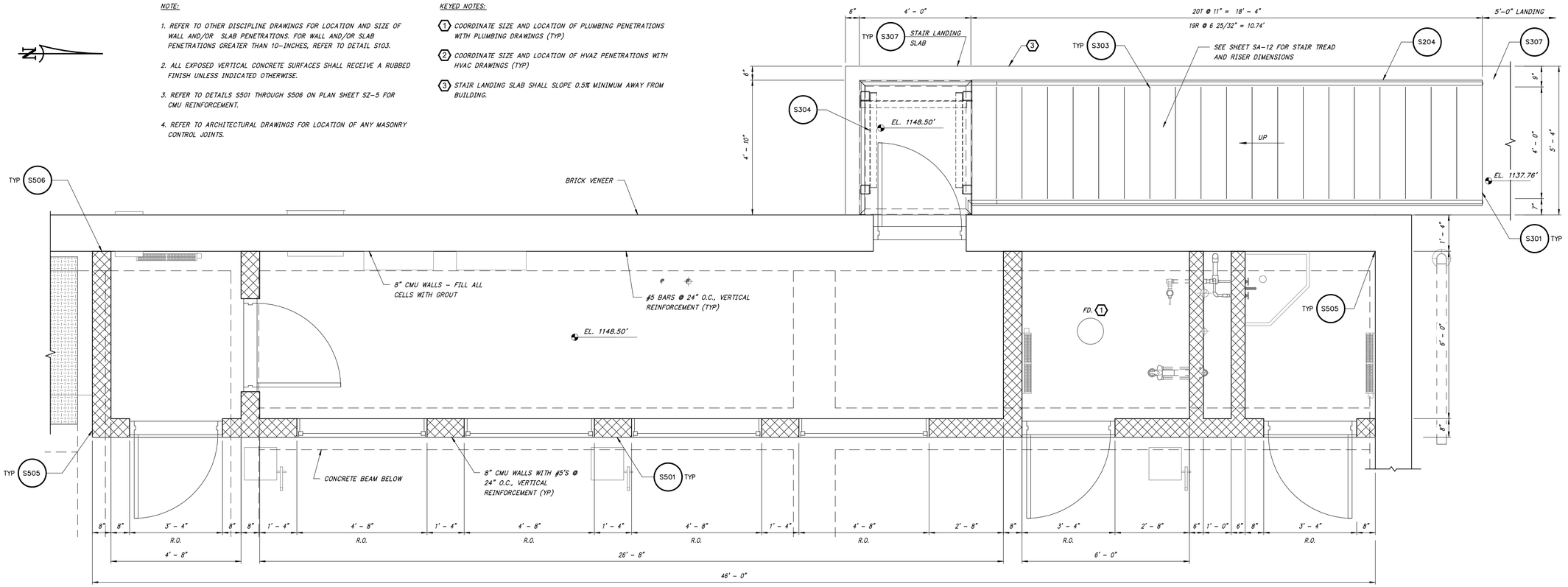
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:03 AM / CES / INFLUENT BUILDING PARTIAL PLAN

NOTE:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH UNLESS INDICATED OTHERWISE.
3. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET SZ-5 FOR CMU REINFORCEMENT.
4. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ANY MASONRY CONTROL JOINTS.

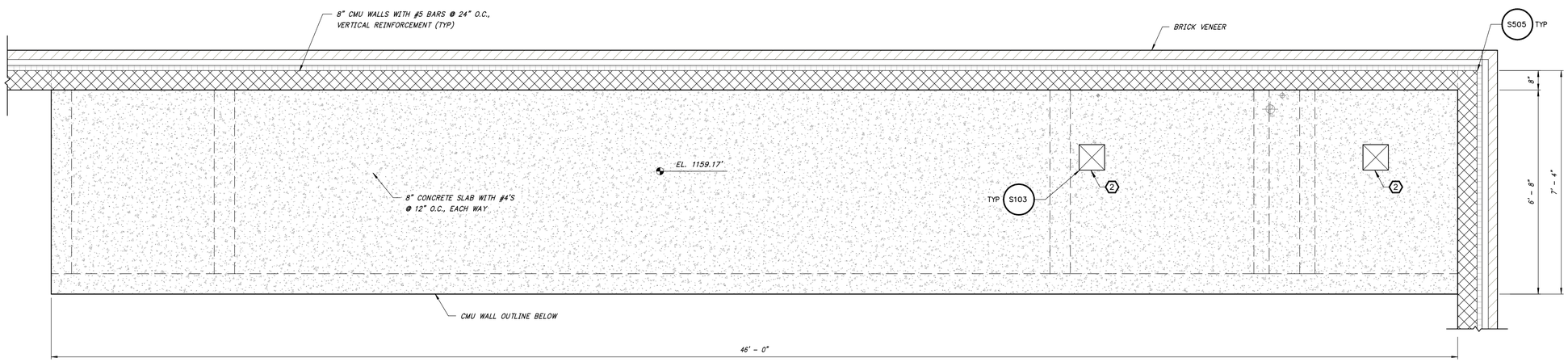
KEYED NOTES:

1. COORDINATE SIZE AND LOCATION OF PLUMBING PENETRATIONS WITH PLUMBING DRAWINGS (TYP)
2. COORDINATE SIZE AND LOCATION OF HVAC PENETRATIONS WITH HVAC DRAWINGS (TYP)
3. STAIR LANDING SLAB SHALL SLOPE 0.5% MINIMUM AWAY FROM BUILDING.




PLAN AT EL. 1152.50'

DETAIL N / SA-12 — 1/2" = 1'-0"




PLAN AT EL. 1159.17'

DETAIL P / SA-12 — 1/2" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1" — ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

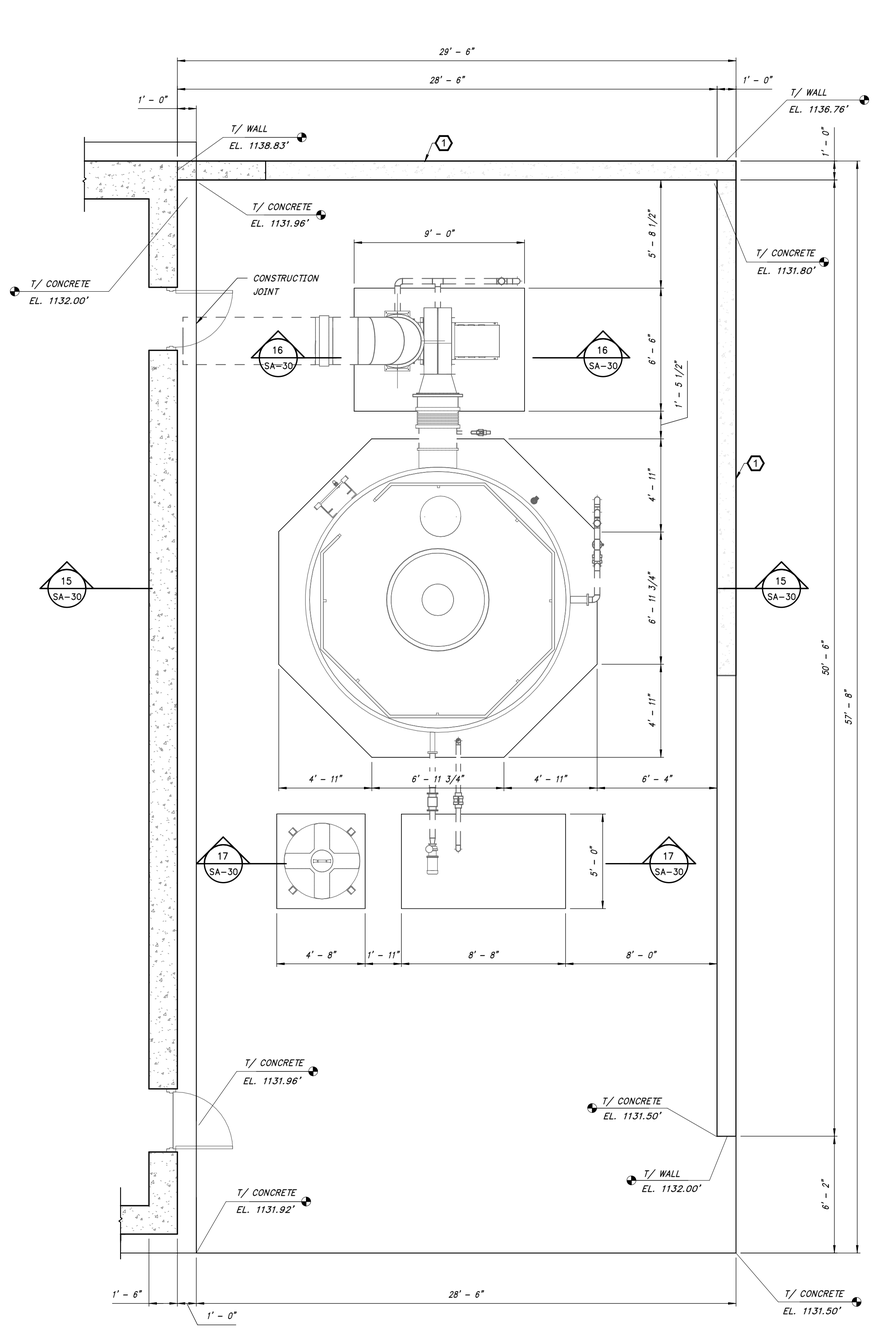
INFLUENT BUILDING PARTIAL PLANS

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SA-13

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:04 AM / CES / INFLUENT BUILDING PARTIAL PLANS




PLAN AT EL. 1139.00'

DETAIL R
1/4" = 1'-0" –

*NOTES:*

1. *REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.*
2. *ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH UNLESS INDICATED OTHERWISE.*
3. *CONTRACTOR SHALL COORDINATE THE EQUIPMENT PAD PLAN DIMENSIONS, TOP OF PAD ELEVETIONS, AND LOCATION WITH MECHANCIAL DRAWINGS AND EQUIPMENT PROVIDED FOR THE PROJECT PRIOR TO INSTALLATION OF CONCRETE AND REINFORCEMENT.*

*KEYED NOTES:*

1 *REFER TO SECTION 15 SHEET SA-30 FOR TYPICAL WALL REINFORCING.*

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HAWKINS
NO. 13205
11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

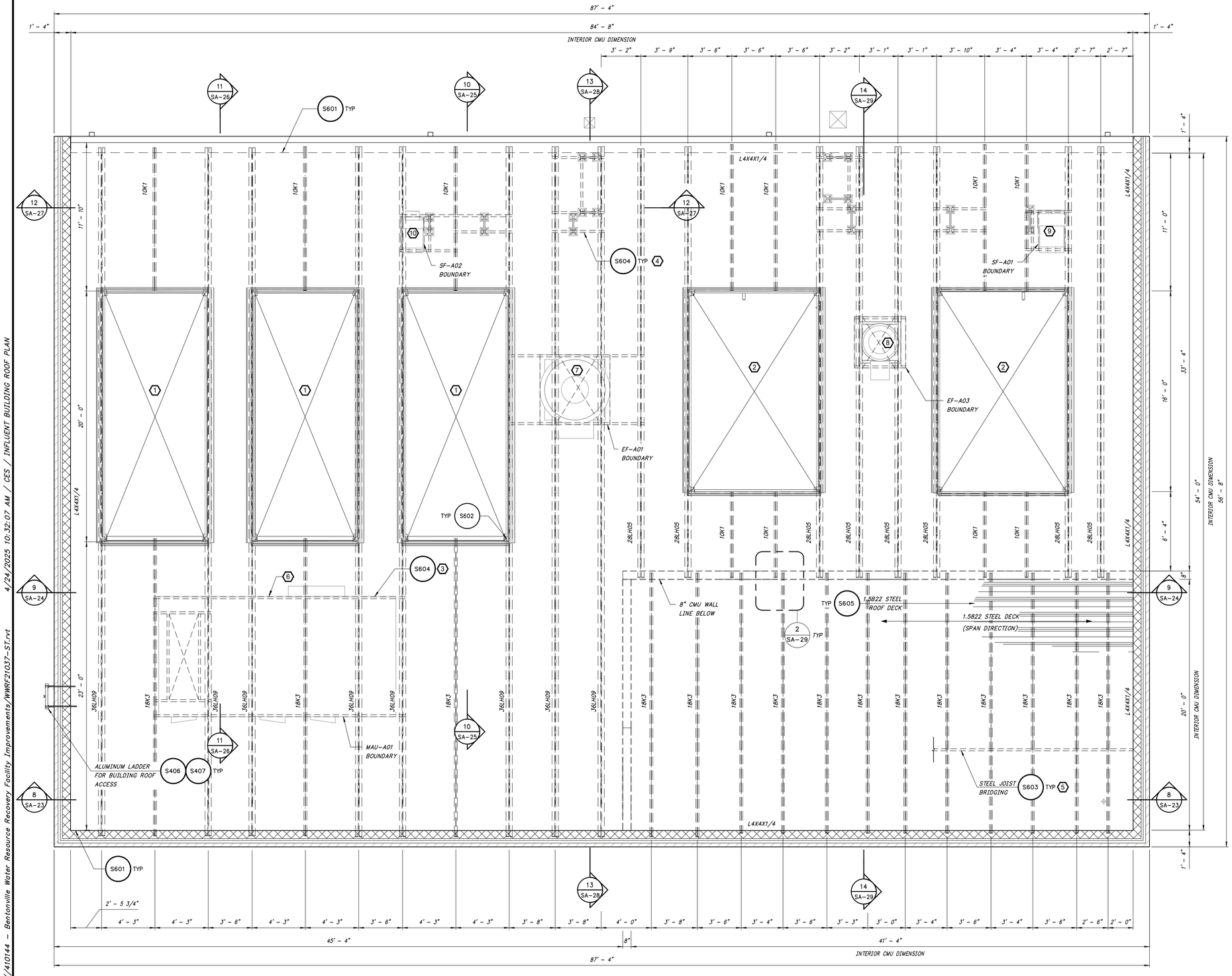
# INFLUENT BUILDING PARTIAL PLAN
## TANK PAD

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-14

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INFLUENT BUILDING ROOF PLAN

DETAIL S / – 1/4" = 1'-0"

N

NOTES:

1. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET SZ-5 FOR CMU REINFORCEMENT.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ANY MASONRY CONTROL JOINTS.
3. COORDINATE LOCATION OF VERTICAL CMU REINFORCEMENT TO AVOID CONFLICTS WITH STEEL JOISTS.
4. STEEL JOIST MANUFACTURER SHALL DESIGN JOISTS FOR THE FOLLOWING UNFACTORED LOADS:
   - DEAD LOAD OF JOISTS
   - SUPERIMPOSED DEAD LOAD 22.5 PSF WITH 5.0 PSF COLLATERAL DEAD LOAD (HVAC EQUIPMENT LOADS SHALL BE IN ADDITION TO SUPERIMPOSED DEAD LOAD)
   - UNIFORM ROOF LIVE LOAD 20 PSF (NON-REDUCIBLE)
   - CONCENTRATED EQUIPMENT LOADS SHOWN ON ROOF PLAN AND KEYED NOTES. COORDINATE WITH HVAC DRAWINGS
   - CONCENTRATED LOAD – 300 LBS. IN ANY LOCATION
   - WIND LOADS: ASCE 7-16
     - POSITIVE WIND PRESSURE 16.0 PSF
     - WIND UPLIFT PRESSURE –29.6 PSF
     - WIND LOADS ON ROOF TOP STRUCTURES ASCE 7-16 SECTION 29.4.1
   - SNOW LOADS: ASCE 7-16
     - FLAT ROOF SNOW LOAD, Pf 10.40 PSF
     - BALANCED SNOW LOAD, Ps 10.40 PSF
     - MINIMUM SNOW LOAD, Pm 16.00 PSF (NOT TO BE USED WITH DRIFT OR BALANCED NOW LOADS)
     - DRIFT LOADING AT PARAPET IN ADDITION TO BALANCED SNOW LOADING
       - EAST/WEST DIRECTION 24.60 PSF DRIFT WIDTH 6.2 FT
       - NORTH/SOUTH DIRECTION 29.80 PSF DRIFT WIDTH 7.5 FT
5. THREE (3) ROWS OF STEEL JOIST BRIDGING SHALL BE INSTALLED. IN ADDITION, A SINGLE LINE OF STEEL JOIST BOTTOM CHORD BRIDGING SHALL BE PROVIDED NEAR THE FIRST BOTTOM CHORD PANEL POINTS.
6. COODINATE SIZES AND LOCATIIONS OF ROOF EQUIPMENT AND ASSOCIATED OPENINGS WITH MECHANICAL DRAWINGS AND EQUIPMENT SHOP DRAWINGS. CONFIRM ROOF EQUIPMENT WEIGHTS BEFORE PROCEEDING WITH DESIGN OF STEEL JOISTS. REFER TO KEYED NOTES 5 AND 6 FOR HVAC ROOFTOP EQUIPMENT WEIGHTS.
7. REFER TO MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS.
8. REFER TO MECHANICAL AND HVAC DRAWINGS FOR PIPING AND DUCT WORK SUPPORTED BY ROOF JOISTS. ROOF JOISTS SHALL BE DESIGNED FOR PIPING, DUCT, AND OTHER ROOF SUPPORTER EQUIPMENT.

KEYED NOTES:

1. EQUIPMENT ACCESS HATCH SHALL BE 20'-0" LONG BY 8'-0" WIDE, ALUMINUM, WITH STAINLESS STEEL HARDWARE, SIMILAR AND EQUAL TO BILCO TYPE D ROOF HATCH. ACCESS DOOR SHALL INCLUDE BIL-GUARD SAFETY RAILING SYSTEM.
2. EQUIPMENT ACCESS HATCH SHALL BE 16'-0" LONG BY 10'-0" WIDE, ALUMINUM, WITH STAINLESS STEEL HARDWARE, SIMILAR AND EQUAL TO BILCO TYPE D ROOF HATCH. ACCESS DOOR SHALL INCLUDE BIL-GUARD SAFETY RAILING SYSTEM.
3. ADDITIONAL ROOF FRAMING IS REQUIRED AT ALL HVAC ROOF PENETRATIONS PER DETAIL S604.
4. ADDITIONAL ROOF FRAMING SHALL BE PROVIDED AT ROOF PIPING AND EQUIPMENT SUPPORTS AS REQUIRED.
5. COORDINATE LOCATION OF ALL STEEL JOIST BRIDGING TO AVOID CONFLICTS WITH HVAC ROOF PENETRATIONS.
6. MAU-A01, 8,200-POUNDS
7. EF-A01, 2,000-POUNDS
8. EF-A03, 1,000-POUNDS
9. SF-A01, 300 POUNDS
10. SF-A02, 200 POUNDS

**BID DRAWINGS**
**MARCH 21, 2025**

1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

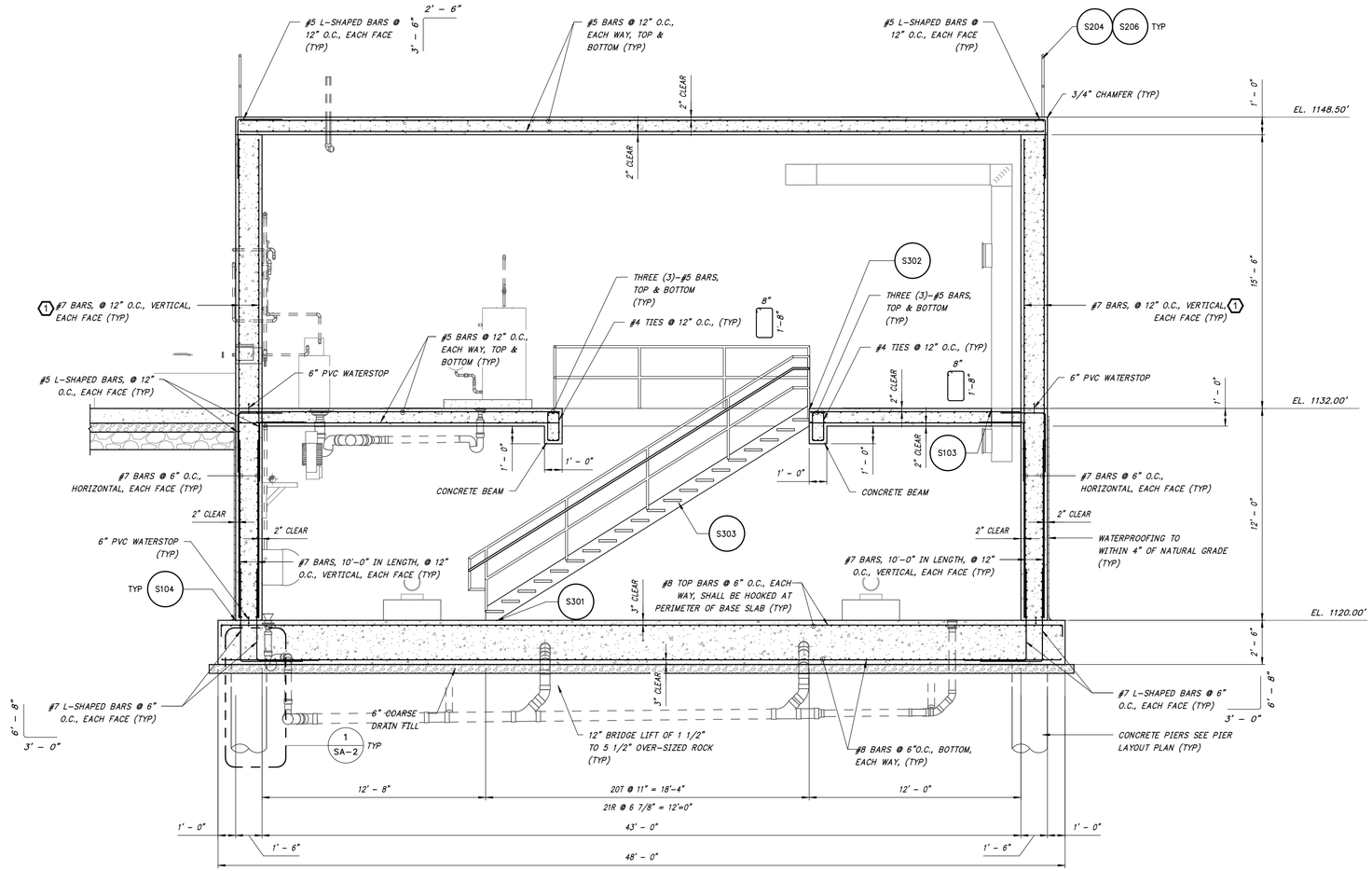
INFLUENT BUILDING ROOF PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SA-15

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SECTION 1 / SA-3
1/4" = 1'-0"

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HARP
NO. 13205
11/22/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

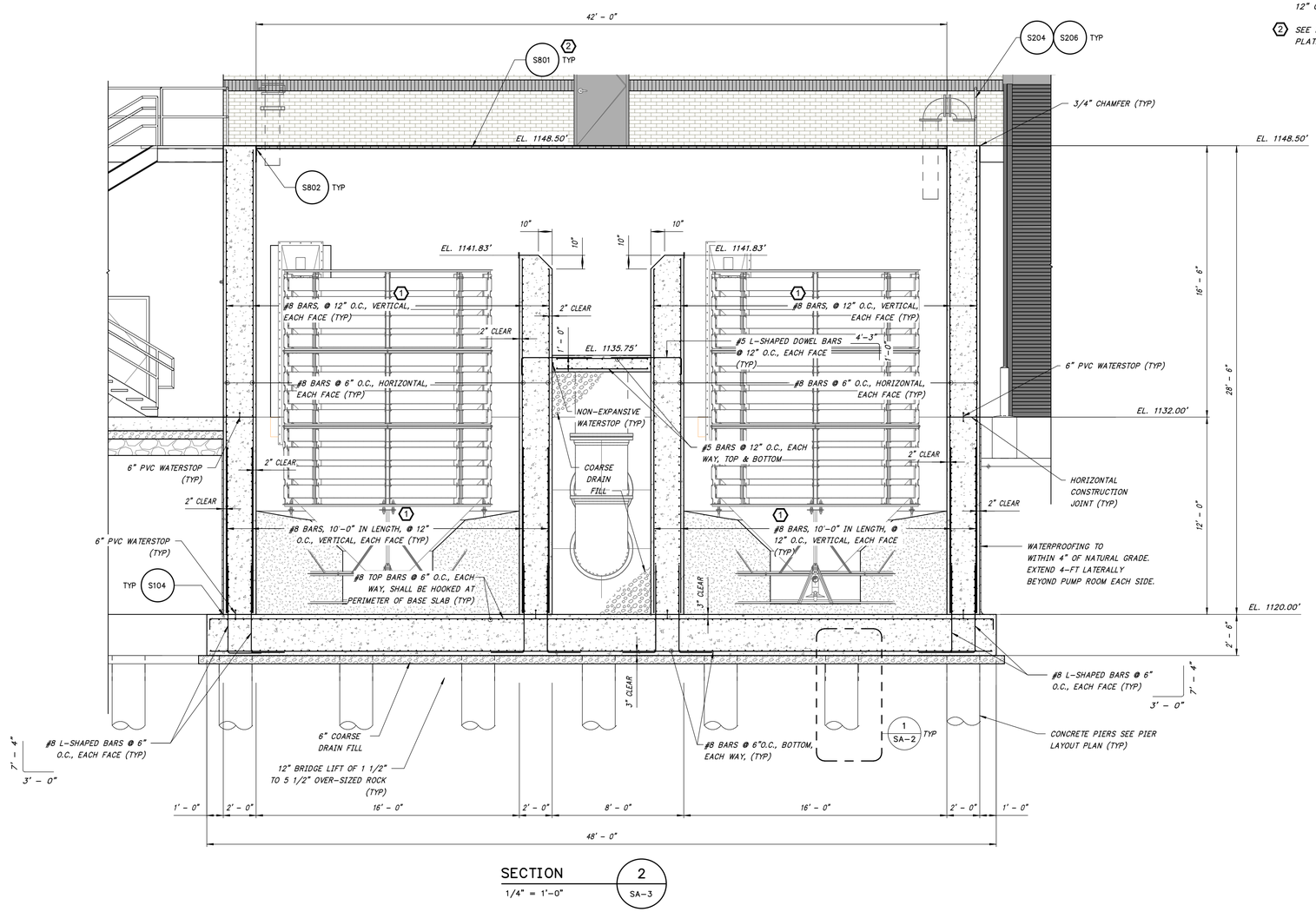
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-16

**BID DRAWINGS**
**MARCH 21, 2025**

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SECTION 2 / SA-3
1/4" = 1'-0"

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET SZ-8 FOR ODOR CONTROL COVER PLATE.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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LARRY C. HARP
NO. 13205
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

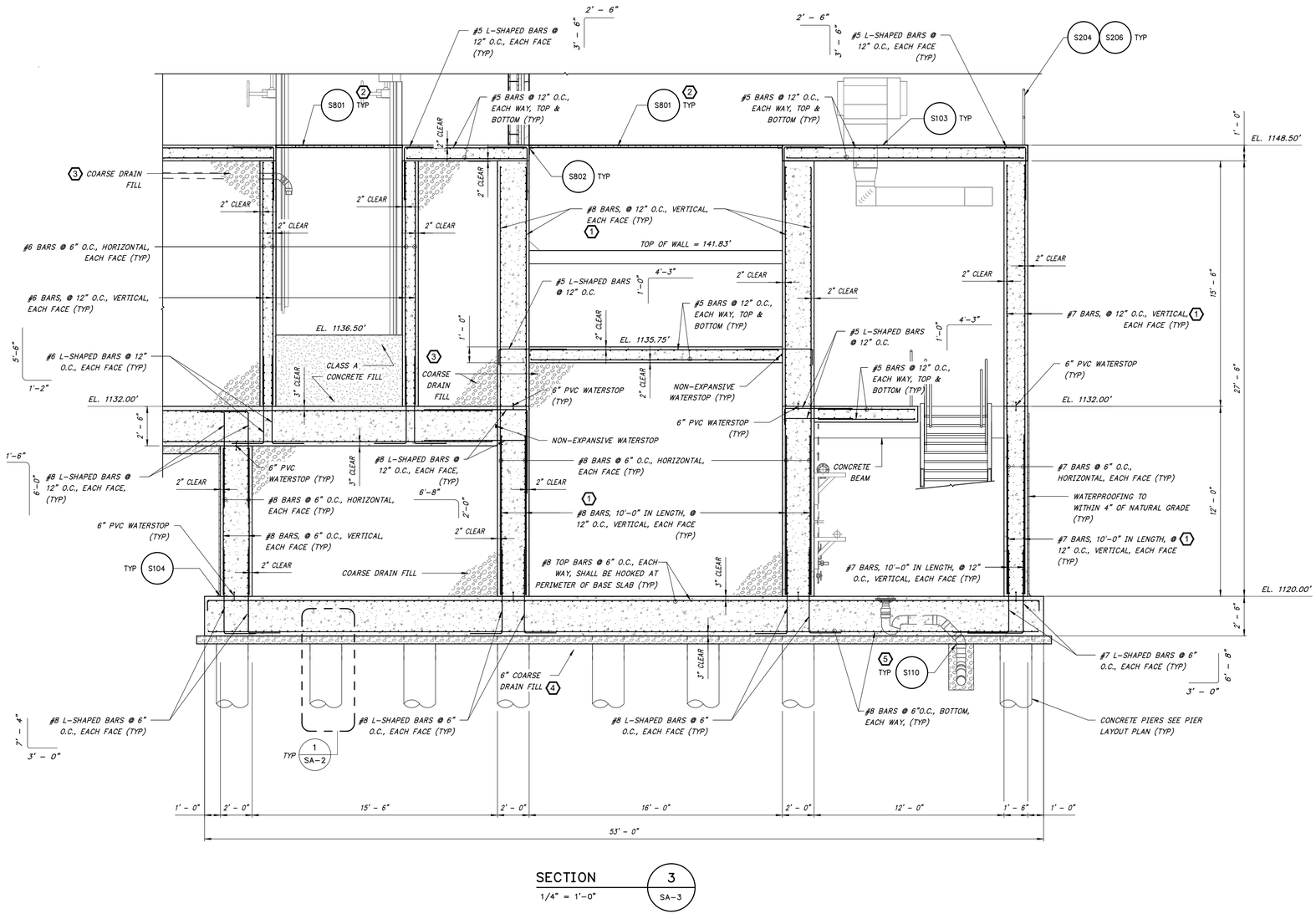
FOR: BENTONVILLE WASTEWATER UTILITIES

**BID DRAWINGS**
**MARCH 21, 2025**

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-17

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SECTION 3
1/4" = 1'-0" SA-3

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET SZ-8 FOR ODOR CONTROL COVER PLATE.
3. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
4. REFER TO NOTE NO. 2
5. ENCASE ALL UNDER SLAB PIPING AND ELECTRICAL CONDUIT IN ACCORDANCE WITH DETAIL S110.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

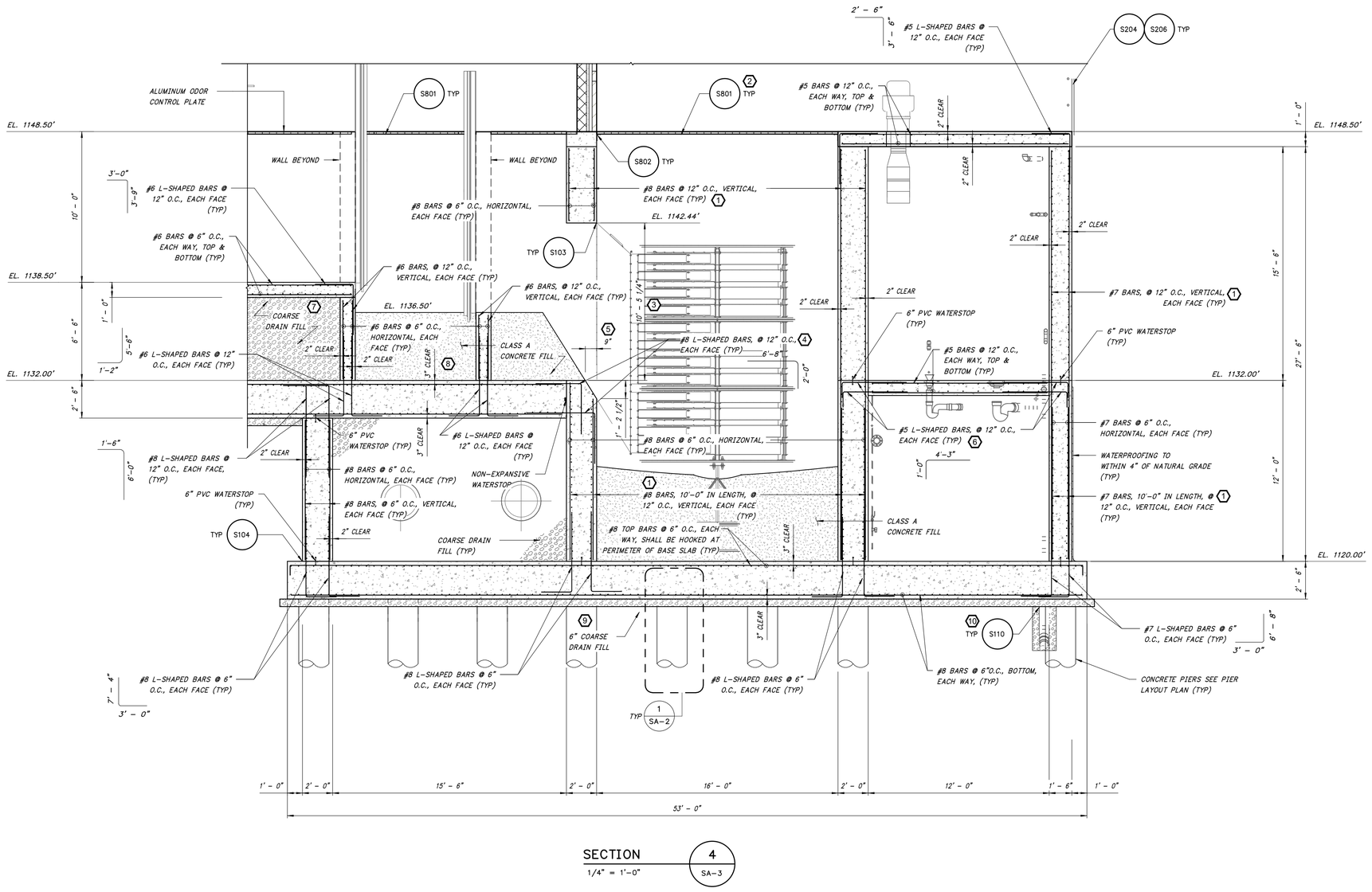
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-18

**BID DRAWINGS**
**MARCH 21, 2025**

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SECTION 4 / SA-3
1/4" = 1'-0"

*NOTES:*

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

*KEYED NOTES:*

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. COORDINATE EXACT OPENING DIMENSIONS WITH EQUIPMENT TO BE PROVIDED.
4. LOCALLY SHIFT TOP L-SHAPED BAR AT WALL OPENING CHAMFER.
5. COORDINATE EXACT WALL CHAMFER DIMENSIONS WITH EQUIPMENT TO BE PROVIDED.
6. PROVIDE 3 INCHES OF CONCRETE CLEAR COVER OVER TOP DOWEL TO ALLOW INSTALLATION OF PVC WATERSTOP.
7. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
8. EPS GEOFOAM MAY BE USED TO PARTIALLY FILL THE SPACE WHERE CLASS A CONCRETE FILL IS SHOWN. A MINIMUM 18 INCH THICK LAYER OF CLASS A CONCRETE FILL SHALL BE PLACED OVER THE TOP OF THE EPS GEOFOAM.
9. REFER TO NOTE NO. 2.
10. ENCASE ALL UNDER SLAB PIPING AND ELECTRICAL CONDUIT IN ACCORDANCE WITH DETAIL S110.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-19

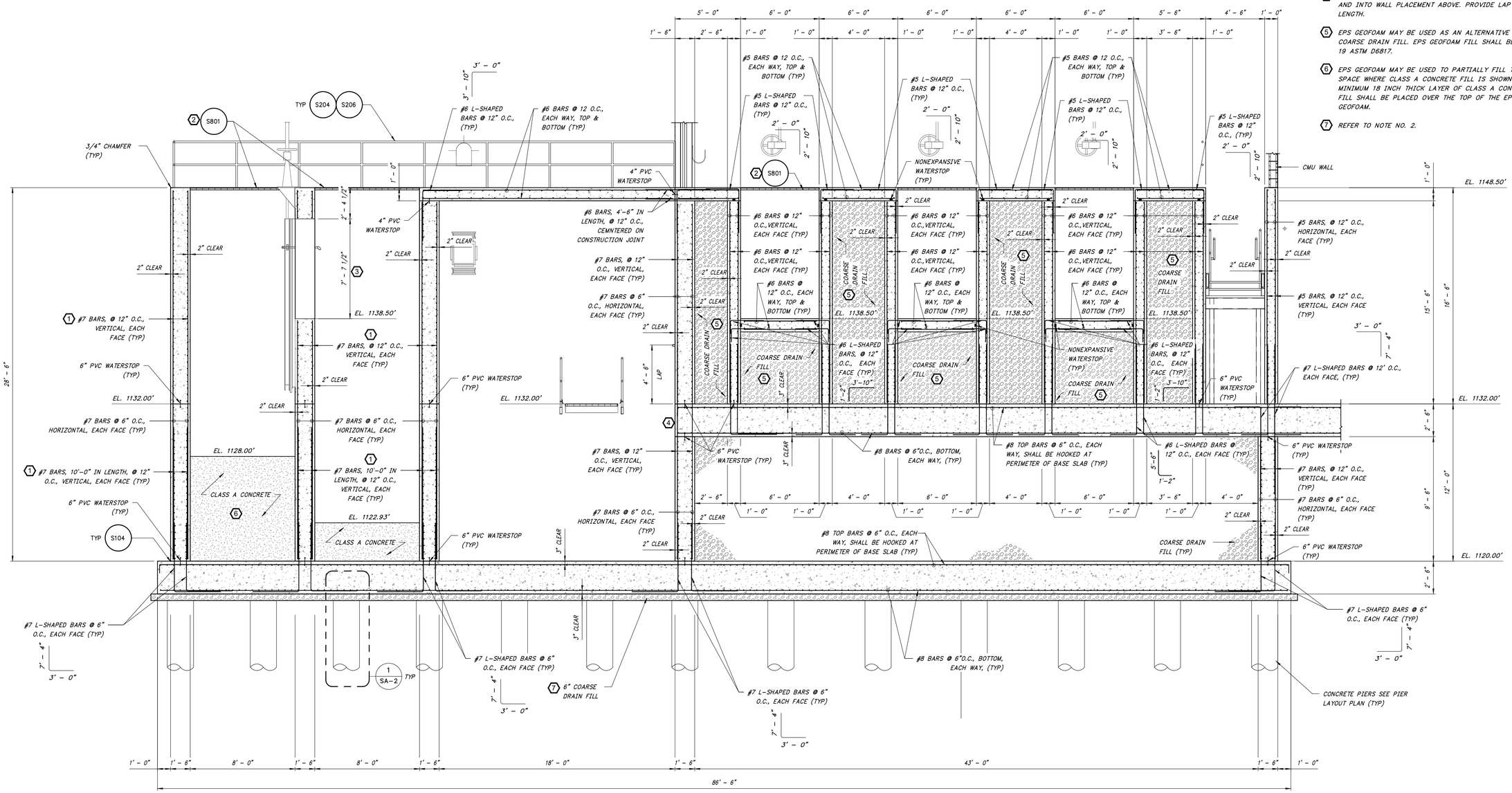
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:20 AM / CES / INFLUENT BUILDING SECTION

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. COORDINATE EXACT OPENING DIMENSIONS WITH EQUIPMENT TO BE PROVIDED.
4. EXTEND VERTICAL WALL REINFORCING THROUGH SLAB AND INTO WALL PLACEMENT ABOVE. PROVIDE LAP LENGTH.
5. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
6. EPS GEOFOAM MAY BE USED TO PARTIALLY FILL THE SPACE WHERE CLASS A CONCRETE FILL IS SHOWN. A MINIMUM 18 INCH THICK LAYER OF CLASS A CONCRETE FILL SHALL BE PLACED OVER THE TOP OF THE EPS GEOFOAM.
7. REFER TO NOTE NO. 2.




SECTION 5 / SA-3
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

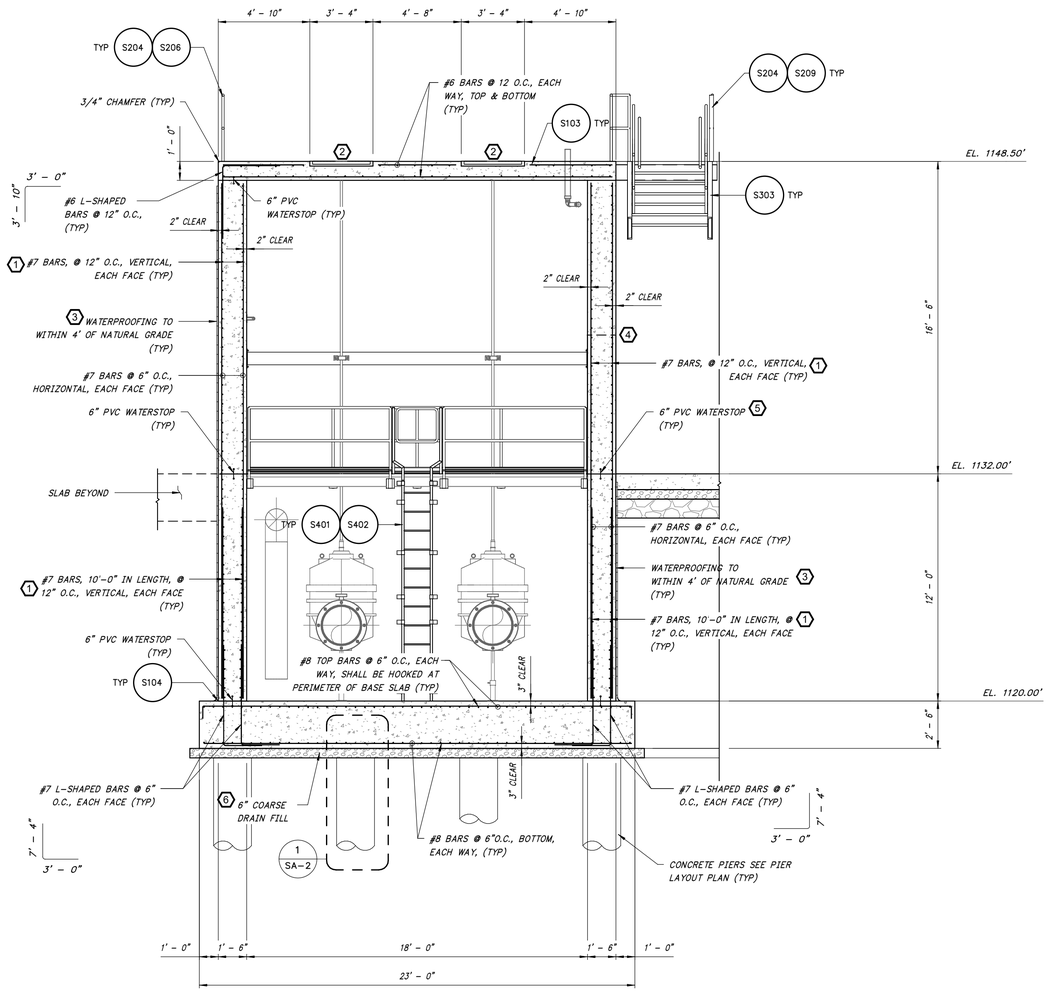
INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. 1 SA-20

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SECTION 6
1/4" = 1'-0" SA-3

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. ACCESS DOOR SHALL BE HALLIDAY NO. WIR4242 OR EQUAL AND SHALL INCLUDE OPTIONAL FALL PROTECTION GRATING. CLEAR OPENING DIMENSIONS SHALL BE 42-INCHES x 42-INCHES MINIMUM.
3. EXTEND WATERPROOFING LATERALLY ALONG LENGTH OF WALL A MINIMUM OF 4-FEET BEYOND INTERIOR DIMENSIONS OF THE METER VAULT.
4. DOOR OPENING IN WALL BEYOND, SEE PLAN SHEET SA-6 FOR LOCATION. COORDINATE DOOR OPENING DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
5. OMIT WATERSTOPS AT DOOR OPENINGS.
6. REFER TO NOTE NO. 2.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

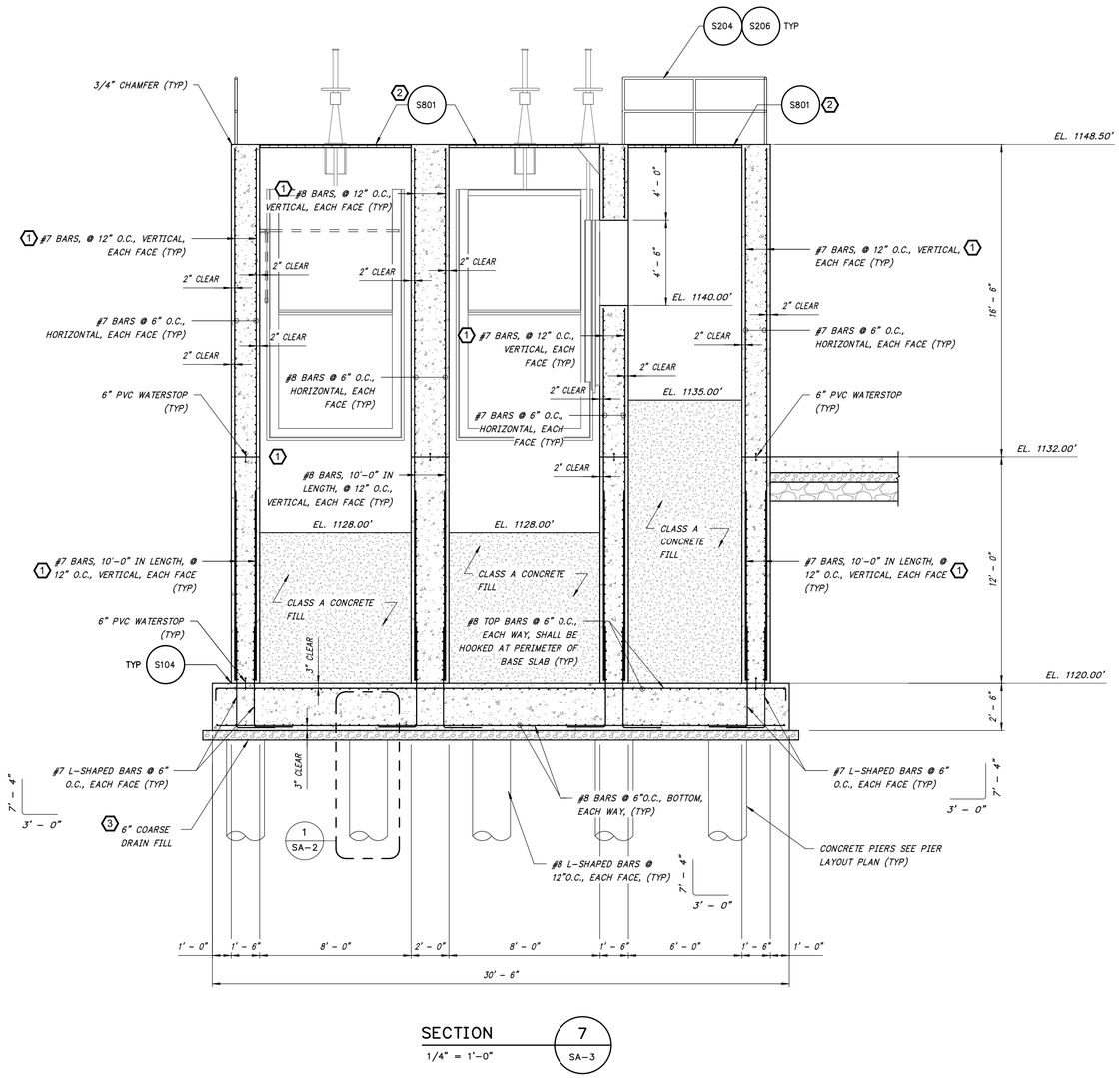
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

**BID DRAWINGS**
**MARCH 21, 2025**

1 SHEET NO. SA-21

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SECTION 7 / SA-3
1/4" = 1'-0"

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. REFER TO NOTE NO. 2.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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NO. 13205
11/22/2025

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BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-22

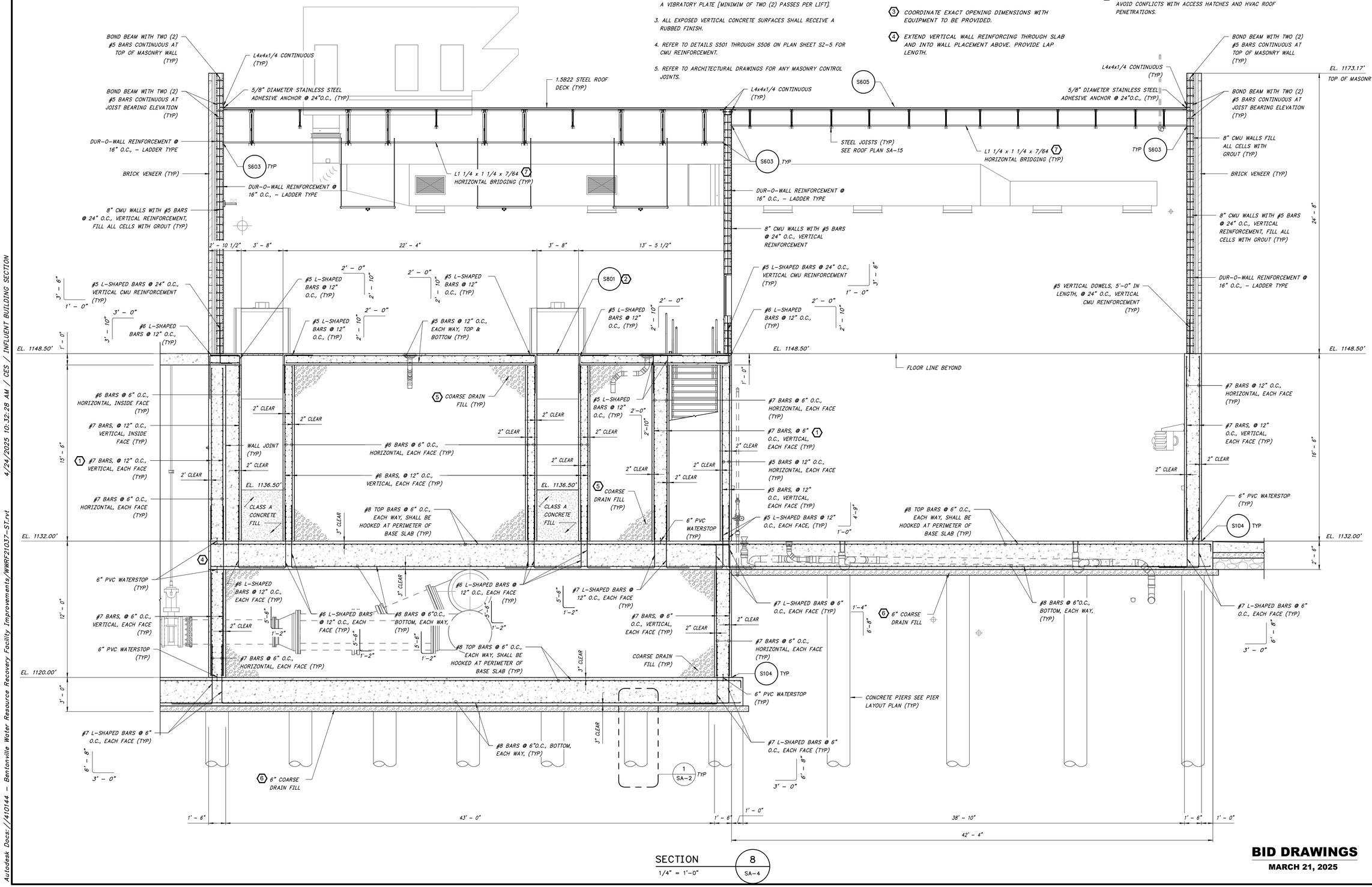
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:26 AM / CES / INFLUENT BUILDING SECTION

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET S2-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. COORDINATE EXACT OPENING DIMENSIONS WITH EQUIPMENT TO BE PROVIDED.
4. EXTEND VERTICAL WALL REINFORCING THROUGH SLAB AND INTO WALL PLACEMENT ABOVE. PROVIDE LAP LENGTH.
5. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
6. REFER TO NOTE NO. 2.
7. COORDINATE LOCATION OF ALL STEEL JOIST BRIDGING TO AVOID CONFLICTS WITH ACCESS HATCHES AND HVAC ROOF PENETRATIONS.




SECTION 8 / SA-4
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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CITY OF BENTONVILLE ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. 1 SA-23

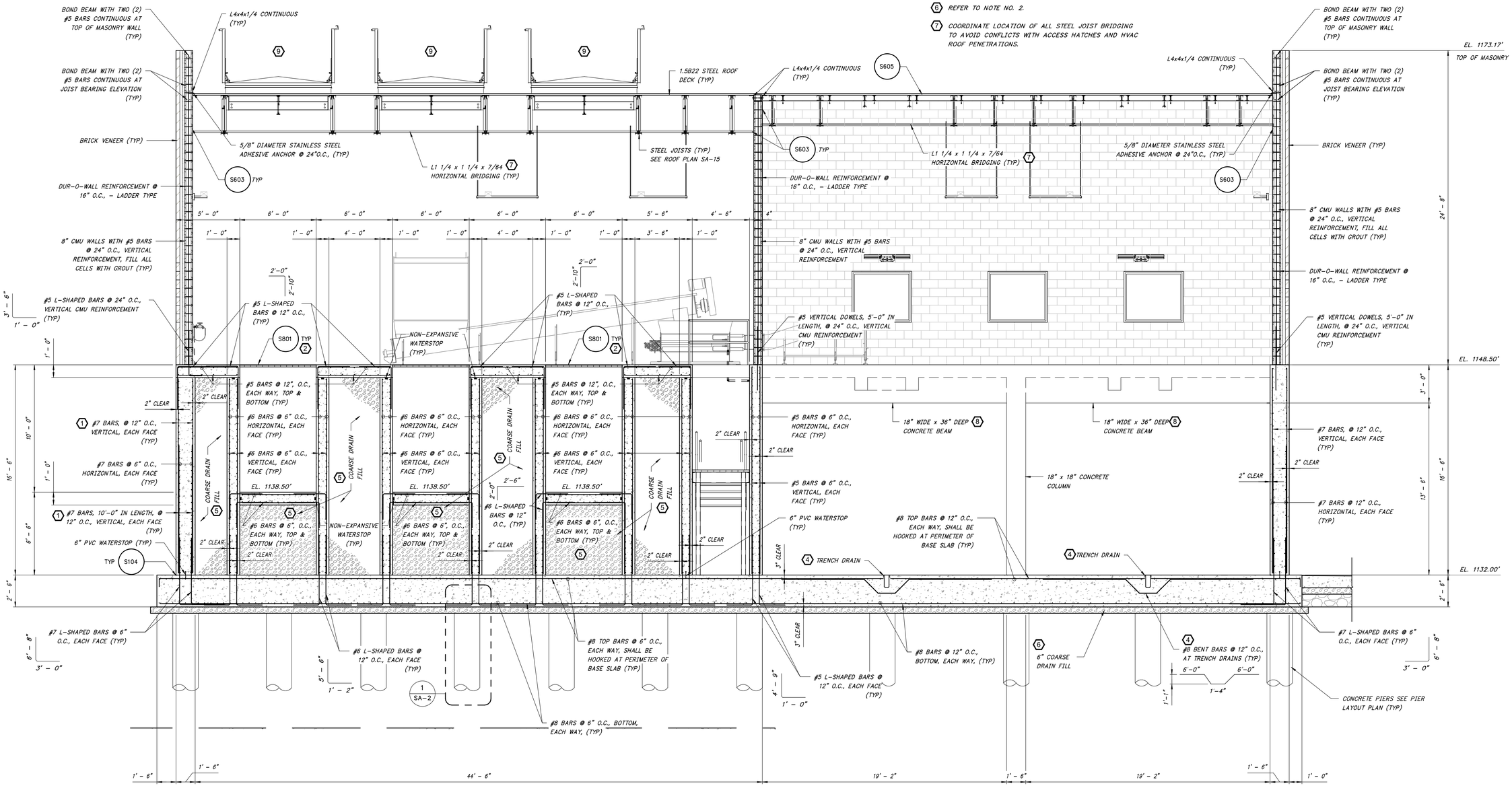
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:28 AM / CES / INFLUENT BUILDING SECTION

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET SZ-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. COORDINATE EXACT OPENING DIMENSIONS WITH EQUIPMENT TO BE PROVIDED.
4. TRENCH DRAIN COORDINATE WITH PLUMBING SHEETS. COORDINATE BENT BAR REINFORCING DIMENSIONS WITH TRENCH DRAIN DIMENSIONS PRIOR TO REINFORCING FABRICATION.
5. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
6. REFER TO NOTE NO. 2.
7. COORDINATE LOCATION OF ALL STEEL JOIST BRIDGING TO AVOID CONFLICTS WITH ACCESS HATCHES AND HVAC ROOF PENETRATIONS.
8. 18" WIDE x 36" DEEP CONCRETE BEAM WITH FIVE (5) #8 BARS, TOP AND BOTTOM AND #4 TIES @ 12"O.C. PROVIDE TWO (2) #5 BARS HORIZONTAL, EQUALLY SPACED ON EACH SIDE OF BEAM.
9. ROOF ACCESS HATCH. REFER TO ROOF PLAN SHEET SA-15.




SECTION 9
1/4" = 1'-0" SA-4

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

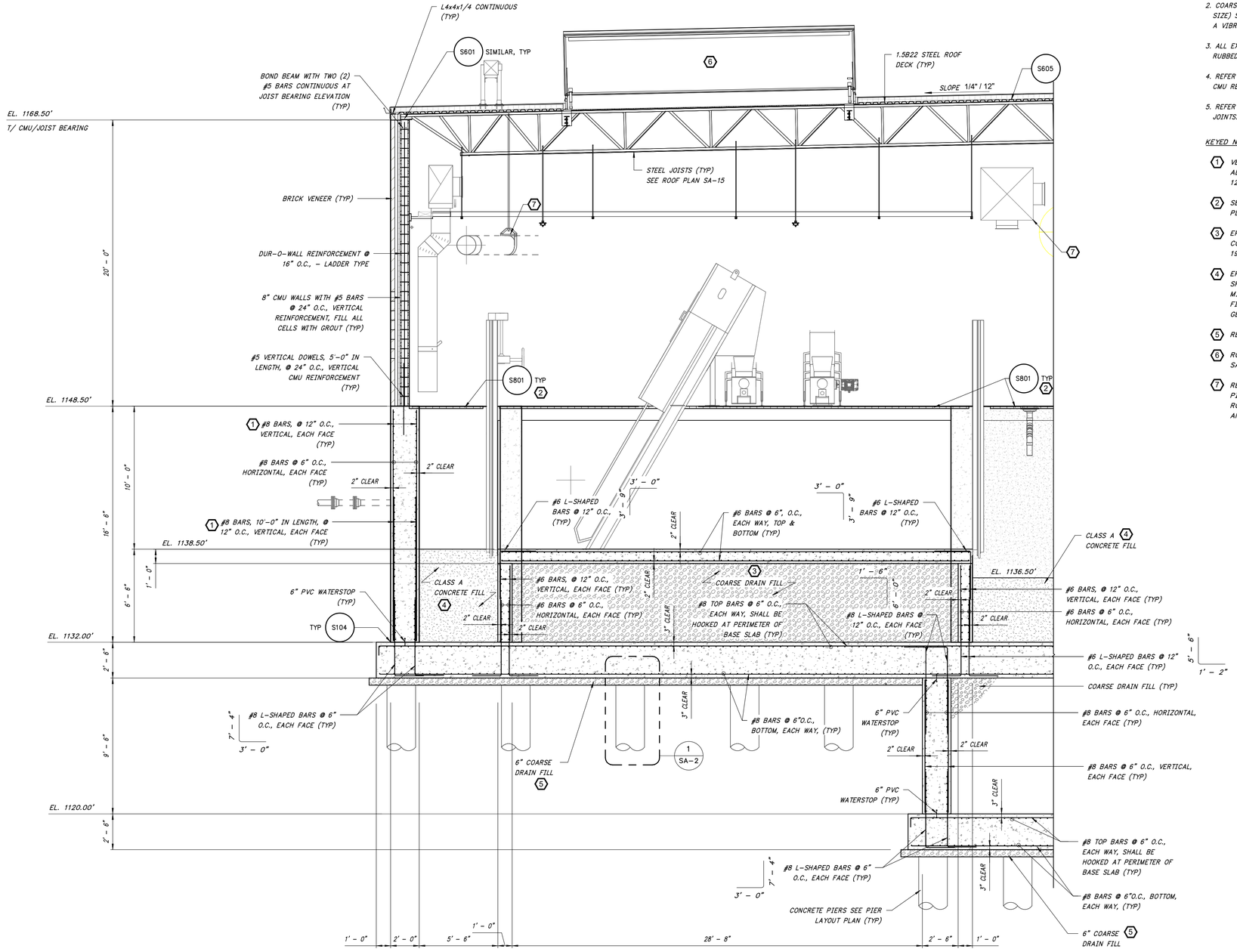
INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-24

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SECTION 10
1/4" = 1'-0" SA-4

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMIM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET S2-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
4. EPS GEOFOAM MAY BE USED TO PARTIALLY FILL THE SPACE WHERE CLASS A CONCRETE FILL IS SHOWN. A MINIMUM 18 INCH THICK LAYER OF CLASS A CONCRETE FILL SHALL BE PLACED OVER THE TOP OF THE EPS GEOFOAM.
5. REFER TO NOTE NO. 2.
6. ROOF ACCESS HATCH. REFER TO ROOF PLAN SHEET SA-15.
7. REFER TO MECHANICAL AND HVAC DRAWINGS FOR PIPING AND DUCT WORK SUPPORTED BY ROOF JOISTS. ROOF JOISTS SHALL BE DESIGNED FOR PIPING, DUCT, AND OTHER ROOF SUPPORTED EQUIPMENT.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

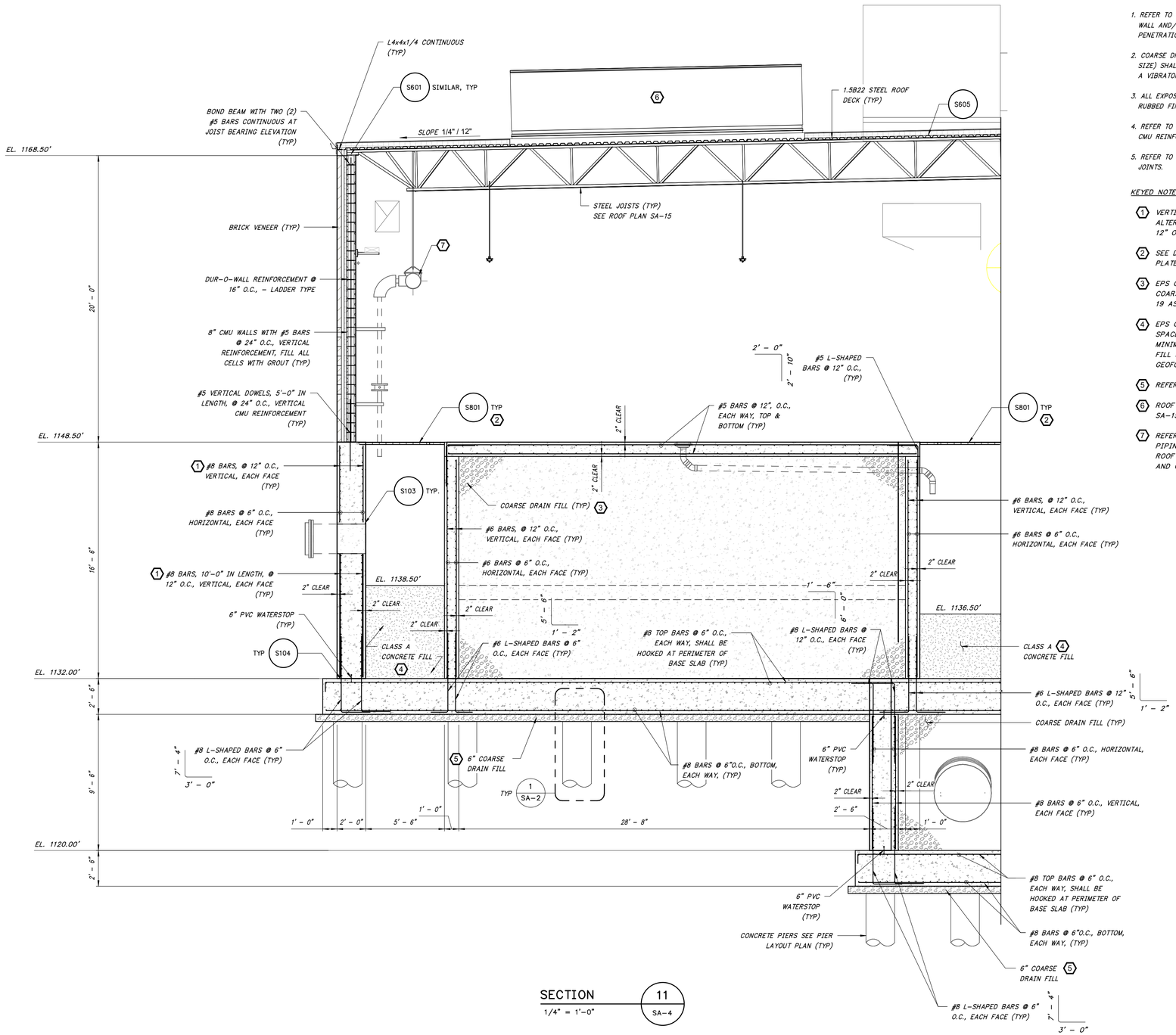
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-25

**BID DRAWINGS**
**MARCH 21, 2025**

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SECTION 11 / SA-4
1/4" = 1'-0"

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMIM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET S2-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. EPS GEOFOAM MAY BE USED AS AN ALTERNATIVE FOR COARSE DRAIN FILL. EPS GEOFOAM FILL SHALL BE EPS 19 ASTM D6817.
4. EPS GEOFOAM MAY BE USED TO PARTIALLY FILL THE SPACE WHERE CLASS A CONCRETE FILL IS SHOWN. A MINIMUM 18 INCH THICK LAYER OF CLASS A CONCRETE FILL SHALL BE PLACED OVER THE TOP OF THE EPS GEOFOAM.
5. REFER TO NOTE NO. 2.
6. ROOF ACCESS HATCH. REFER TO ROOF PLAN SHEET SA-15.
7. REFER TO MECHANICAL AND HVAC DRAWINGS FOR PIPING AND DUCT WORK SUPPORTED BY ROOF JOISTS. ROOF JOISTS SHALL BE DESIGNED FOR PIPING, DUCT, AND OTHER ROOF SUPPORTED EQUIPMENT.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

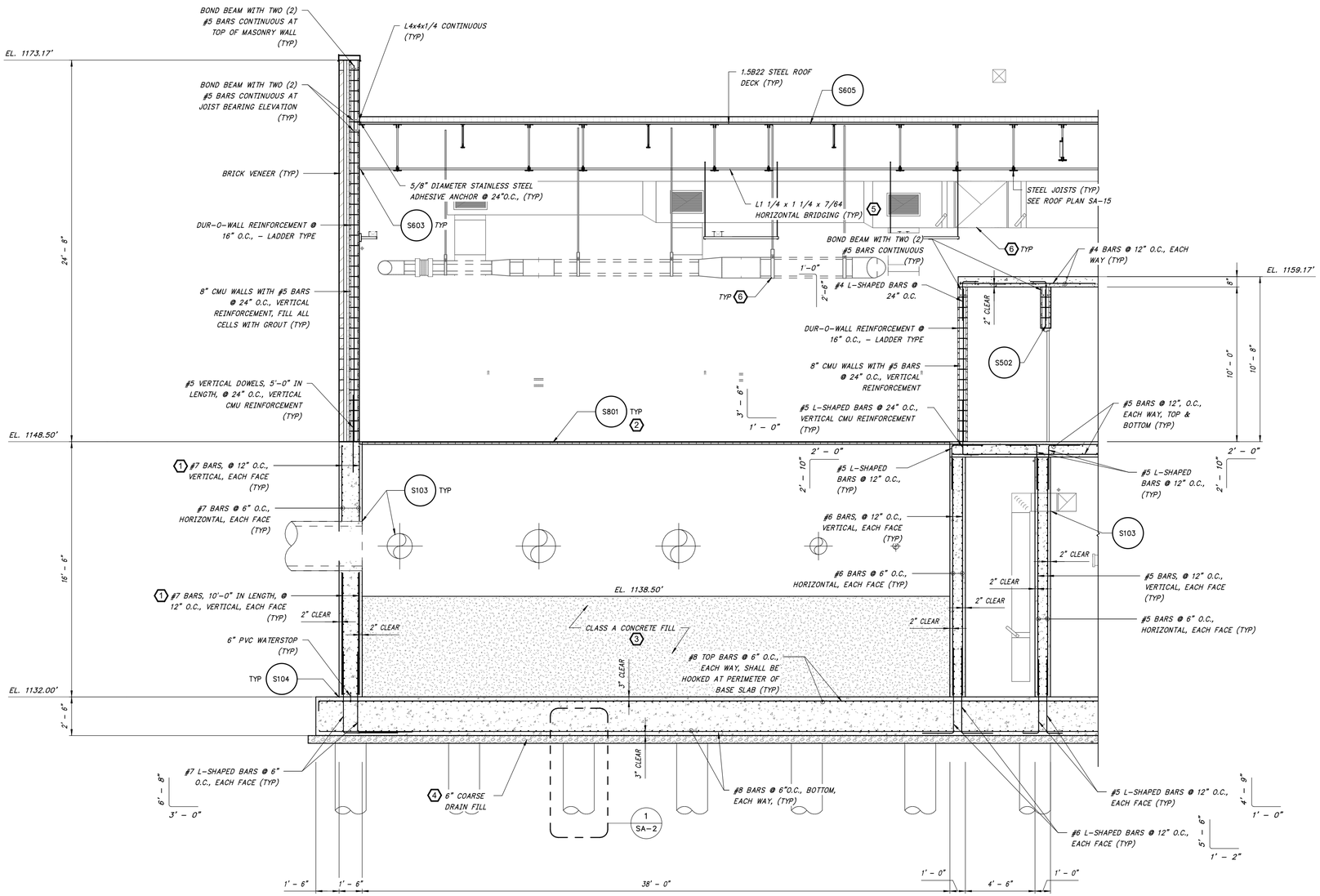
INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-26

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SECTION 12
1/4" = 1'-0" SA-4

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET S2-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET S2-8 FOR ODOR CONTROL COVER PLATE.
3. EPS GEOFOAM MAY BE USED TO PARTIALLY FILL THE SPACE WHERE CLASS A CONCRETE FILL IS SHOWN. A MINIMUM 18 INCH THICK LAYER OF CLASS A CONCRETE FILL SHALL BE PLACED OVER THE TOP OF THE EPS GEOFOAM.
4. REFER TO NOTE NO. 2.
5. COORDINATE LOCATION OF ALL STEEL JOIST BRIDGING TO AVOID CONFLICTS WITH ACCESS HATCHES AND HVAC ROOF PENETRATIONS.
6. REFER TO MECHANICAL AND HVAC DRAWINGS FOR PIPING AND DUCT WORK SUPPORTED BY ROOF JOISTS. ROOF JOISTS SHALL BE DESIGNED FOR PIPING, DUCT, AND OTHER ROOF SUPPORTED EQUIPMENT.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER LARRY C. HARTLEY NO. 13205 4/24/2025

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

INFLUENT BUILDING SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-27

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:36 AM / CES / INFLUENT BUILDING SECTION

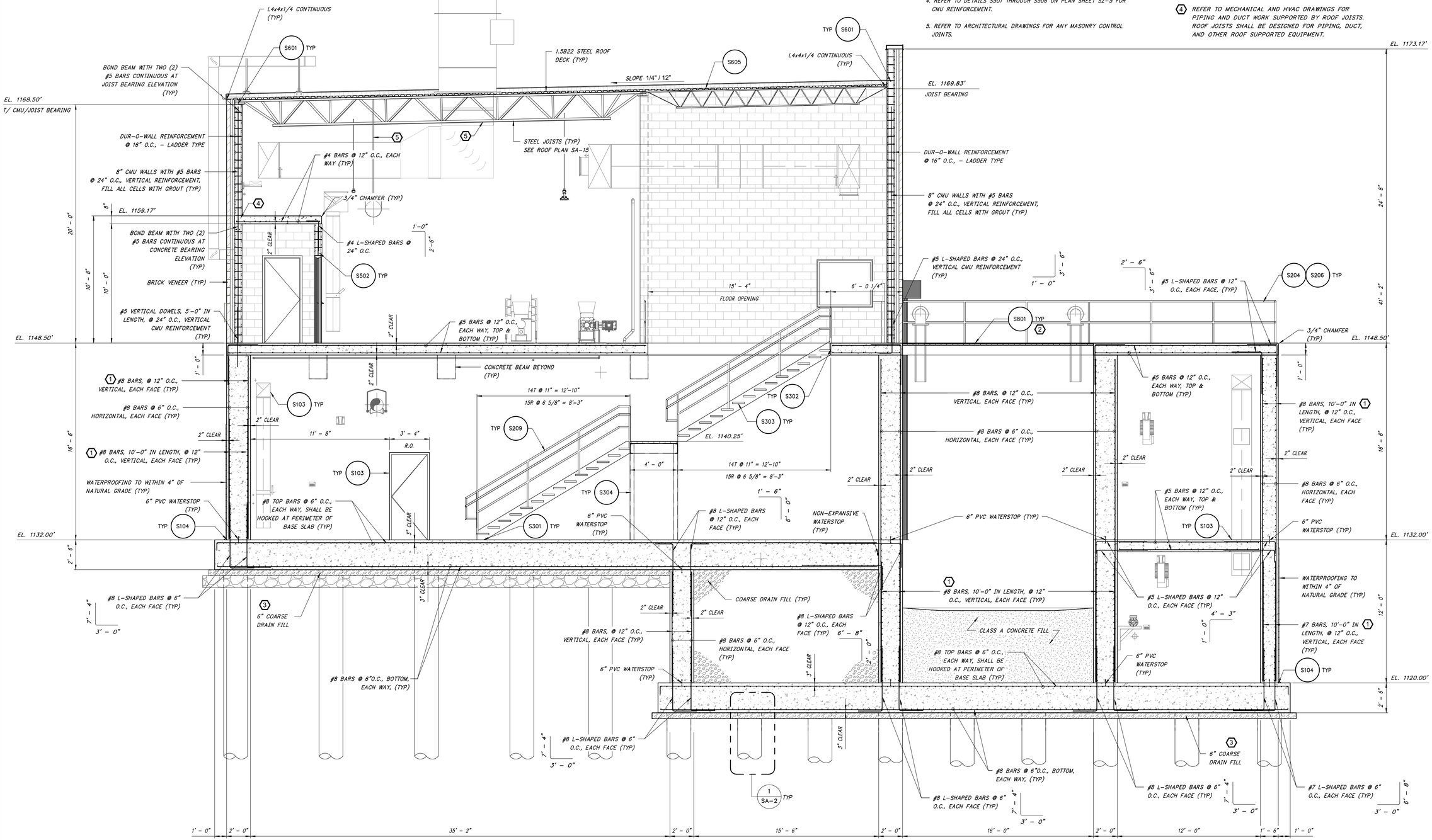
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:38 AM / CES / INFLUENT BUILDING SECTION

**NOTES:**

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 8' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO DETAILS S501 THROUGH S506 ON PLAN SHEET SZ-5 FOR CMU REINFORCEMENT.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ANY MASONRY CONTROL JOINTS.

**KEYED NOTES:**

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. SEE DETAIL ON SHEET SZ-8 FOR ODOR CONTROL COVER PLATE.
3. REFER TO NOTE NO. 2.
4. EXTEND CMU WALL REINFORCEMENT THROUGH CONCRETE SLAB.
4. REFER TO MECHANICAL AND HVAC DRAWINGS FOR PIPING AND DUCT WORK SUPPORTED BY ROOF JOISTS. ROOF JOISTS SHALL BE DESIGNED FOR PIPING, DUCT, AND OTHER ROOF SUPPORTED EQUIPMENT.




SECTION 13
1/4" = 1'-0" SA-4

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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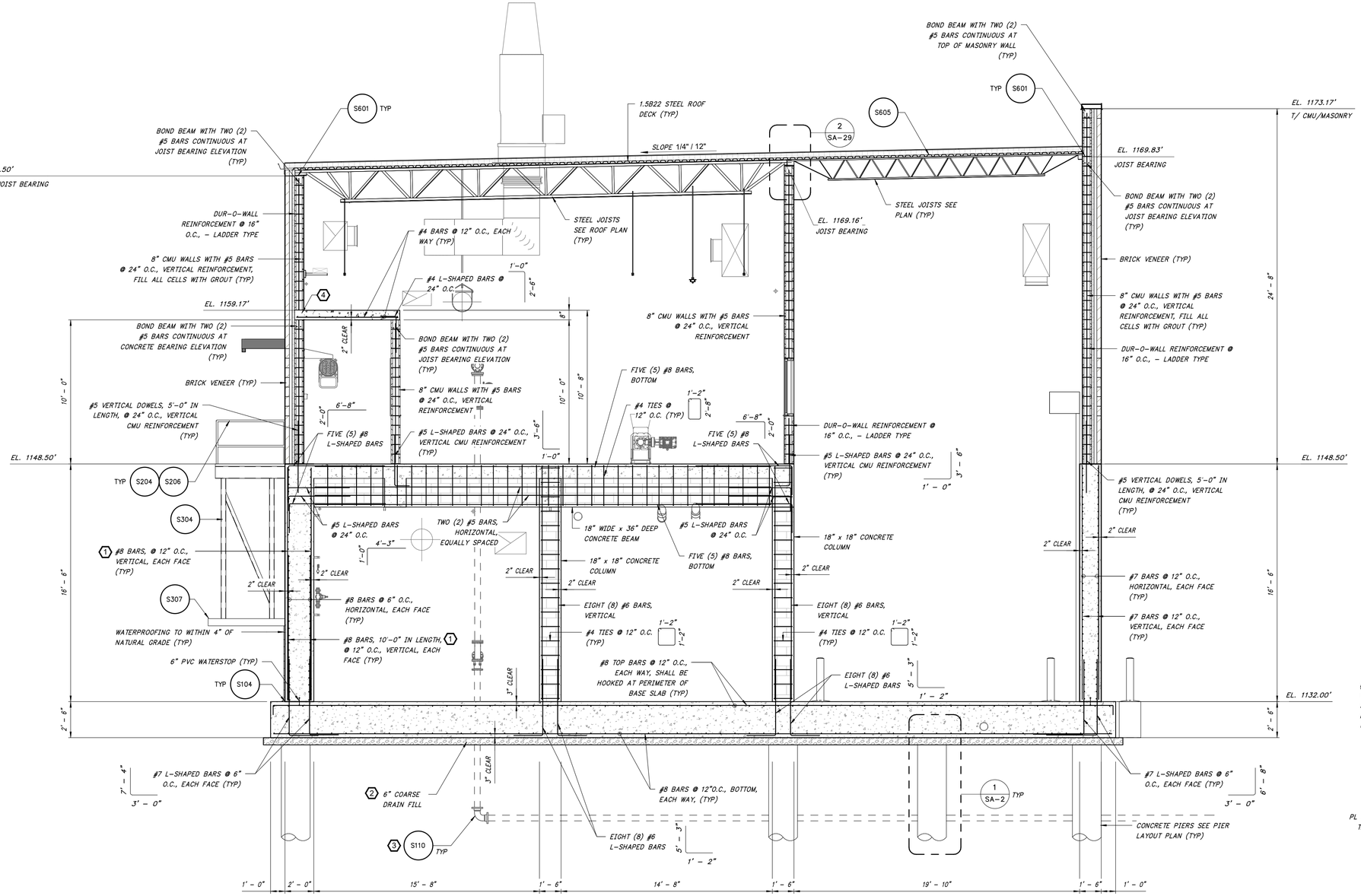
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER LARRY C. HARP NO. 13205 11/22/2025

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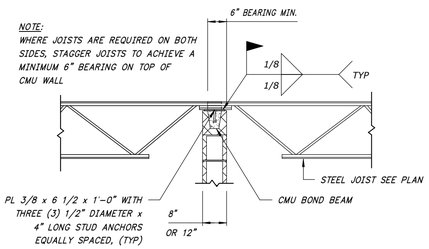
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS
INFLUENT BUILDING SECTION
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

1 SHEET NO. SA-28




SECTION 14 / SA-4
1/4" = 1'-0"




JOIST BEARING ON BOTH SIDES

DETAIL 2
N.T.S

NOTES:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6' LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO NOTE NO. 2.
3. ENCASE ALL UNDER SLAB PIPING AND ELECTRICAL CONDUIT IN ACCORDANCE WITH DETAIL S110.
4. EXTEND CMU WALL REINFORCEMENT THROUGH CONCRETE SLAB.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
LARRY C. HARTLEY
NO. 13205
11/21/2025

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# INFLUENT BUILDING SECTION

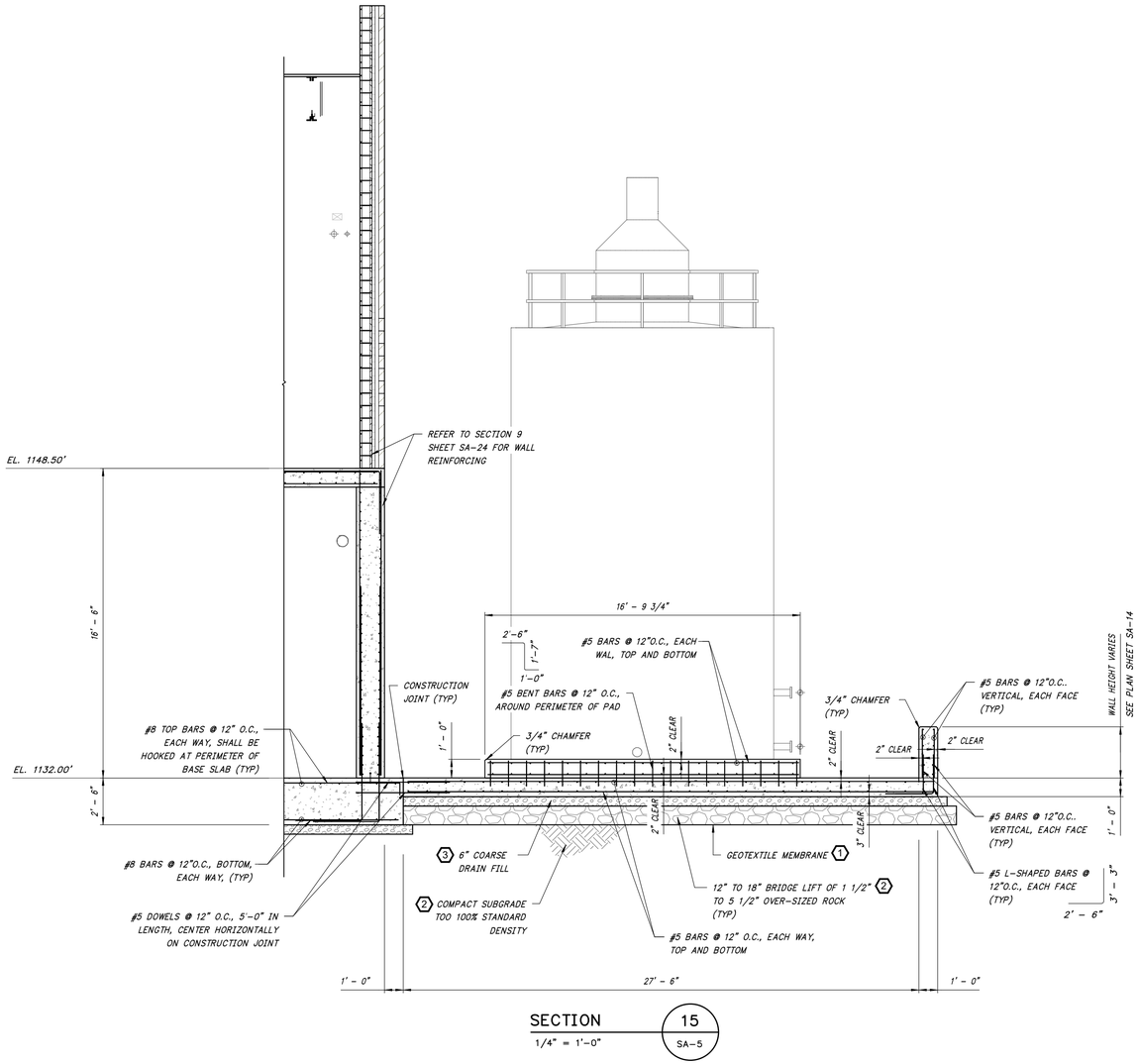
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: As indicated
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. 1 SA-29

**BID DRAWINGS**
**MARCH 21, 2025**

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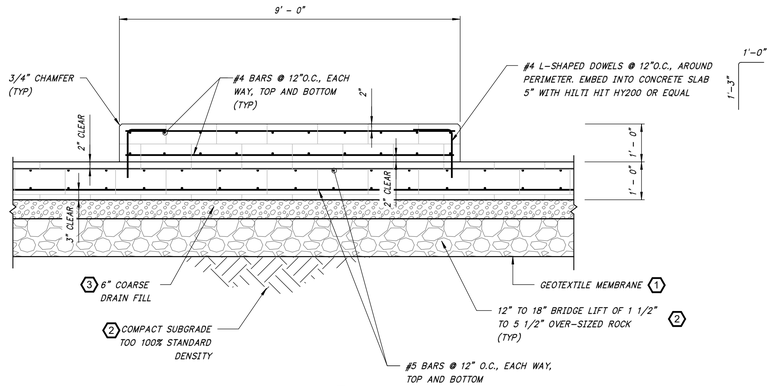

SECTION 15
1/4" = 1'-0"
SA-5

NOTES:

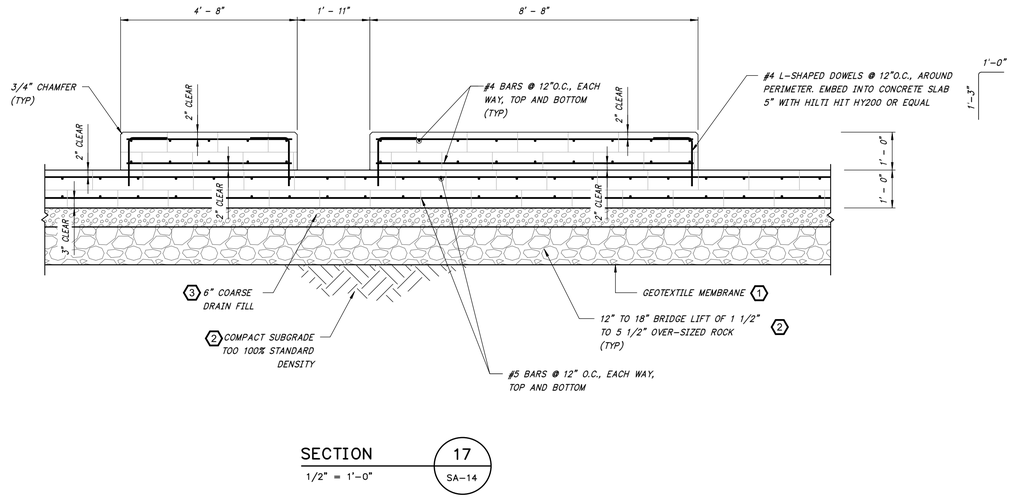
1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH UNLESS INDICATED OTHERWISE.
3. CONTRACTOR SHALL COORDINATE THE EQUIPMENT PAD PLAN DIMENSIONS, TOP OF PAD ELEVETIONS, AND LOCATION WITH MECHANCIAL DRAWINGS AND EQUIPMENT PROVIDED FOR THE PROJECT PRIOR TO INSTALLATION OF CONCRETE AND REINFORCEMENT.

KEYED NOTES:

1. GEOTEXTILE MEMBRANE SHALL BE MIRAFI HP270, OR APPROVED EQUAL, AND SHALL ENCAPSULATE THE BOTTOM AND SIDES OF THE BRIDGE LIFT.
2. 18" TO 24" BRIDGE LIFT MAY BE OMITTED IF THE SPECIFIED COMPACTION OF THE SUBGRADE CAN BE ACHIEVED AND WITH THE APPROVAL OF THE GEOTECHNICAL ENGINEER OF RECORD.
3. REFER TO NOTE NO. 4.




SECTION 16
1/2" = 1'-0"
SA-14




SECTION 17
1/2" = 1'-0"
SA-14

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

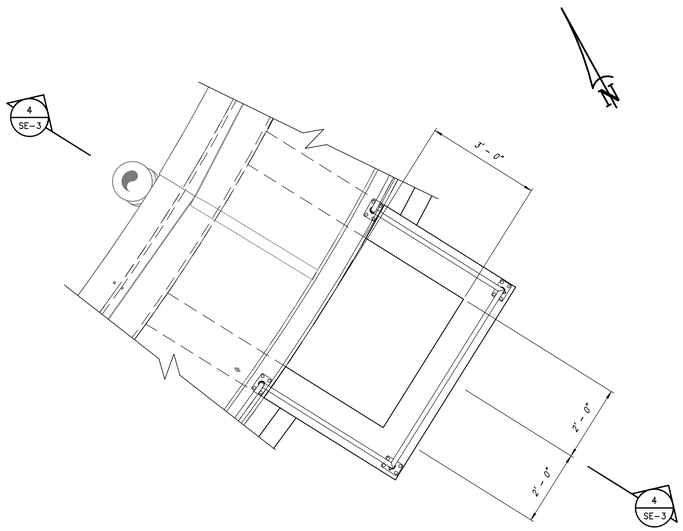
INFLUENT BUILDING SECTIONS

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: As indicated
DESIGNED BY: LCH
DRAWN BY: CES
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

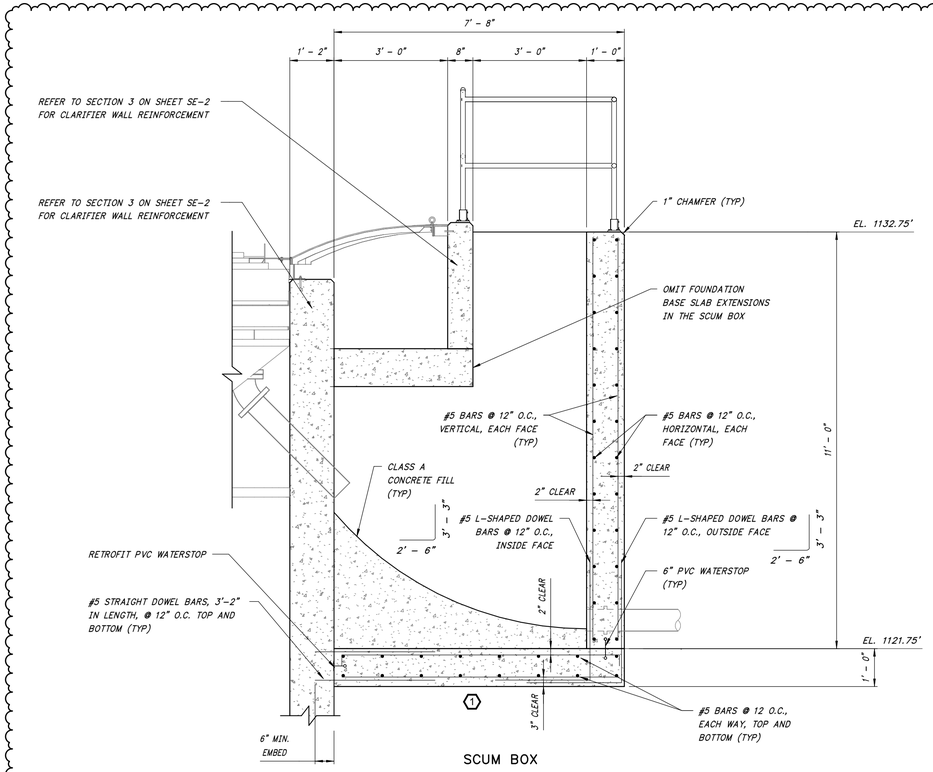
SHEET NO.
SA-30

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SCUM BOX

DETAIL C
1/2" = 1'-0" SE-1




SCUM BOX

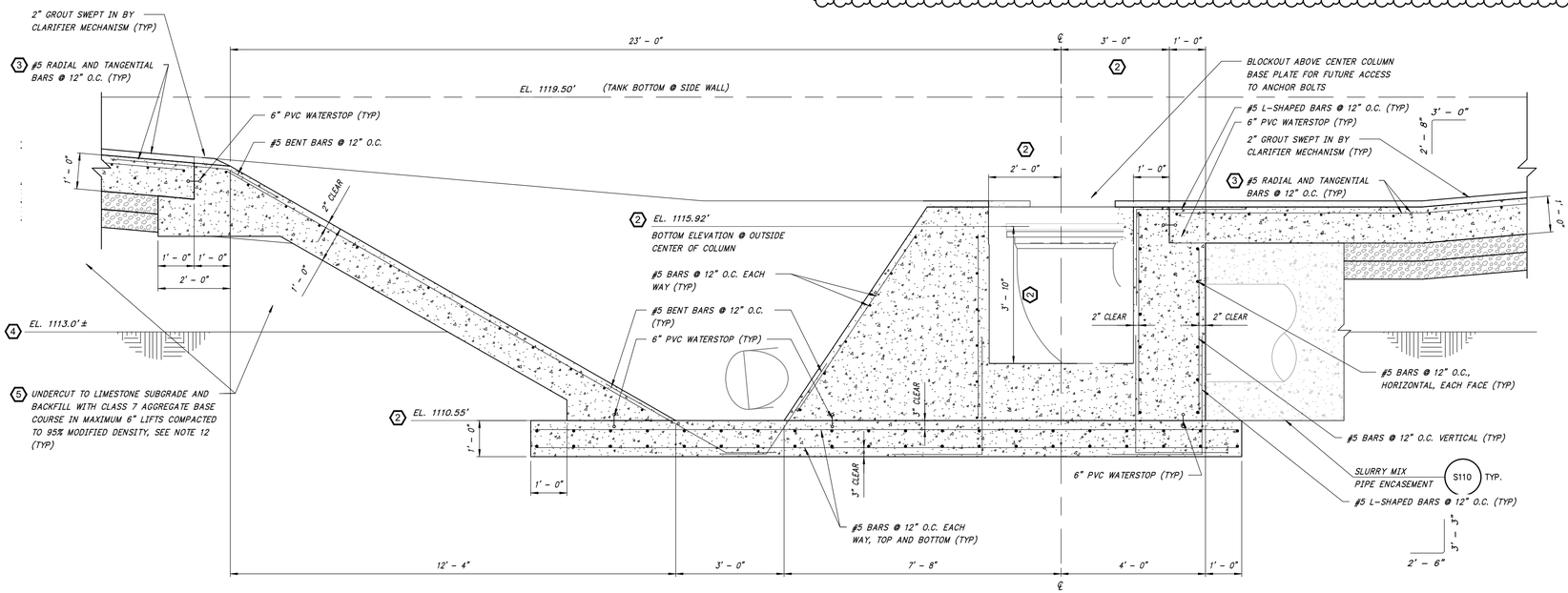
SECTION 4 (1)
1/2" = 1'-0" SE-3

NOTES:

1. REFER TO MECHANICAL DRAWINGS FOR CORRECT ORIENTATION OF CLARIFIER EQUIPMENT.
2. CONTRACTOR SHALL COORDINATE INSTALLATION OF CLARIFIER EQUIPMENT WITH THE MANUFACTURER.
3. CONTRACTOR SHALL SWEEP 2" GROUT IN CLARIFIER FLOOR SLAB WITH CLARIFIER MECHANISM.
4. REFER TO DETAIL S702 ON PLAN SHEET SZ-7 FOR STAGGERING OF HORIZONTAL BAR SPLICES.
5. REFER TO MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS.
6. REFER TO SPECIFICATION SECTION 03740 FOR MODIFICATION OR REPAIR OF EXISTING CONCRETE.
7. ACCESS STAIRS AND PLATFORMS SHALL BE CONSTRUCTED OF GALVANIZED STEEL SUPPORTS AND ALUMINUM HANDRAIL AND GRATING. APPLY ONE (1) COAT OF COAL TAR EPOXY TO PROVIDE DIELECTRIC SEPARATION BETWEEN ALUMINUM AND GALVANIZED STEEL.
8. CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ACCESS STAIRS AND PLATFORMS IN ACCORDANCE WITH THE DESIGN CRITERIA IN SPECIFICATION SECTION 05120. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION OF STRUCTURAL OR MISCELLANIOUS STEEL.
9. REFER TO DETAILS S301 THROUGH S307 ON PLAN SHEET SZ-3 FOR ACCESS STAIR AND PLATFORM DETAILS.
10. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
11. COARSE DRAIN FILL PER ASTM SPECIFICATION C33 (3/4" MAX. AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 12" LIFTS AND COMPACTED WITH A VIBRATORY PLATE (MINIMUM OF TWO (2) PASSES).
12. BASED ON GEOTECHNICAL INVESTIGATION, IT IS ANTICIPATED THAT LIMESTONE SUBGRADE WILL BE ENCOUNTERED AT APPROXIMATE EL. 1113.00'.

KEYED NOTES

1. BACKFILL SCUM BOX WITH SLURRY MIX PIPE ENCASEMENT
2. CONTRACTOR SHALL COORDINATE THESE DIMENSIONS AND ELEVATIONS WITH THE SECONDARY CLARIFIER MANUFACTURER.
3. REFER TO DETAIL S701 ON PLAN SHEET SZ-7 FOR SECONDARY CLARIFIER BASE SLAB REINFORCEMENT.
4. REFER TO NOTE NO. 12.
5. REFER TO DETAIL D ON PLAN SHEET SE-4 FOR OVER-EXCAVATION AND BACKFILL REQUIREMENTS FOR SECONDARY CLARIFIER NO. 1.




SECTION 5
1/2" = 1'-0" SE-1

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 8398 BRETT D. PEST

HAWKINS WEIR ENGINEERS, INC.
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

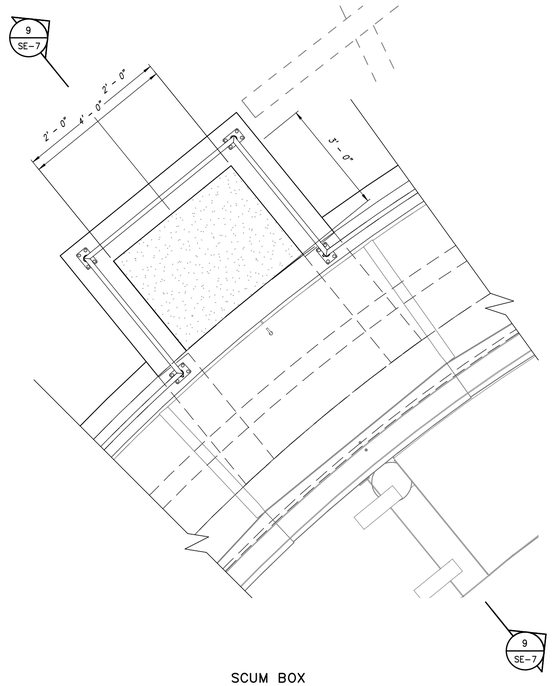
SECONDARY CLARIFIER NO. 1
DETAIL AND SECTIONS

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

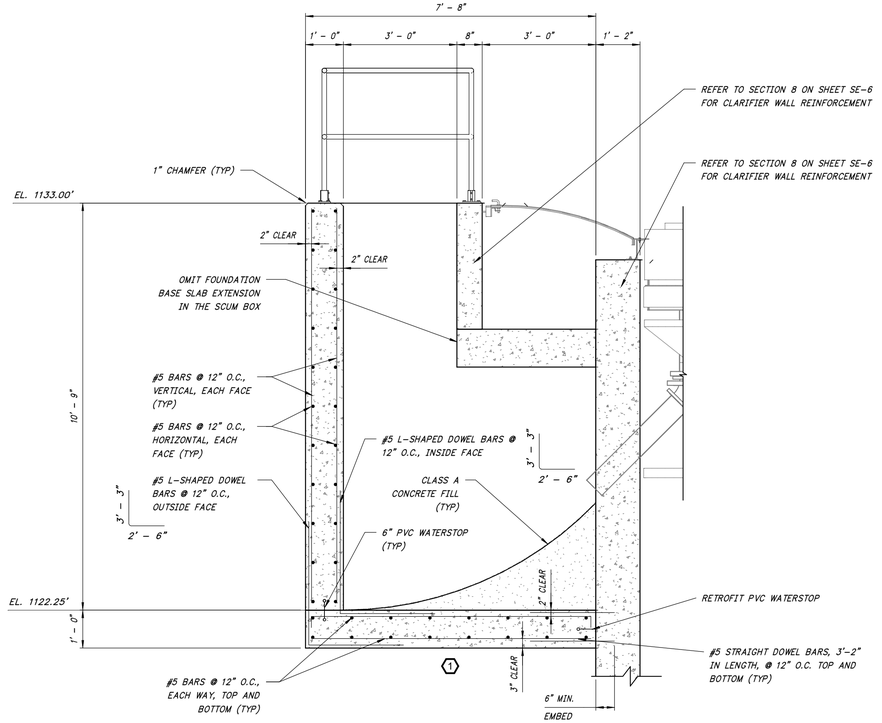
SHEET NO.
SE-3

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:47 AM / DKS / SECONDARY CLARIFIER NO. 1




SCUM BOX

DETAIL H
1/2" = 1'-0" SE-5




SCUM BOX

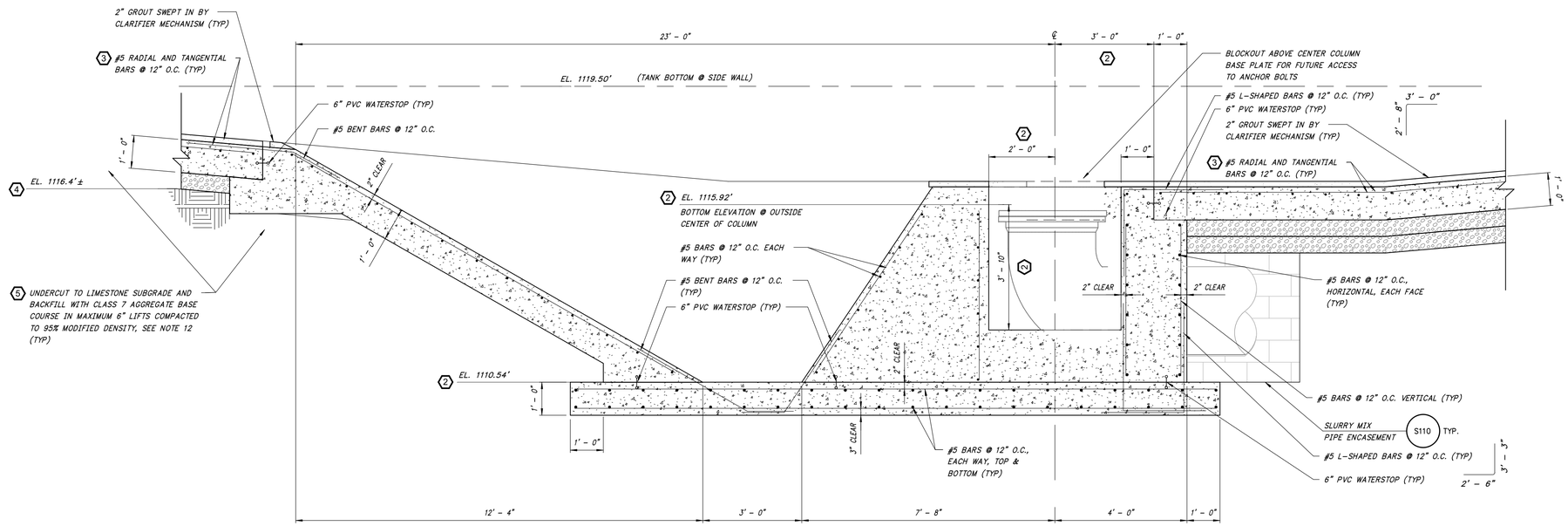
SECTION 9 SE-7 (1)
1/2" = 1'-0"

*NOTES:*

1. *REFER TO MECHANICAL DRAWINGS FOR CORRECT ORIENTATION OF CLARIFIER EQUIPMENT.*
2. *CONTRACTOR SHALL COORDINATE INSTALLATION OF CLARIFIER EQUIPMENT WITH THE MANUFACTURER.*
3. *CONTRACTOR SHALL SWEEP 2" GROUT IN CLARIFIER FLOOR SLAB WITH CLARIFIER MECHANISM.*
4. *REFER TO DETAIL S702 ON PLAN SHEET SZ-7 FOR STAGGERING OF HORIZONTAL BAR SPLICES.*
5. *REFER TO MECHANICAL DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS.*
6. *REFER TO SPECIFICATION SECTION 03740 FOR MODIFICATION OR REPAIR OF EXISTING CONCRETE.*
7. *ACCESS STAIRS AND PLATFORMS SHALL BE CONSTRUCTED OF GALVANIZED STEEL SUPPORTS AND ALUMINUM HANDRAIL AND GRATING. APPLY ONE (1) COAT OF COAL TAR EPOXY TO PROVIDE DIELECTRIC SEPARATION BETWEEN ALUMINUM AND GALVANIZED STEEL.*
8. *CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ACCESS STAIRS AND PLATFORMS IN ACCORDANCE WITH THE DESIGN CRITERIA IN SPECIFICATION SECTION 05120. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION OF STRUCTURAL OR MISCELLANIOUS STEEL.*
9. *REFER TO DETAILS S301 THROUGH S307 ON PLAN SHEET SZ-3 FOR ACCESS STAIR AND PLATFORM DETAILS.*
10. *ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.*
11. *COARSE DRAIN FILL PER ASTM SPECIFICATION C33 (3/4" MAX. AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 12" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES].*
12. *BASED ON GEOTECHNICAL INVESTIGATION, IT IS ANTICIPATED THAT LIMESTONE SUBGRADE WILL BE ENCOUNTERED AT APPROXIMATE EL. 1116.4'±.*

*KEYED NOTES*

1. *BACKFILL SCUM BOX WITH SLURRY MIX PIPE ENCASEMENT*
2. *CONTRACTOR SHALL COORDINATE THESE DIMENSIONS AND ELEVATIONS WITH THE SECONDARY CLARIFIER MANUFACTURER.*
3. *REFER TO DETAIL S701 ON PLAN SHEET SZ-7 FOR SECONDARY CLARIFIER BASE SLAB REINFORCEMENT.*
4. *REFER TO NOTE NO. 12.*
5. *REFER TO DETAIL E ON PLAN SHEET SE-4 FOR OVER-EXCAVATION AND BACKFILL REQUIREMENTS FOR SECONDARY CLARIFIER NO. 3.*




SECTION 10 SE-5
1/2" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER 2021 No. 8398 DIRECTIONAL

HAWKINS WEIR ENGINEERS, INC.
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# SECONDARY CLARIFIER NO. 3 DETAIL AND SECTIONS

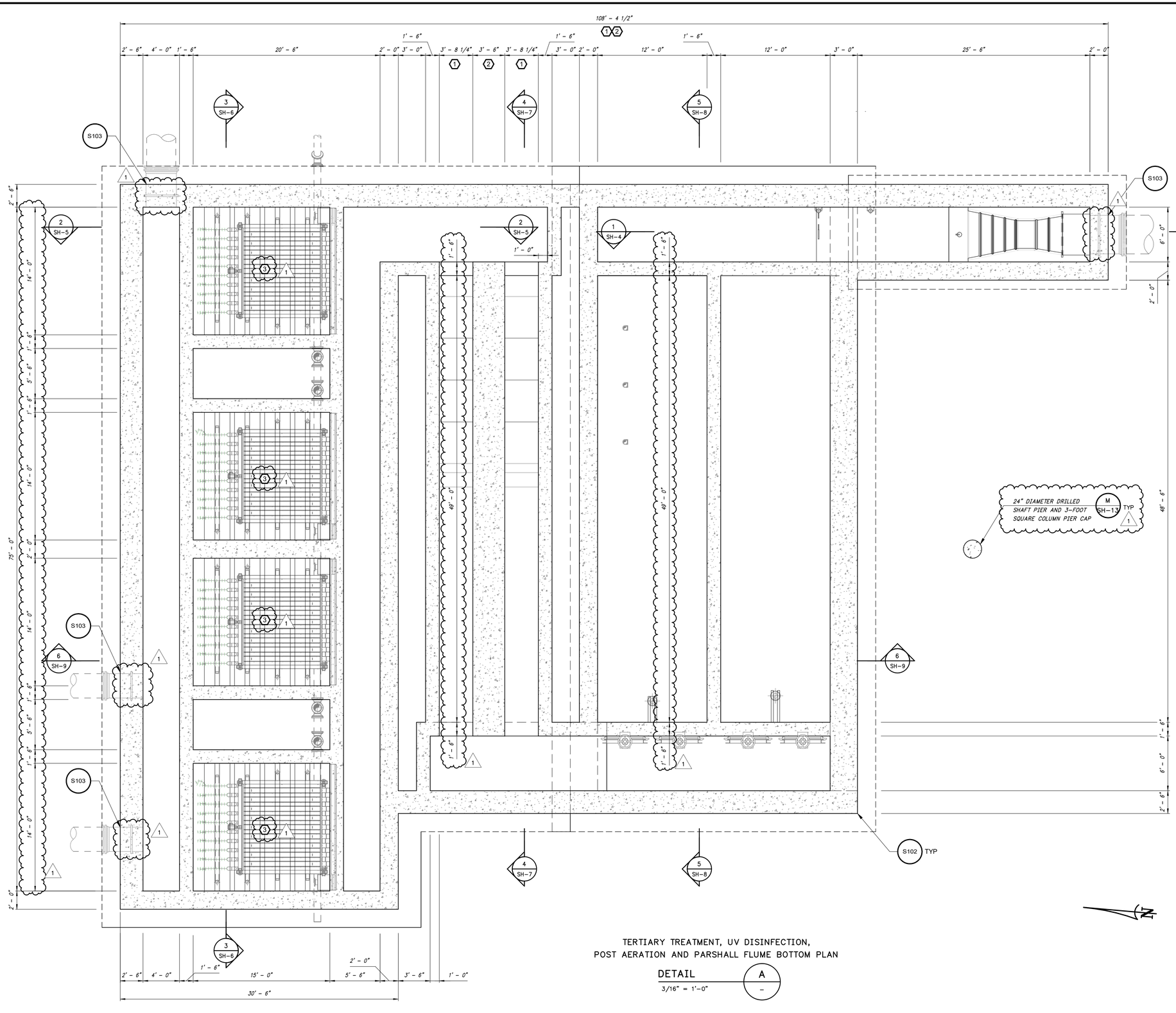
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SE-7

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:50 AM / DKS / SECONDARY CLARIFIER NO. 3

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/22/2025 11:05:34 AM / DKS / TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME BOTTOM PLAN




TERTIARY TREATMENT, UV DISINFECTION,
POST AERATION AND PARSHALL FLUME BOTTOM PLAN

DETAIL A
3/16" = 1'-0"

NOTE:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
3. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.
4. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].

KEYED NOTES:

1. CONTRACTOR SHALL COORDINATE UV CHANNEL WIDTH WITH THE UV MANUFACTURER, AND ACKNOWLEDGE THAT THE UV CHANNEL WIDTH MAY VARY BY UV MANUFACTURER.
2. THIS CONCRETE WALL THICKNESS MAY DECREASE IF THE UV MANUFACTURER REQUIRES A UV CHANNEL WIDTH WIDER THAN 3'-8 1/4". CONTRACTOR SHALL COORDINATE ANY SUCH WALL THICKNESS DEVIATION WITH THE ENGINEER THROUGH THE RFI PROCESS.
3. REFER TO PROCESS MECHANICAL DRAWINGS FOR CLASS A CONCRETE FILL AT THE BOTTOM OF THE FILTERS.

1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

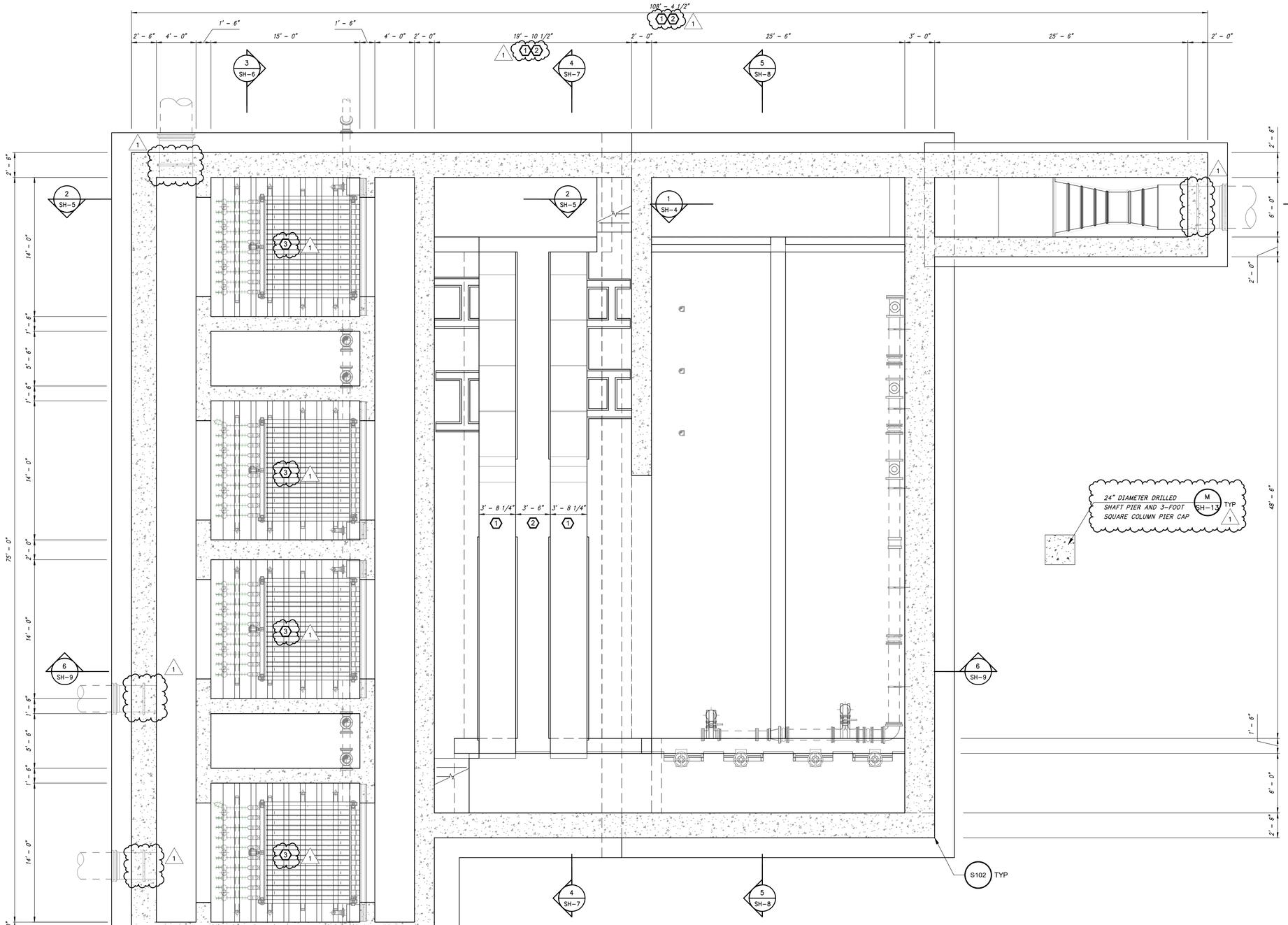
# TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME BOTTOM PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 3/16" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-1

**BID DRAWINGS**
**MARCH 21, 2025**




TERTIARY TREATMENT, UV DISINFECTION,
POST AERATION AND PARSHALL FLUME INTERMEDIATE PLAN

DETAIL B
3/16" = 1'–0"

NOTE:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10–INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
3. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.
4. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].

KEYED NOTES:

1. CONTRACTOR SHALL COORDINATE UV CHANNEL WIDTH WITH THE UV MANUFACTURER, AND ACKNOWLEDGE THAT THE UV CHANNEL WIDTH MAY VARY BY UV MANUFACTURER.
2. THIS CONCRETE WALL THICKNESS MAY DECREASE IF THE UV MANUFACTURER REQUIRES A UV CHANNEL WIDTH WIDER THAN 3'–8 1/4". CONTRACTOR SHALL COORDINATE ANY SUCH WALL THICKNESS DEVIATION WITH THE ENGINEER THROUGH THE RFI PROCESS.
3. REFER TO PROCESS MECHANICAL DRAWINGS FOR CLASS A CONCRETE FILL AT THE BOTTOM OF THE FILTERS.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

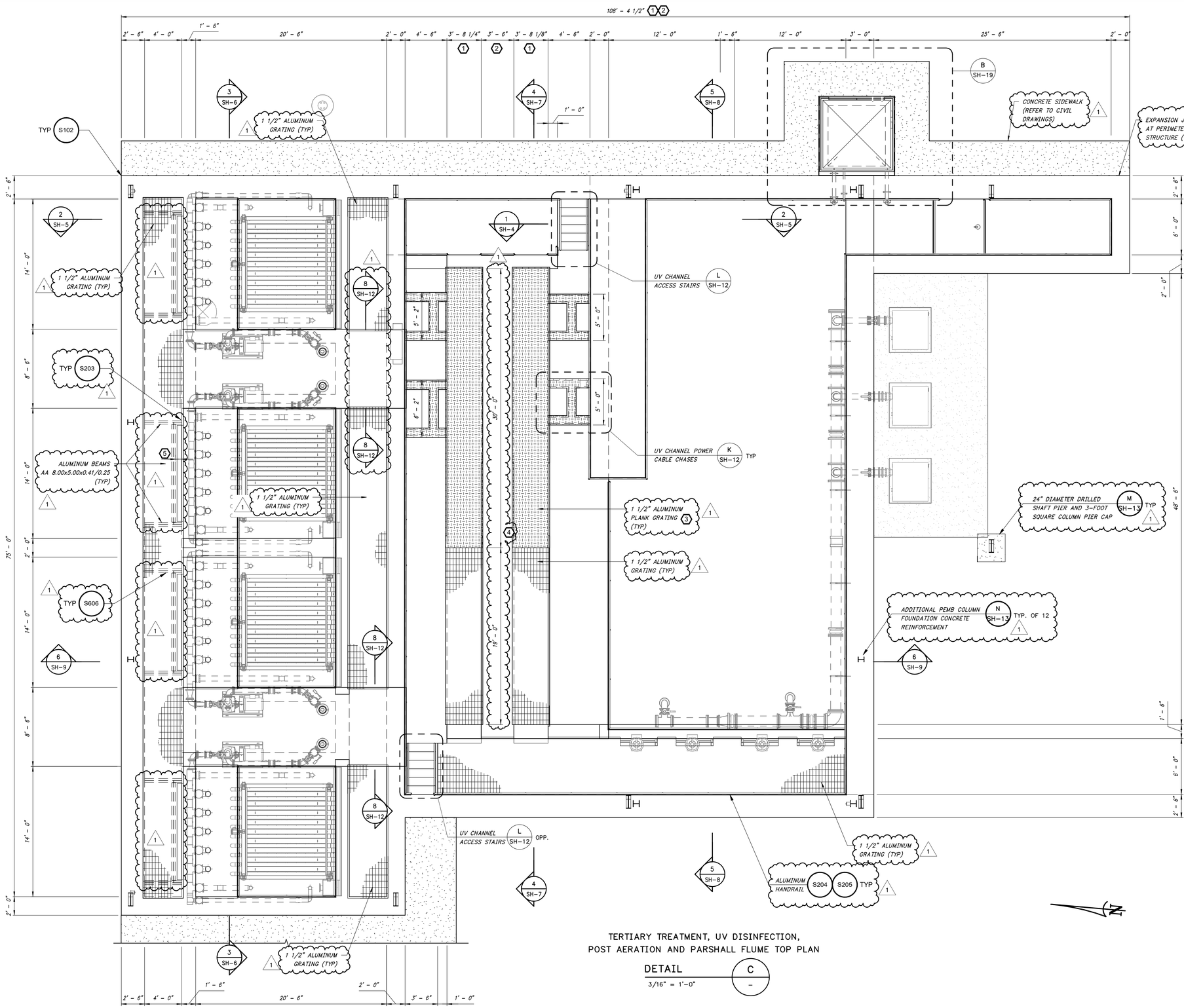
TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME INTERMEDIATE PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 3/16" = 1'–0"
DESIGNED BY: BDP
DRAWN BY: ADF
HWEI NO.: 2021037
FILENAME: WWRF21037–ST

SHEET NO.
SH–2

Autodesk Docs://410144 – Bentonville Water Resource Recovery Facility Improvements/WWRF21037–ST.rvt 4/22/2025 11:05:35 AM / ADF / TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME INTERMEDIATE PLAN




TERTIARY TREATMENT, UV DISINFECTION, POST AERATION AND PARSHALL FLUME TOP PLAN

DETAIL C
3/16" = 1'-0"

NOTE:

1. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
2. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
3. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.
4. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].

KEYED NOTES:

1. CONTRACTOR SHALL COORDINATE UV CHANNEL WIDTH WITH THE UV MANUFACTURER, AND ACKNOWLEDGE THAT THE UV CHANNEL WIDTH MAY VARY BY UV MANUFACTURER.
2. THIS CONCRETE WALL THICKNESS MAY DECREASE IF THE UV MANUFACTURER REQUIRES A UV CHANNEL WIDTH WIDER THAN 3'-8 1/4". CONTRACTOR SHALL COORDINATE ANY SUCH WALL THICKNESS DEVIATION WITH THE ENGINEER THROUGH THE RFI PROCESS.
3. 1 1/2" ALUMINUM PLANK GRATING SHALL BE SIMILAR AND EQUAL TO THAT MANUFACTURED BY MCNICHOLS, OR EQUAL. ALUMINUM PLANK GRATING SHALL BE EXTRUDED INTER-LOCKING PLANK, DIAMONDBACK ®, ADA, ALLOY 6061-T6 EXTRUSION, SOLID (12" WIDTH), 1 1/2" CHANNEL DEPTH, DIAMOND – SERRATED SURFACE, 0% OPEN AREA EXCEPT AT ANY REQUIRED SLIDE GATE OPENINGS. ALL ALUMINUM PLANK GRATING OPENINGS SHALL BE BANDED.
4. GRATING EAST OF THIS DIMENSION LINE (30'-0") SHALL BE 1 1/2" ALUMINUM PLANK GRATING. GRATING WEST OF THIS DIMENSION LINE (19'-0") SHALL BE 1 1/2" ALUMINUM GRATING.
5. THE CONTRACTOR SHALL COORDINATE THIS DIMENSION WITH THE SELF-CONTAINED SLIDE GATE MANUFACTURER. THE DISTANCE BETWEEN THE BEAM AND WALL SHALL BE WIDE ENOUGH TO FACILITATE THE OPERATION, INSTALLATION, OR THE REMOVAL OF THE SELF-CONTAINED SLIDE GATE.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME TOP PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

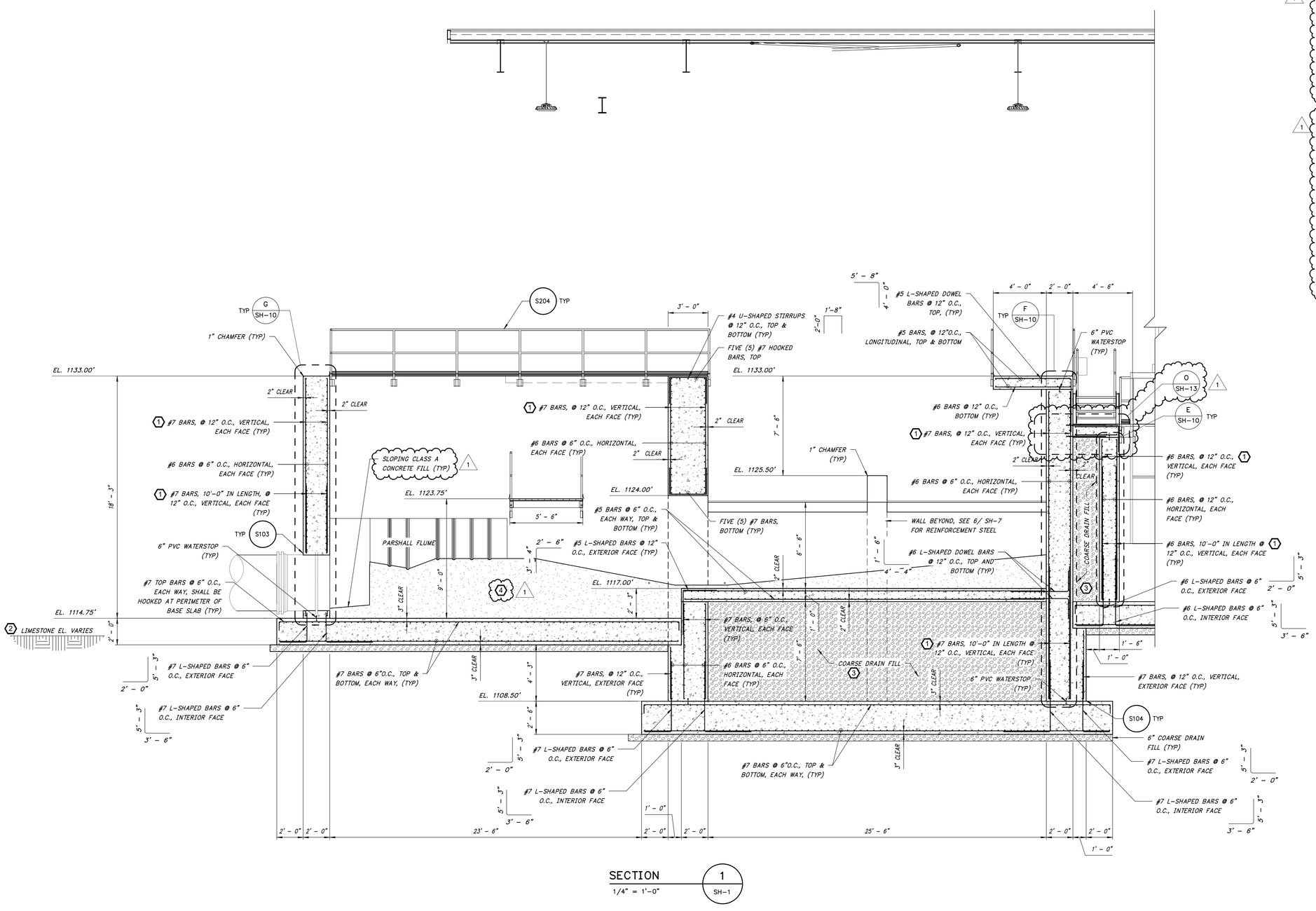
DATE: MARCH 2025
SCALE: 3/16" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: Author
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-3

**BID DRAWINGS**
**MARCH 21, 2025**

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/22/2025 11:05:40 AM / Author / TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME TOP PLAN

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SECTION 1 / SH-1
1/4" = 1'-0"

NOTE:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZES) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING.
2. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.
3. REFER TO NOTE NO. 2.
4. CONTRACTOR MAY PROPOSE ALTERNATIVE CONSTRUCTION METHODS CONSISTING OF REINFORCED CONCRETE WALLS AND/OR SLABS IN LIEU OF CLASS A CONCRETE FILL, OR SOME COMBINATION THEROF, TO SUPPORT PARSHALL FLUME.

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

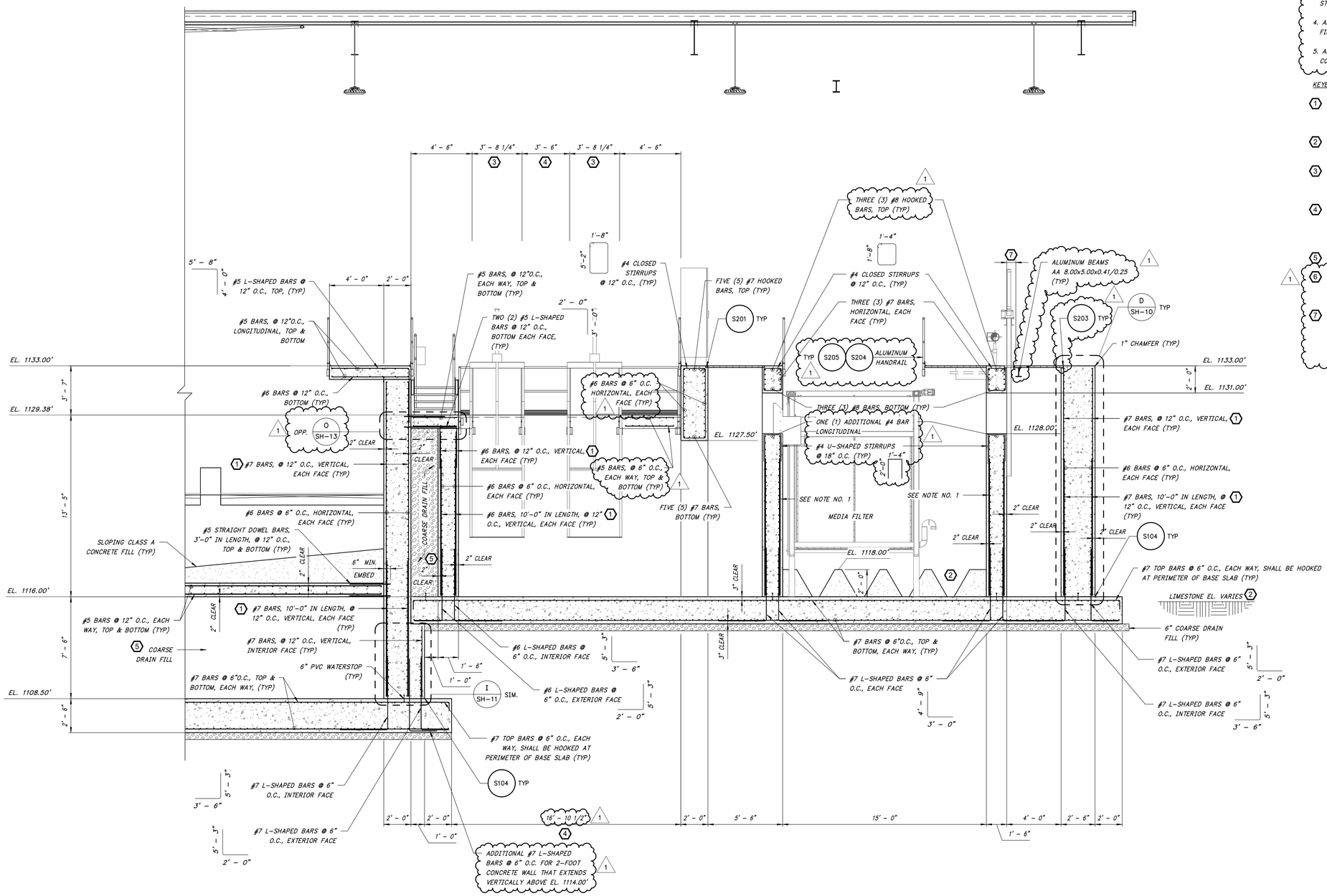
# TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-4

**BID DRAWINGS**
**MARCH 21, 2025**




SECTION 2 / SH-1
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZES) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING.
2. REFER TO PROCESS MECHANICAL DRAWINGS FOR CLASS A CONCRETE FILL AT THE BOTTOM OF THE FILTERS.
3. CONTRACTOR SHALL COORDINATE UV CHANNEL WIDTH WITH THE UV MANUFACTURER, AND ACKNOWLEDGE THAT THE UV CHANNEL WIDTH MAY VARY BY UV MANUFACTURER.
4. THIS CONCRETE WALL THICKNESS MAY DECREASE IF THE UV MANUFACTURER REQUIRES A UV CHANNEL WIDTH WIDER THAN 3'-8 1/4". CONTRACTOR SHALL COORDINATE ANY SUCH WALL THICKNESS DEVIATION WITH THE ENGINEER THROUGH THE RFI PROCESS.
5. REFER TO NOTE NO. 2.
6. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.
7. THE CONTRACTOR SHALL COORDINATE THIS DIMENSION WITH THE SELF-CONTAINED SLIDE GATE MANUFACTURER. THE DISTANCE BETWEEN THE BEAM AND WALL SHALL BE WIDE ENOUGH TO FACILITATE THE OPERATION, INSTALLATION, OR THE REMOVAL OF THE SELF- CONTAINED SLIDE GATE.

1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME
SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-5

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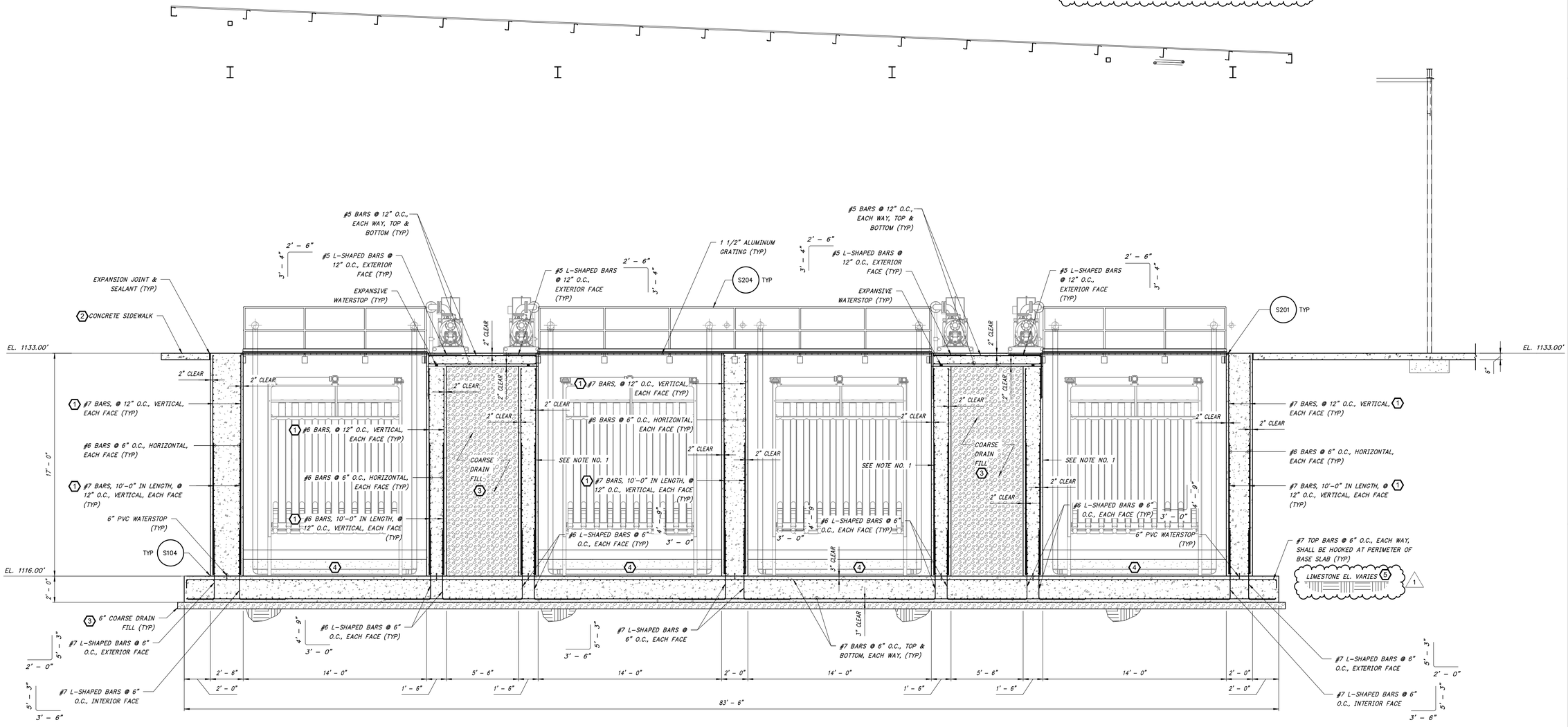
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NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
4. REFER TO PROCESS MECHANICAL DRAWINGS FOR CLASS A CONCRETE FILL AT THE BOTTOM OF THE FILTERS.
5. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.




SECTION 3 (SH-1)
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

# TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-6

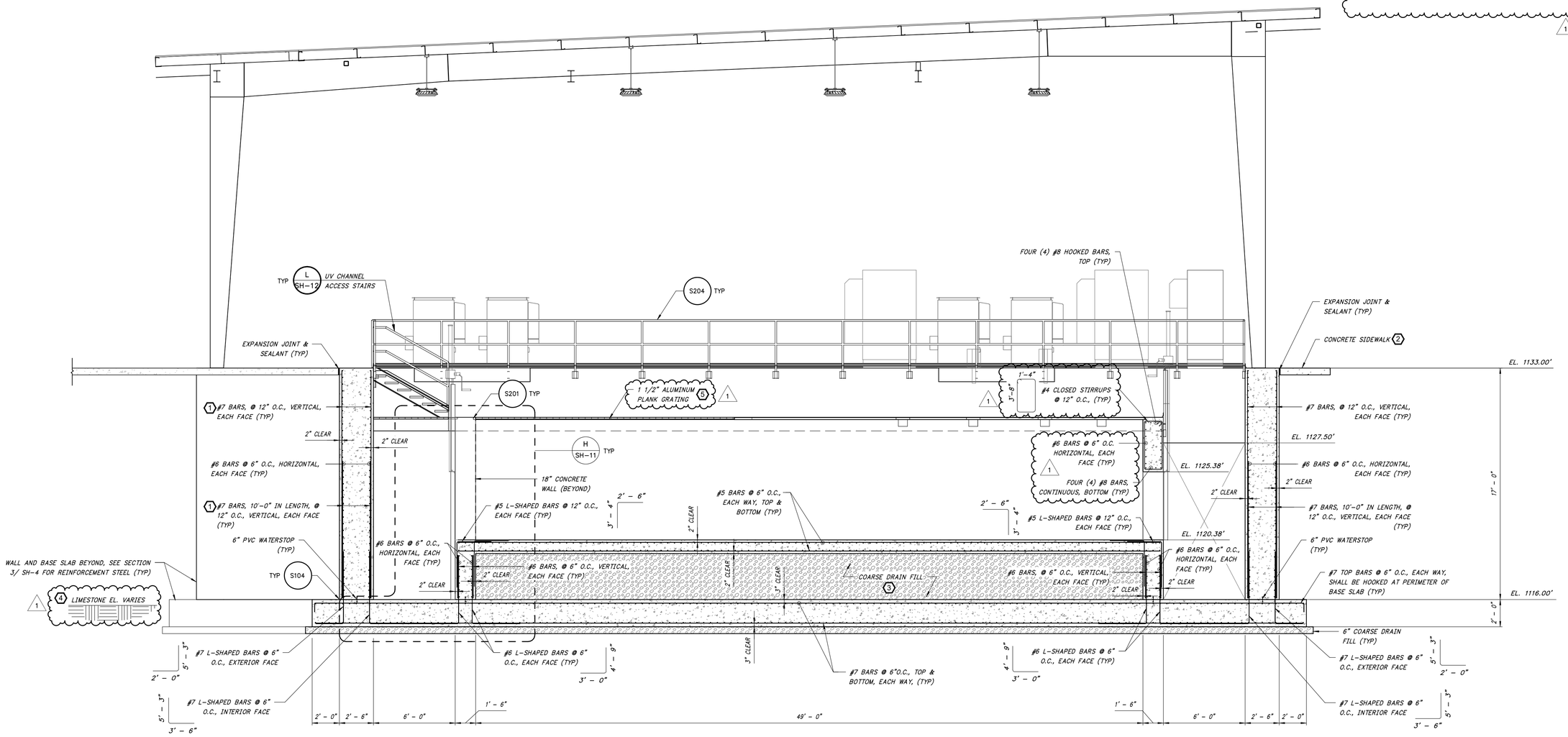
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NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
4. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.
5. 1 1/2" ALUMINUM PLANK GRATING SHALL BE SIMILAR AND EQUAL TO THAT MANUFACTURED BY MCNICHOLS, OR EQUAL. ALUMINUM PLANK GRATING SHALL BE EXTRUDED INTER-LOCKING PLANK, DIAMONDBACK ®, ADA, ALLOY 6061-T6 EXTRUSION, SOLID (12" WIDTH), 1 1/2" CHANNEL DEPTH, DIAMOND - SERRATED SURFACE, 0% OPEN AREA EXCEPT AT ANY REQUIRED SLIDE GATE OPENINGS. ALL ALUMINUM PLANK GRATING OPENINGS SHALL BE BANDED.




SECTION 4 / SH-1
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

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| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME SECTIONS
SECTIONS
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-7

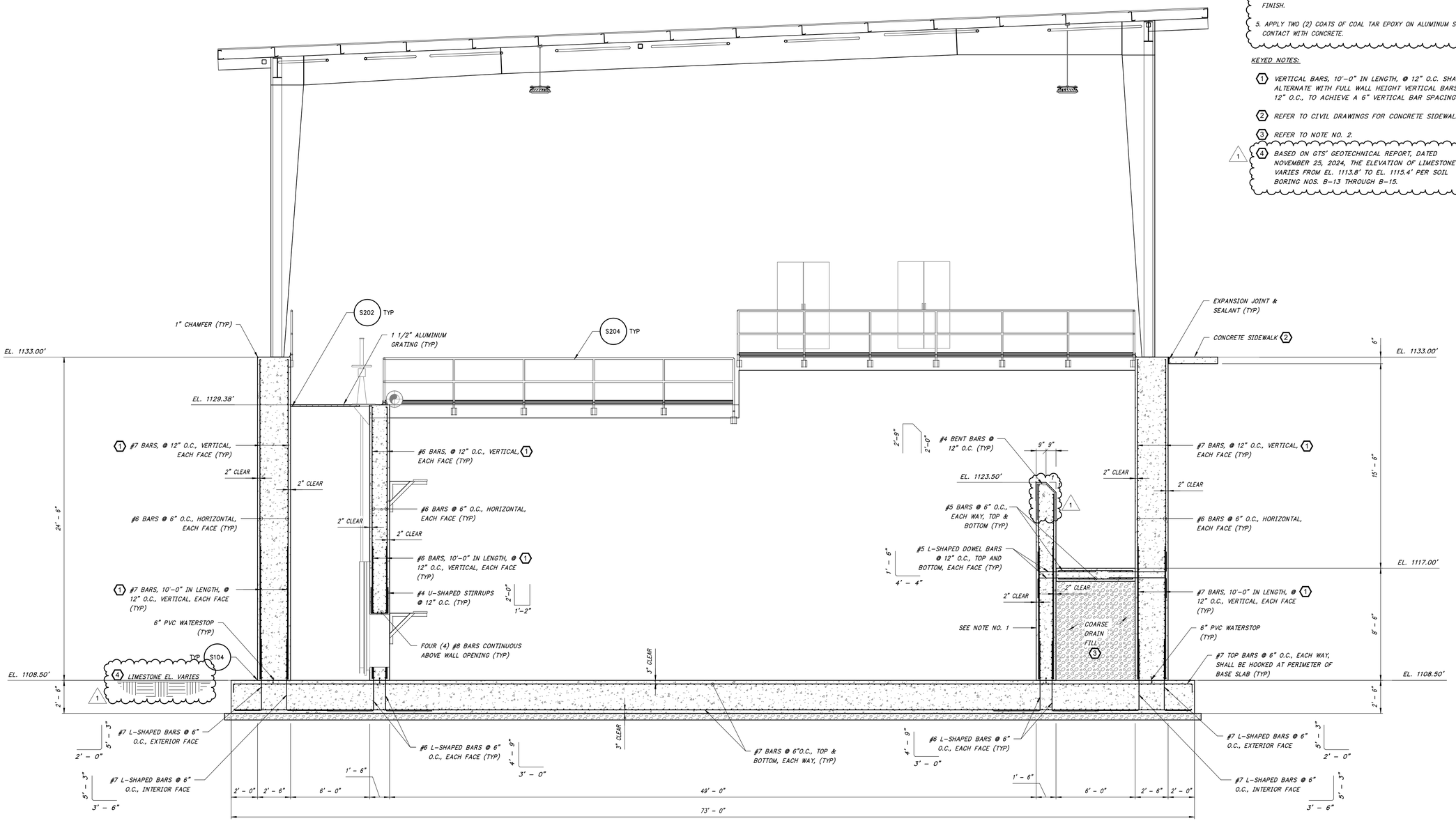
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NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE (MINIMUM OF TWO (2) PASSES PER LIFT).
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5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
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SECTION 5 / SH-1
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME
SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-8

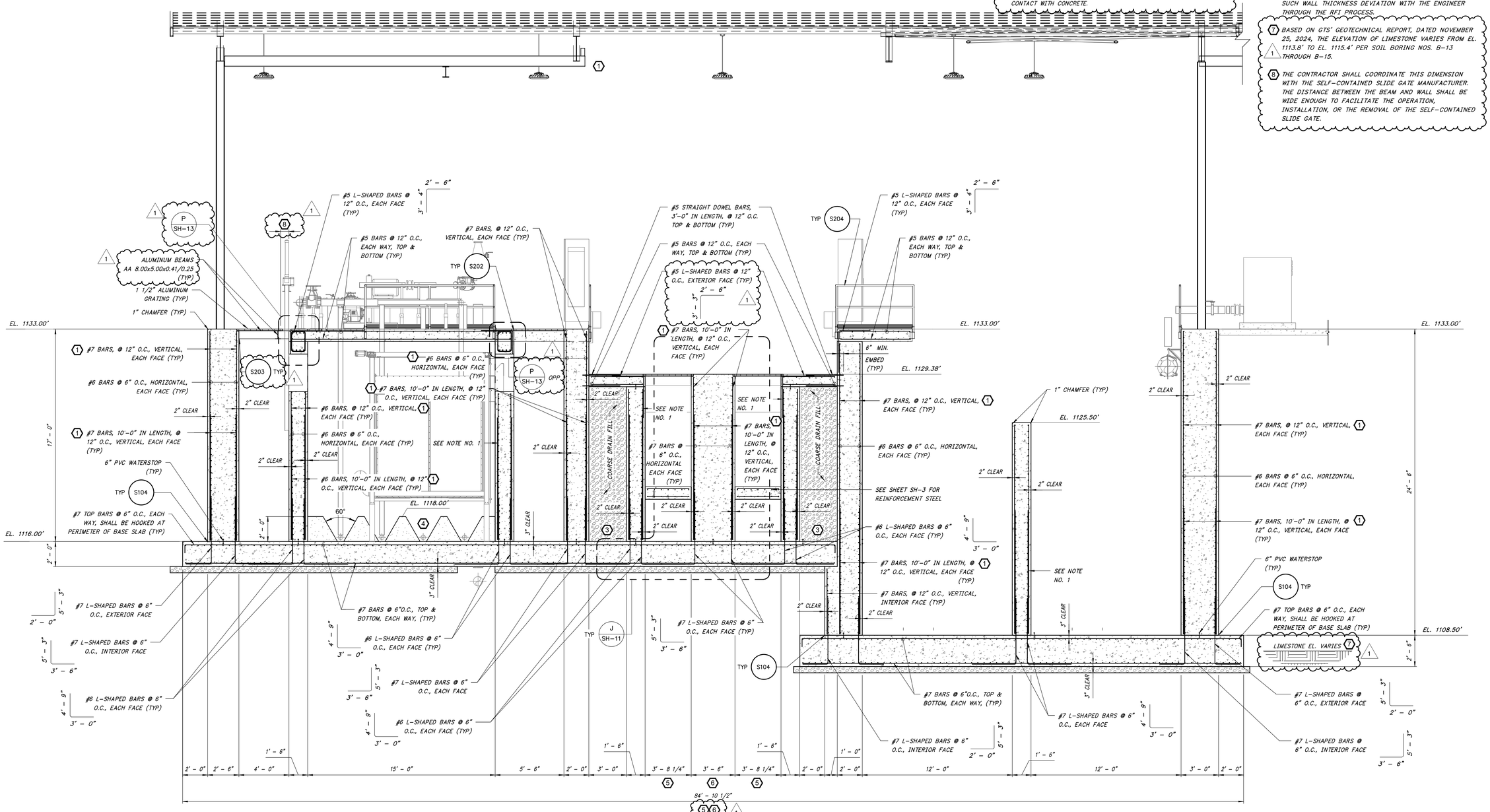
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NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
4. REFER TO PROCESS MECHANICAL DRAWINGS FOR CLASS A CONCRETE AT THE BOTTOM OF THE FILTERS.
5. CONTRACTOR SHALL COORDINATE UV CHANNEL WIDTH WITH THE UV MANUFACTURER, AND ACKNOWLEDGE THAT THE UV CHANNEL WIDTH MAY VARY BY UV MANUFACTURER.
6. THIS CONCRETE WALL THICKNESS MAY DECREASE IF THE UV MANUFACTURER REQUIRES A UV CHANNEL WIDTH WIDER THAN 3'-8 1/4". CONTRACTOR SHALL COORDINATE ANY SUCH WALL THICKNESS DEVIATION WITH THE ENGINEER THROUGH THE RFI PROCESS.
7. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.
8. THE CONTRACTOR SHALL COORDINATE THIS DIMENSION WITH THE SELF-CONTAINED SLIDE GATE MANUFACTURER. THE DISTANCE BETWEEN THE BEAM AND WALL SHALL BE WIDE ENOUGH TO FACILITATE THE OPERATION, INSTALLATION, OR THE REMOVAL OF THE SELF-CONTAINED SLIDE GATE.




SECTION 6 / SH-1
1/4" = 1'-0"

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 8398 BRETT D. PEST

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME
SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

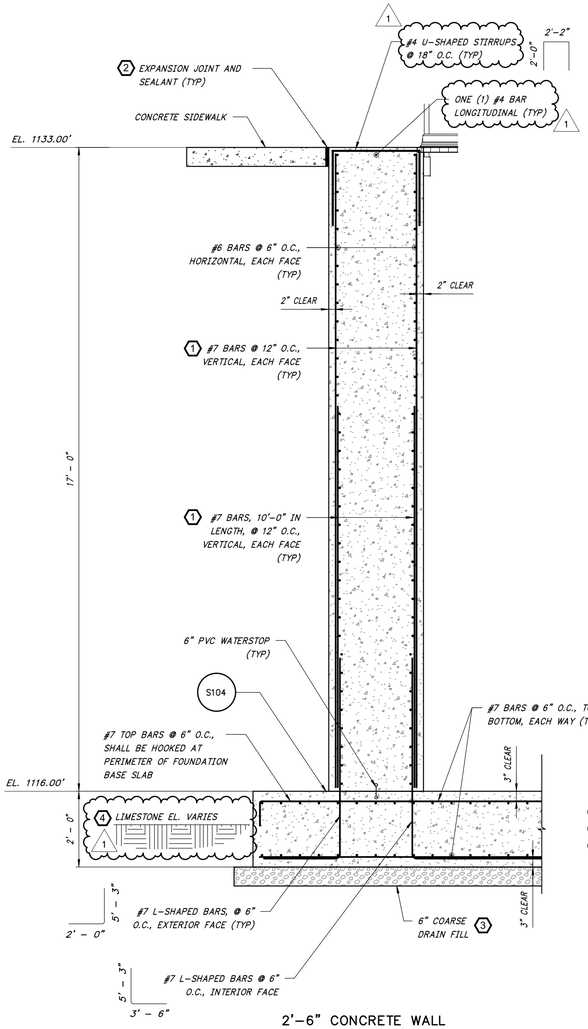
SHEET NO.
SH-9

NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
2. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
3. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS, FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.
4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

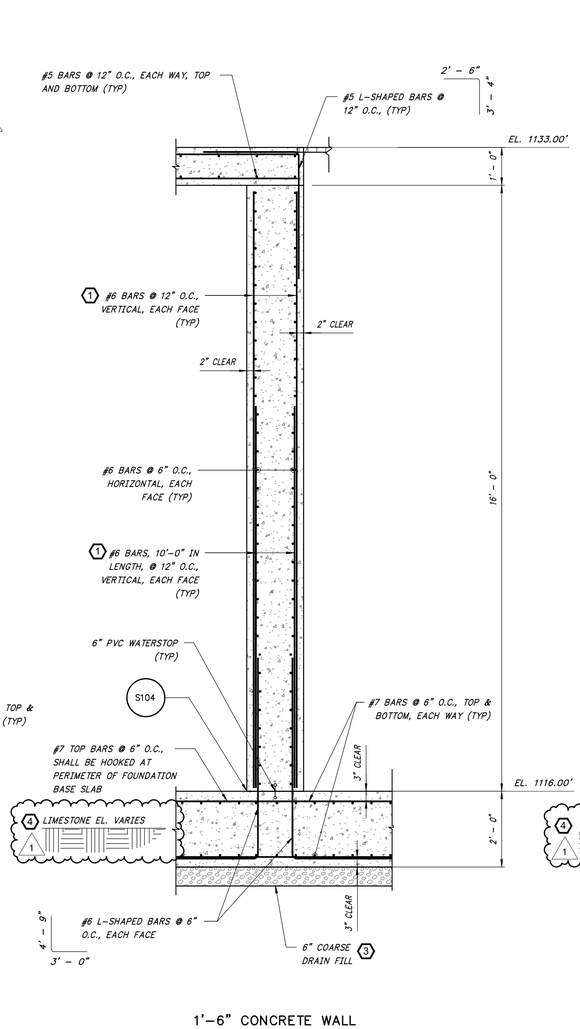
KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING.
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
4. BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.



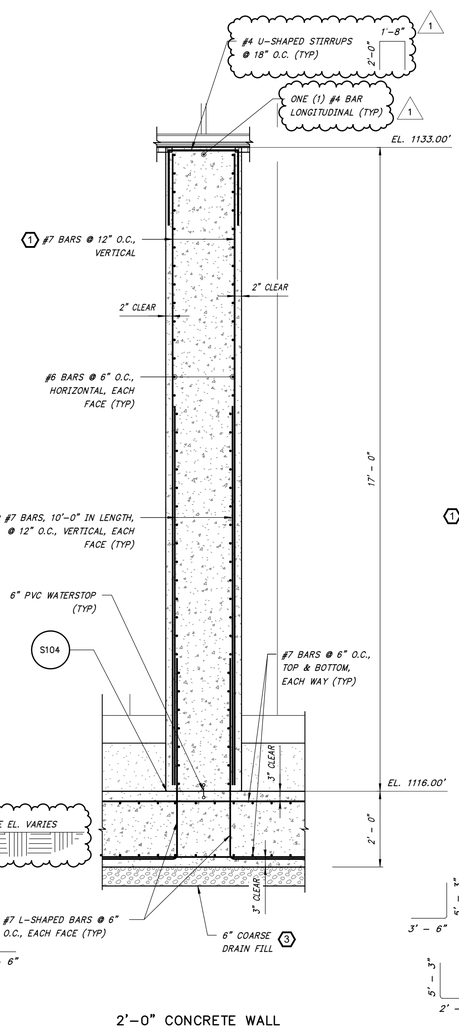

2'-6" CONCRETE WALL

DETAIL D — 1/2" = 1'-0" — SH-5



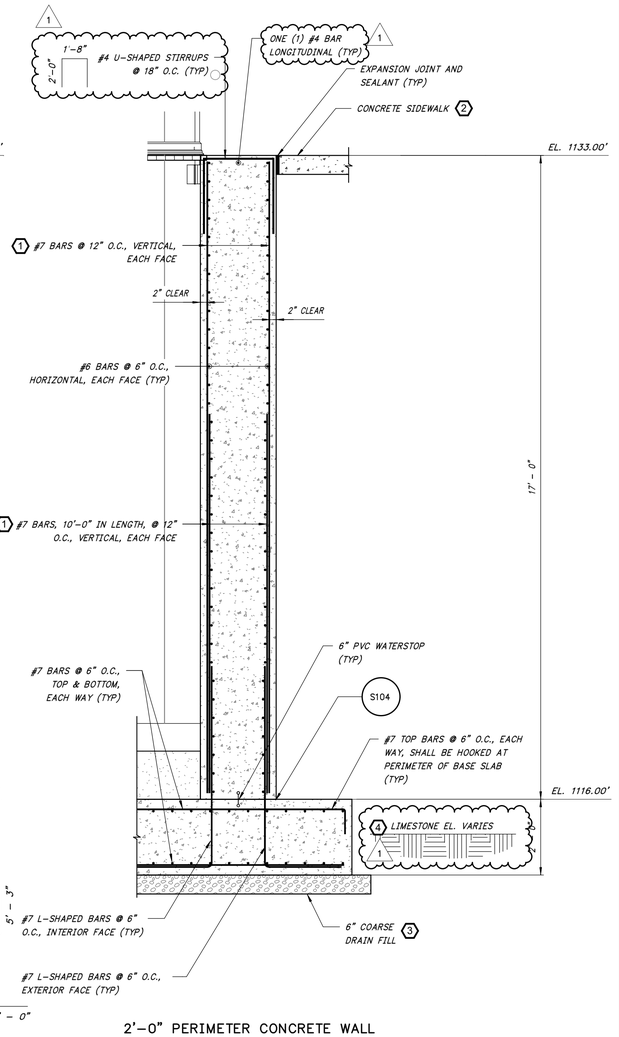

1'-6" CONCRETE WALL

DETAIL E — 1/2" = 1'-0" — SH-4




2'-0" CONCRETE WALL

DETAIL F — 1/2" = 1'-0" — SH-4




2'-0" PERIMETER CONCRETE WALL

DETAIL G — 1/2" = 1'-0" — SH-4

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS — REGISTERED PROFESSIONAL ENGINEER — No. 8398 — BRENT D. PEEK

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME WALL REINFORCMENT SECTIONS

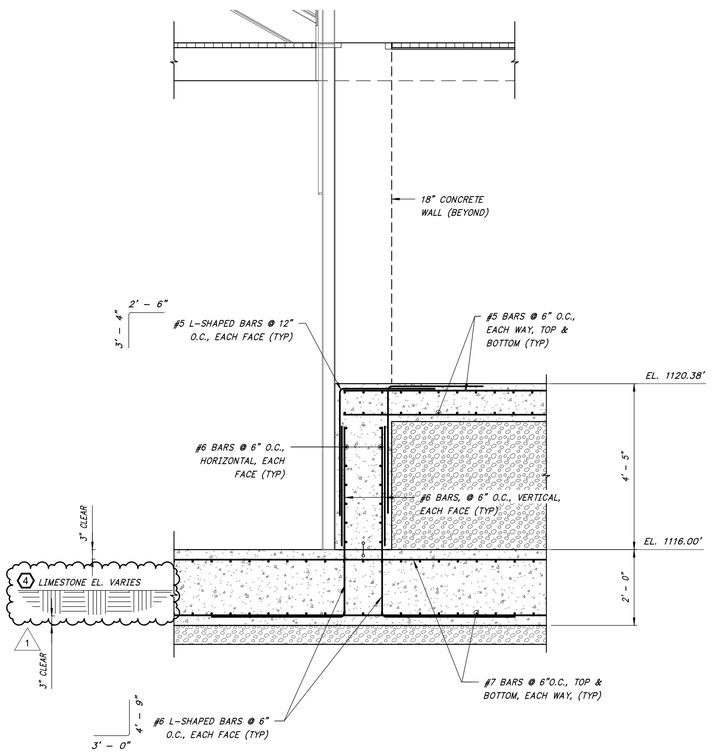
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1/2" = 1'-0"
DESIGNED BY: BDP
DRAWN BY: JEB
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-10

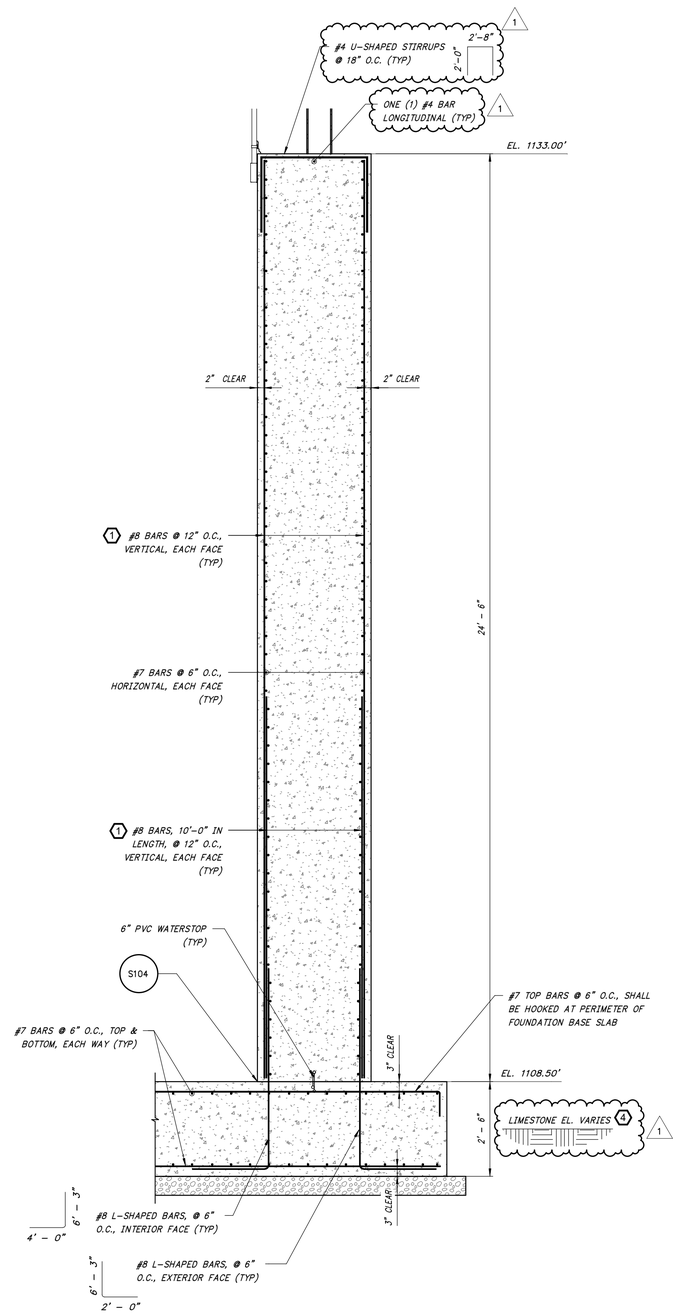
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Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/22/2025 11:06:14 AM / DKS / TERTIARY TREATMENT REINFORCEMENT WALL



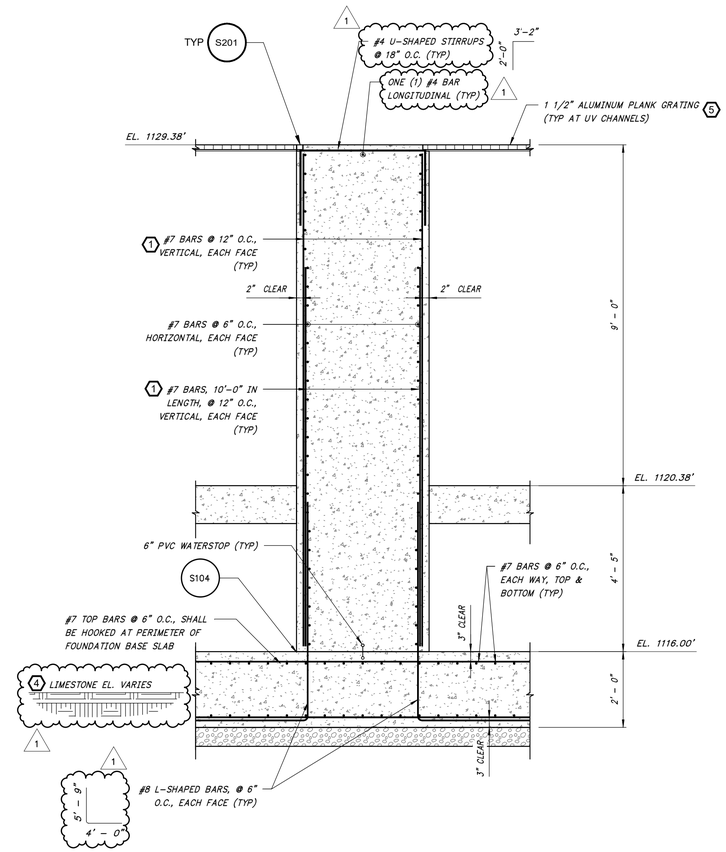

1'–6" CONCRETE WALL AT UV CHANNEL

DETAIL H / 1/2" = 1'–0" / SH–7




3'–0" CONCRETE WALL

DETAIL I / 1/2" = 1'–0" / SH–5




3'–6" CONCRETE WALL

DETAIL J / 1/2" = 1'–0" / SH–9

**BID DRAWINGS**
**MARCH 21, 2025**

NOTES:

1. VERTICAL AND HORIZONTAL WALL REINFORCEMENT STEEL FOR 18" WALLS SHALL BE IDENTICAL FOR ALL 18" WALLS IN THE TERTIARY STRUCTURE. L-SHAPED BAR DIMENSIONS VARY, SEE SECTIONS FOR L-SHAPED BAR DIMENSIONS.
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4. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
5. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

KEYED NOTES:

1. VERTICAL BARS, 10'-0" IN LENGTH, @ 12" O.C. SHALL ALTERNATE WITH FULL WALL HEIGHT VERTICAL BARS @ 12" O.C., TO ACHIEVE A 6" VERTICAL BAR SPACING
2. REFER TO CIVIL DRAWINGS FOR CONCRETE SIDEWALK.
3. REFER TO NOTE NO. 2.
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5. 1 1/2" ALUMINUM PLANK GRATING SHALL BE SIMILAR AND EQUAL TO THAT MANUFACTURED BY MCNICHOLS, OR EQUAL ALUMINUM PLANK GRATING SHALL BE EXTRUDED INTERLOCKING PLANK, DIAMONDBACK ®, ADA, ALLOY 6061-T6 EXTRUSION, SOLID (12" WIDTH), 1 1/2" CHANNEL DEPTH, DIAMOND-SERRATED SURFACE, 0% OPEN AREA EXCEPT AT REQUIRED SLIDE GATE OPENINGS. ALL ALUMINUM PLANK GRATING OPENINGS SHALL BE BANDED.
6. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No. 6398 BRETT D. PEEK

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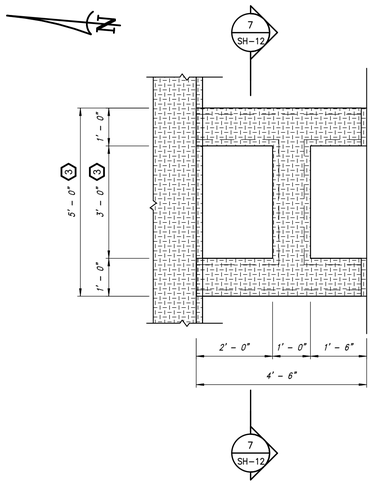
CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT REINFORCEMENT WALL SECTIONS

FOR: BENTONVILLE WASTEWATER UTILITIES

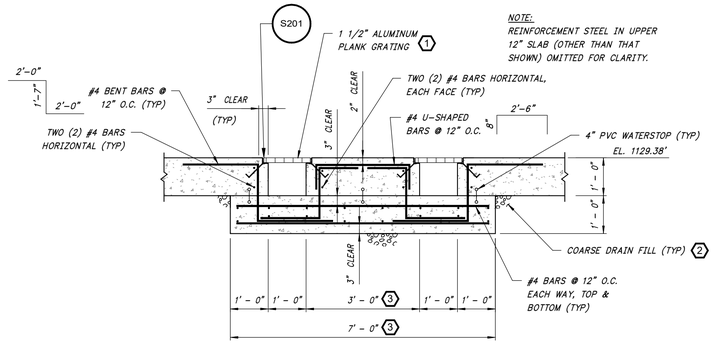
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DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SH-11



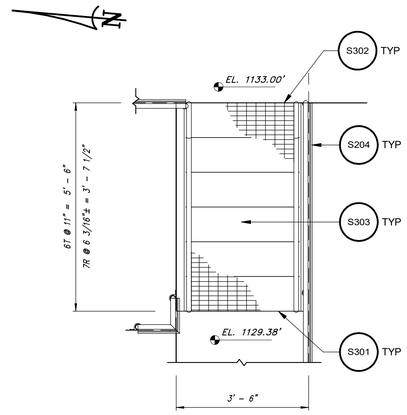

UV CHANNEL POWER CABLE CHASES

DETAIL K / 1/2" = 1'-0" / SH-3



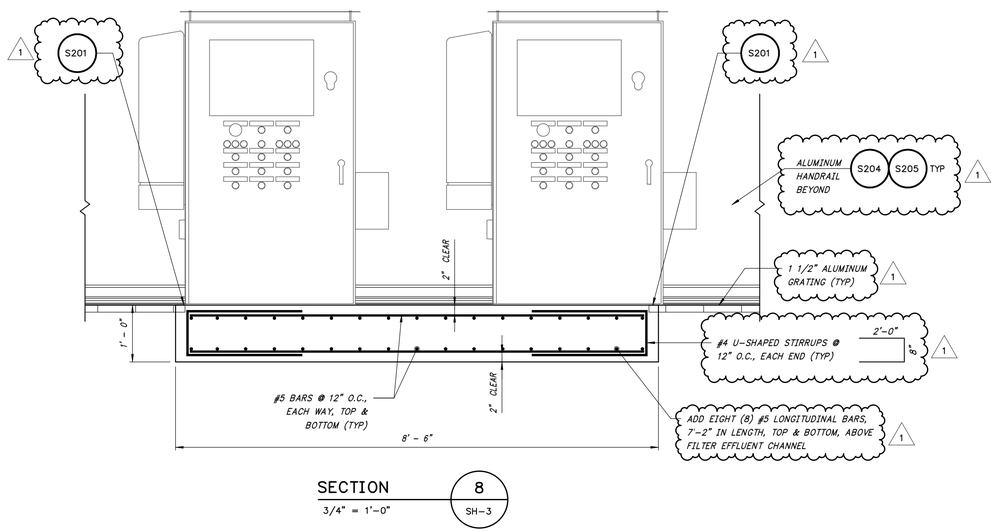

UV CHANNEL POWER CABLE CHASES

SECTION 7 / 1/2" = 1'-0" / SH-12




UV CHANNEL ACCESS STAIRS

DETAIL L / 1/2" = 1'-0" / SH-3




SECTION 8 / 3/4" = 1'-0" / SH-3

NOTES:

1. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].
2. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE. (1)
3. ALL EXPOSED CONCRETE VERTICAL SURFACES SHALL RECEIVE A RUBBED FINISH.
4. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS. FOR ALL WALL AND/OR SLAB PENETRATIONS GREATER THAN 10-INCHES, REFER TO STRUCTURAL STANDARD DETAIL S103.

KEYED NOTES:

1. 1 1/2" ALUMINUM PLANK GRATING SHALL BE SIMILAR AND EQUAL TO THAT MANUFACTURED BY MCNICHOLS, OR EQUAL ALUMINUM PLANK GRATING SHALL BE EXTRUDED INTERLOCKING PLANK, DIAMONDBACK ®, ADA, ALLOY 6061-T6 EXTRUSION, SOLID (12" WIDTH), 1 1/2" CHANNEL DEPTH, DIAMOND-SERRATED SURFACE, 0% OPEN AREA EXCEPT AT ANY REQUIRED SLIDE GATE OPENINGS. ALL ALUMINUM PLANK GRATING OPENINGS SHALL BE BANDED.
2. REFER TO NOTE NO. 1.
3. DIMENSIONS SHOWN ARE FOR THE SOUTH UV CHANNEL POWER CABLE CHASES. OVERALL DIMENSION FOR THE NORTHEAST UV CHANNEL POWER CABLE CHASES SHALL BE 7'-2", AND THE OVERALL DIMENSION FOR THE NORTHWEST UV CHANNEL POWER CABLE CHASES SHALL BE 8'-2".

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER Brett D. Pettit No. 8398 DIRECTOR OF ENGINEERING

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

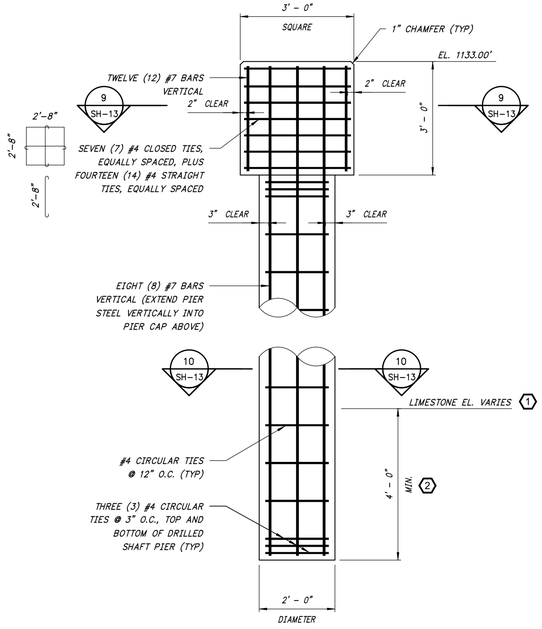
TERTIARY TREATMENT
DETAIL AND SECTION

FOR: BENTONVILLE WASTEWATER UTILITIES

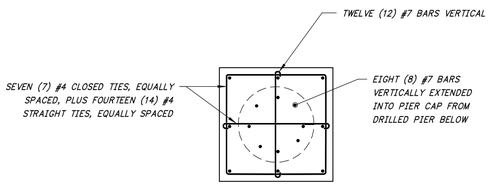
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DRAWN BY: ADF
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-12

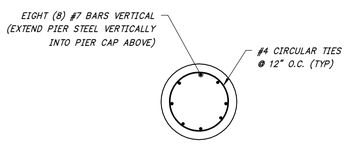
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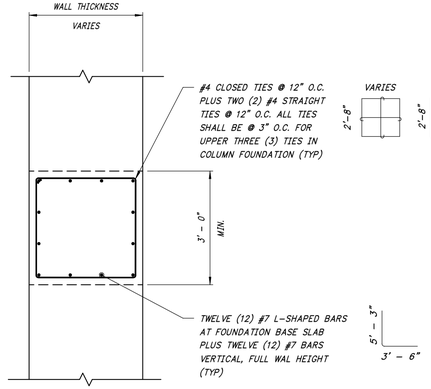

DETAIL M
1/2" = 1'-0"
SH-1




SECTION 9
1/2" = 1'-0"
SH-13

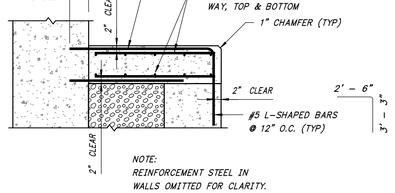



SECTION 10
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SH-13

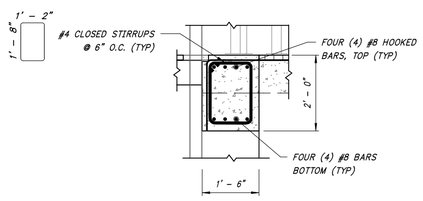



PEMB COLUMN
FOUNDATION (TYP. OF 12)

DETAIL N
1/2" = 1'-0"
SH-3




DETAIL O
1/2" = 1'-0"
SH-4




DETAIL P
1/2" = 1'-0"
SH-9

NOTE:

1. ALL EXPOSED VERTICAL CONCRETE SURFACES SHALL RECEIVE A RUBBED FINISH.
2. APPLY TWO (2) COATS OF COAL TAR EPOXY ON ALUMINUM SURFACES IN CONTACT WITH CONCRETE.
3. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].

KEYED NOTES:

1 BASED ON GTS' GEOTECHNICAL REPORT, DATED NOVEMBER 25, 2024, THE ELEVATION OF LIMESTONE VARIES FROM EL. 1113.8' TO EL. 1115.4' PER SOIL BORING NOS. B-13 THROUGH B-15.

2 SOCHET 24-INCH DIAMETER DRILLED SHAFT PIER, 4-FOOT MINIMUM, INTO LIMESTONE

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
No. 8398
BRETT D. PEST

HAWKINS WEIR ENGINEERS, INC.
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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

TERTIARY TREATMENT
DETAILS AND SECTIONS

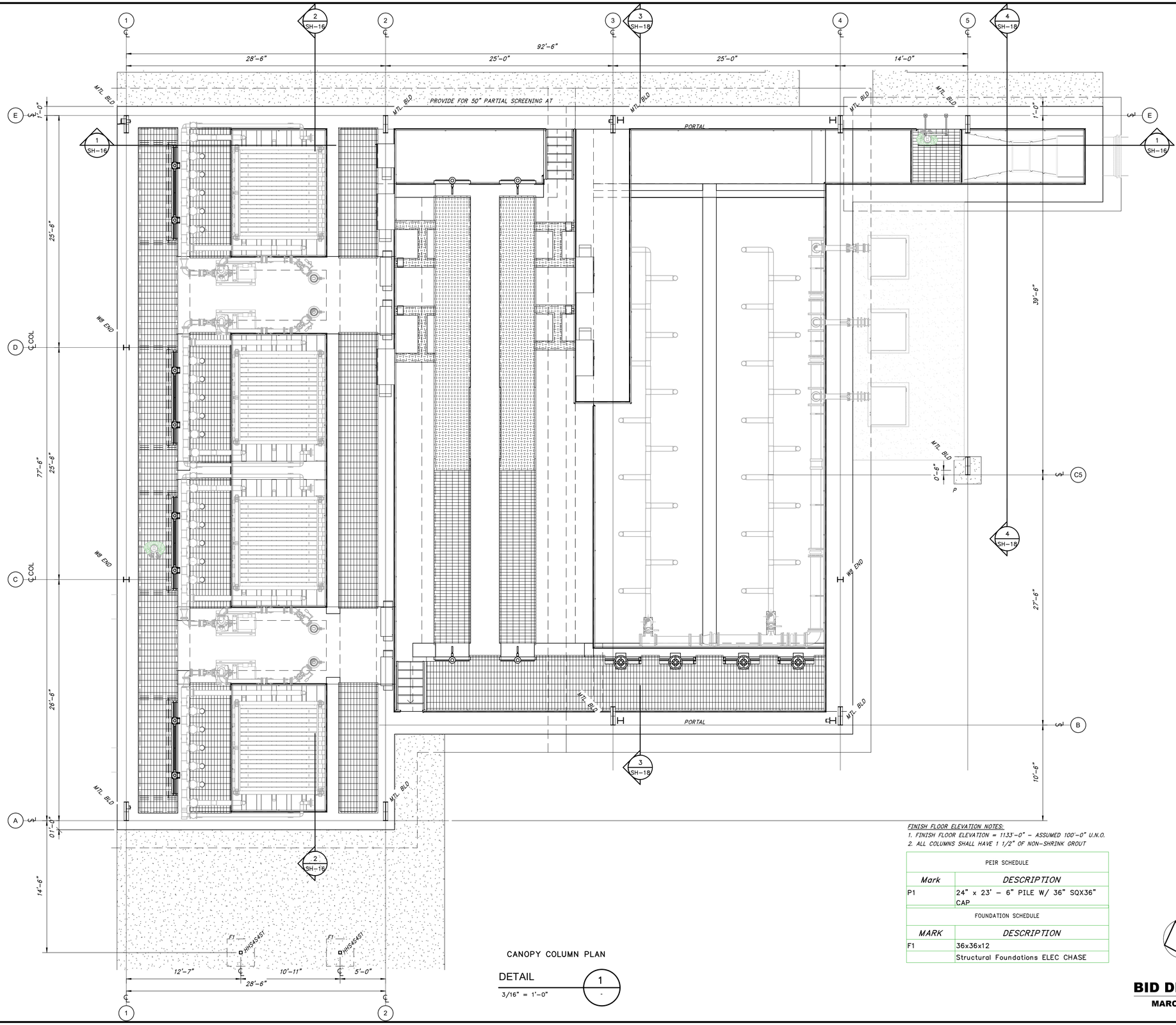
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: BDP
DRAWN BY: ADF
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-13
1

**BID DRAWINGS**
**MARCH 21, 2025**

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*Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/S-TERTIARY-PR.rvt 4/22/2025 10:31:29 AM / TL / TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARCHALL FLUME*

CANOPY COLUMN PLAN

DETAIL 1 / 3/16" = 1'-0"

*FINISH FLOOR ELEVATION NOTES:*

*1. FINISH FLOOR ELEVATION = 1133'-0" - ASSUMED 100'-0" U.N.O.*

*2. ALL COLUMNS SHALL HAVE 1 1/2" OF NON-SHRINK GROUT*

| PEIR SCHEDULE | |
|---|---|
| *Mark* | *DESCRIPTION* |
| P1 | 24" x 23' - 6" PILE W/ 36" SQX36" CAP |

| FOUNDATION SCHEDULE | |
|---|---|
| *MARK* | *DESCRIPTION* |
| F1 | 36x36x12 |
| | Structural Foundations ELEC CHASE |

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER JOHN M. RIGGS No. 14516

HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

*CITY OF BENTONVILLE, ARKANSAS*
*BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS*

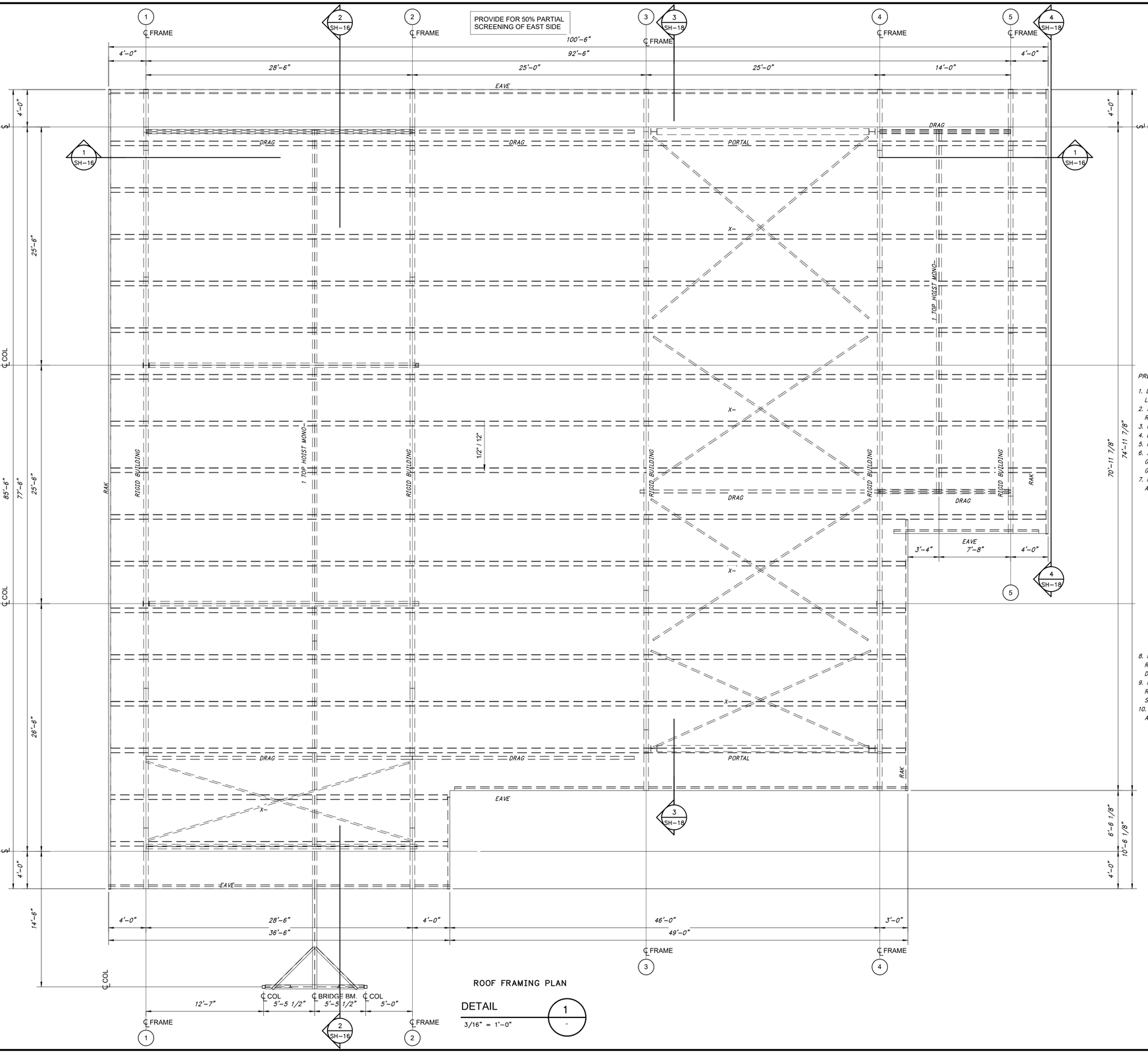
# *TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARCHALL FLUME*

## *CANOPY COLUMN PLAN*

*FOR: BENTONVILLE WATER UTILITIES*

DATE: MARCH 2025
SCALE: 3/16" = 1'-0"
DESIGNED BY: JR
DRAWN BY: TL
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SH-14 2




ROOF FRAMING PLAN

DETAIL 1 / - 3/16" = 1'-0"

- ℄ - DENOTES STRUCTURAL LINE
- ⊏ - DENOTES FACE OF COLUMN
- ⊏ - DENOTES BLOCK LINE
- ℄ - DENOTES CENTER LINE

METAL BUILDING LEGEND
3/4" = 1'-0"

*PRE-ENGINEERED METAL BUILDING NOTES*

1. DETAILING, FABRICATION, AND ERECTION, SHALL CONFORM TO THE AISC STEEL CONSTRUCTION MANUAL, LATEST EDITION.
2. ALL WELDS TO BE MADE BY CERTIFIED WELDERS TO AWS STANDARDS WITH E70 ELECTRODES AND MEET THE REQUIREMENTS OF THE IBC 2021 SECTION 2204.1.
3. UNLESS NOTED OTHERWISE, ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 55 SUPPLEMENT 1.
4. DO NOT USE CABLES FOR X-BRACING. PROVIDE RODS OR HEAVIER MEMBER FOR ALL PROVIDED X-BRACES.
5. ROOF AND WALL OPENING FRAMES TO BE PROVIDED BY THE METAL BUILDING SYSTEM PROVIDER.
6. ALL STEEL SHALL BE HOT DIPPED GALVANIZED WITH FINISH OF 3.9 MILL MINIMUM THICKNESS. GALVANIZING SHALL BE DONE IN ACCORDANCE WITH ASTM A123/A. ALL BOLTS SHALL BE HOT DIPPED GALVANDEAD LOAD:4 STAINLESS STEEL WHERE OWEIGHT OF STRUCTURE AND EQUIPMENT.
7. PRE-EIROOF LIVE LOAD:ING SHALL BE DESIGN20 PCFRESIST THE DESIGN LOADS AS REQUIRED BY THE 2021 ARKANSUNIFORM SNOW LOAD: CODE (IBC, 2021) :16.5 PSISHOWN BELOW.

WIND
RISK CATEGORY: III
EXPOSURE CATEGORY: C
SEISMIC DESIGN CRITERIA:
SITE CLASS: C
SIESMIC RISK CATEGORY: III
OCCUPANCY IMPORTANCE FACTOR: 1.25
SEISMIC DESIGN CATEGORY: B
Ss = 0.153 Fa = 1.3 SMS = 0.199 SDS = 0.133
S1 = 0.089 Fv = 1.5 SM1 = 0.134 SD1 = 0.089

8. PRE-ENGINEERED METAL BUILDING MANUFACTURER SHALL PROVIDED REQUIRED THERMAL EXPANSION JOINTS REQUIRED IN THE BUILDING AND CRANE RUNWAY STRUCTURE TO ACCOMMODATE A TEMPERATURE DIFFERENTIAL OF 100?.
9. PRE-ENGINEERED METAL BUILDING MANUFACTURER SHALL SUBMIT CALCULATIONS, INCLUDING COLUMN REACTIONS AND DEFLECTIONS TO THE FOUNDATION ENGINEER FOR APPROVAL. CALCULATIONS SHALL BE STAMPED BY AN PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARKANSAS.
10. DESIGN HOIST LOADS (TO BE VERIFIED WITH FINAL SELECTION OF HOIST)
    A. LIFTING LOAD = 1 TON

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER JOHN M. RIGGS No. 14516

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

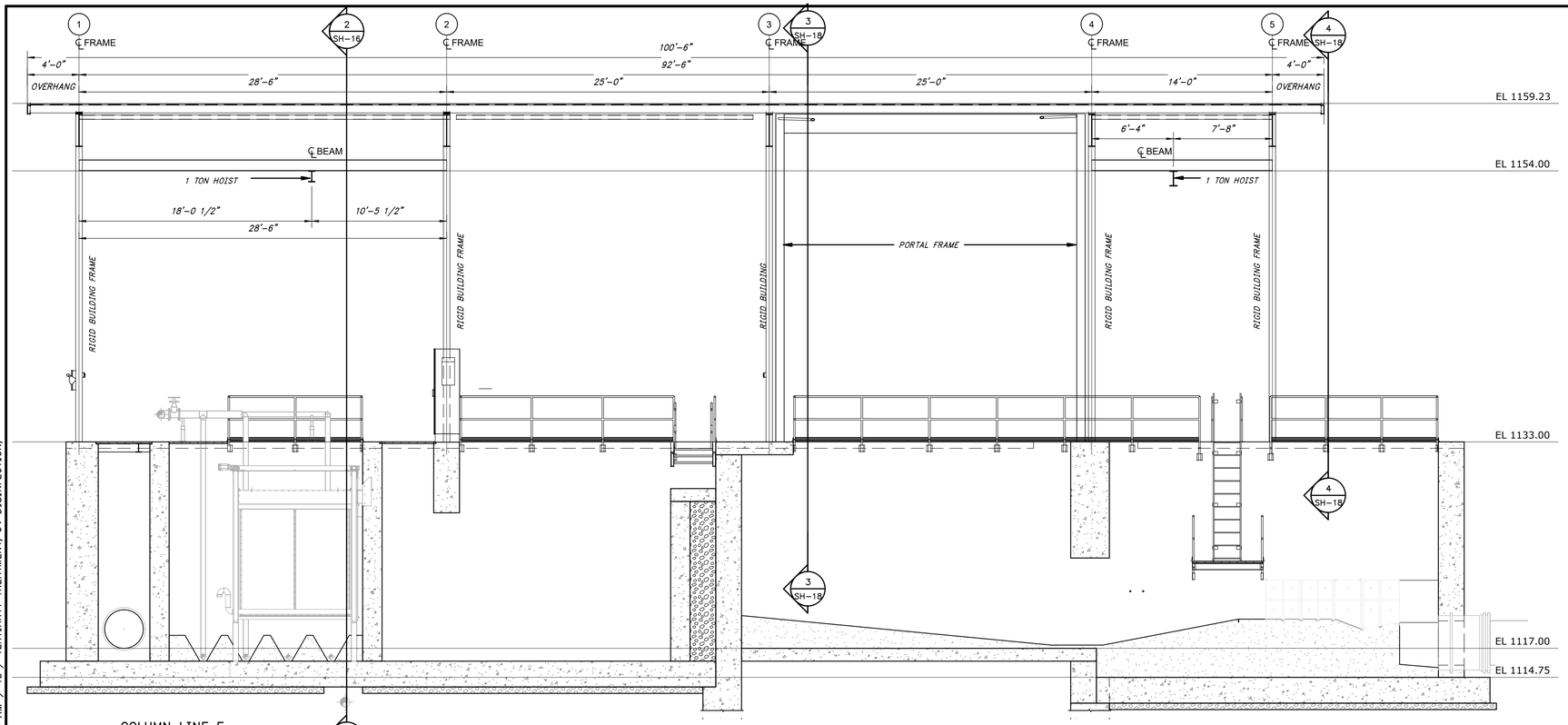
# TERTIARTY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME CANOPY ROOF FRAMING PLAN

FOR: BENTONVILLE WATER UTILITIES

DATE: MARCH 2025
SCALE: As indicated
DESIGNED BY: JR
DRAWN BY: TL
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO. SH-15 2

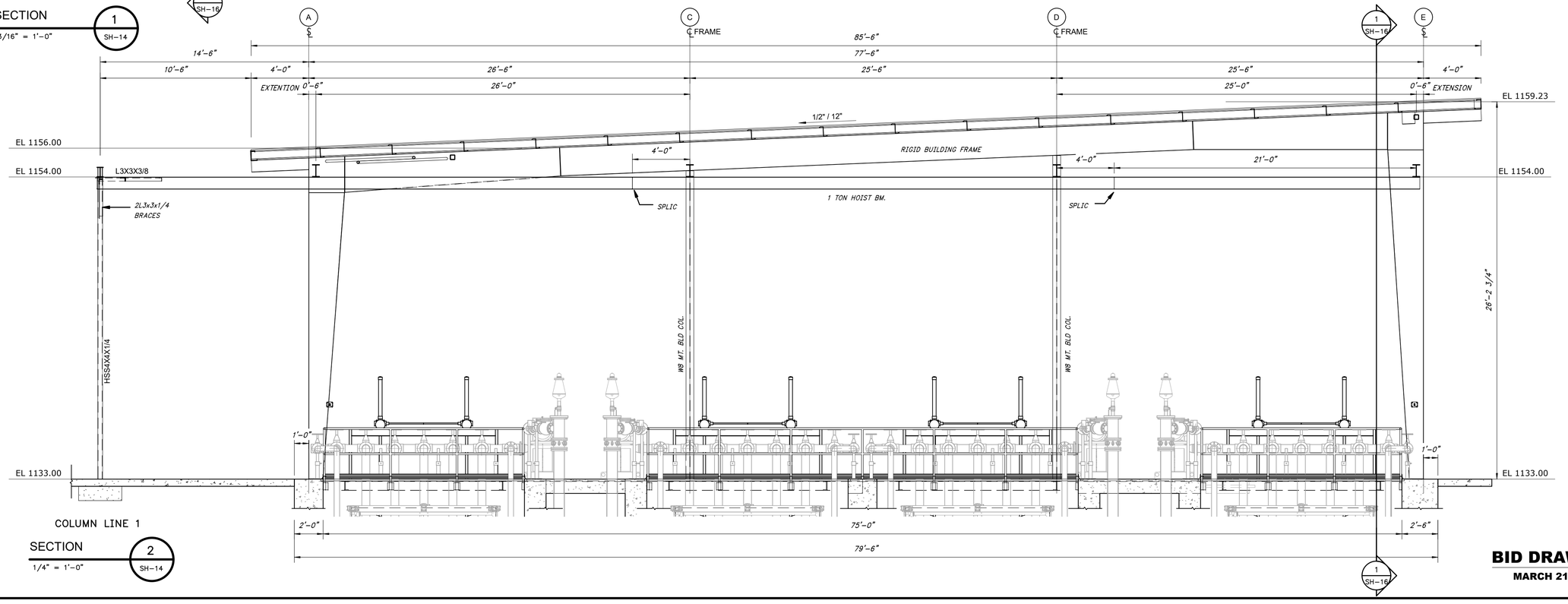
Autodesk Docs://4101144 - Bentonville Water Resource Recovery Facility Improvements/S-TERTIARY-PR.rvt 4/22/2025 10:31:30 AM / TL / TERTIARTY TREATMENT, UV DISINFECTION,




COLUMN LINE E

SECTION 1 / SH-14

3/16" = 1'-0"




COLUMN LINE 1

SECTION 2 / SH-14

1/4" = 1'-0"

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
No. 14516
JOHN M. RIGGS
4/22/25

HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

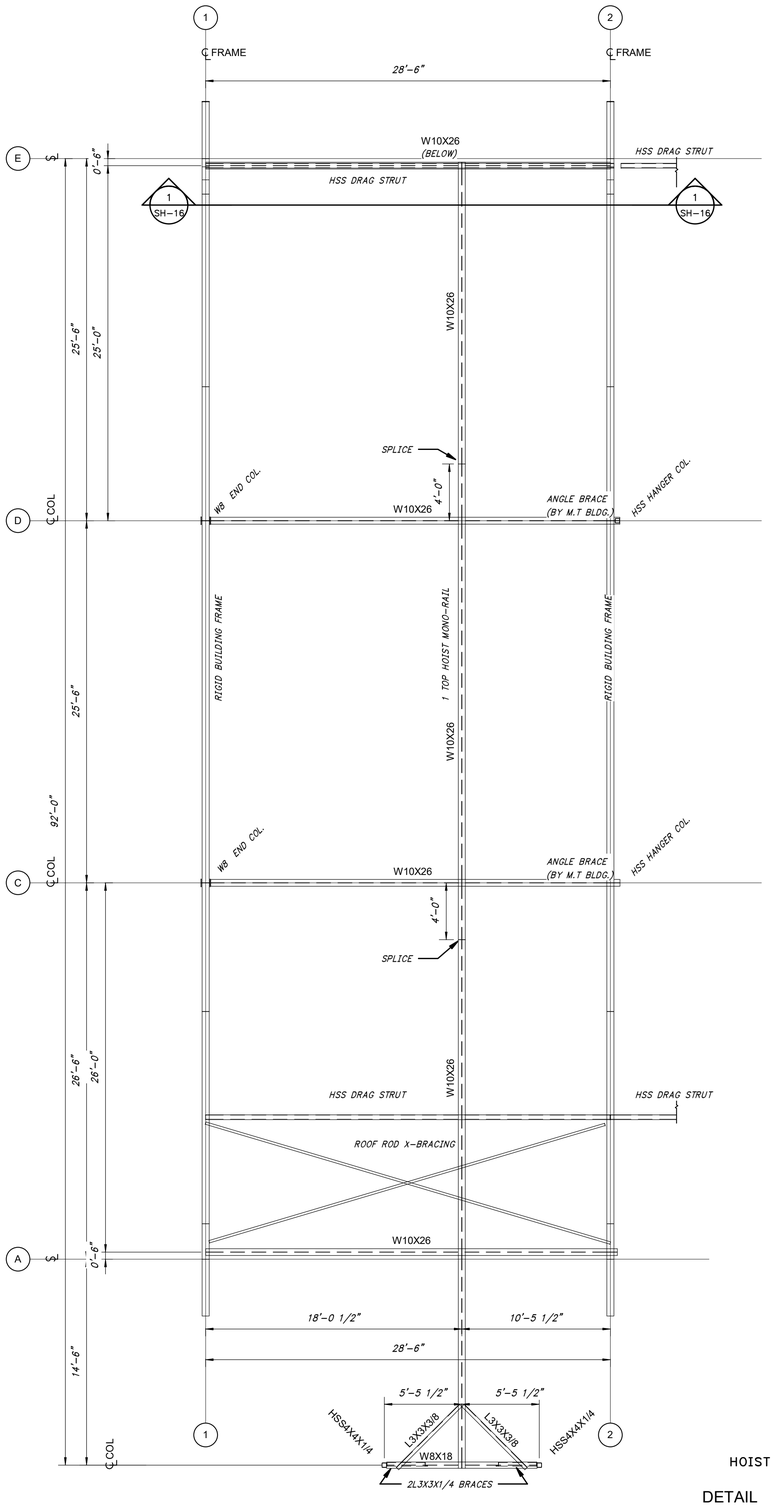
TERTIARTY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME FRAMING SECTIONS

FOR: BENTONVILLE WATER UTILITIES

| | |
|---|---|
| DATE: | MARCH 2025 |
| SCALE: | As indicated |
| DESIGNED BY: | JR |
| DRAWN BY: | TL |
| HWEI NO.: | 2021037 |
| FILENAME: | WWRF21037-ST |

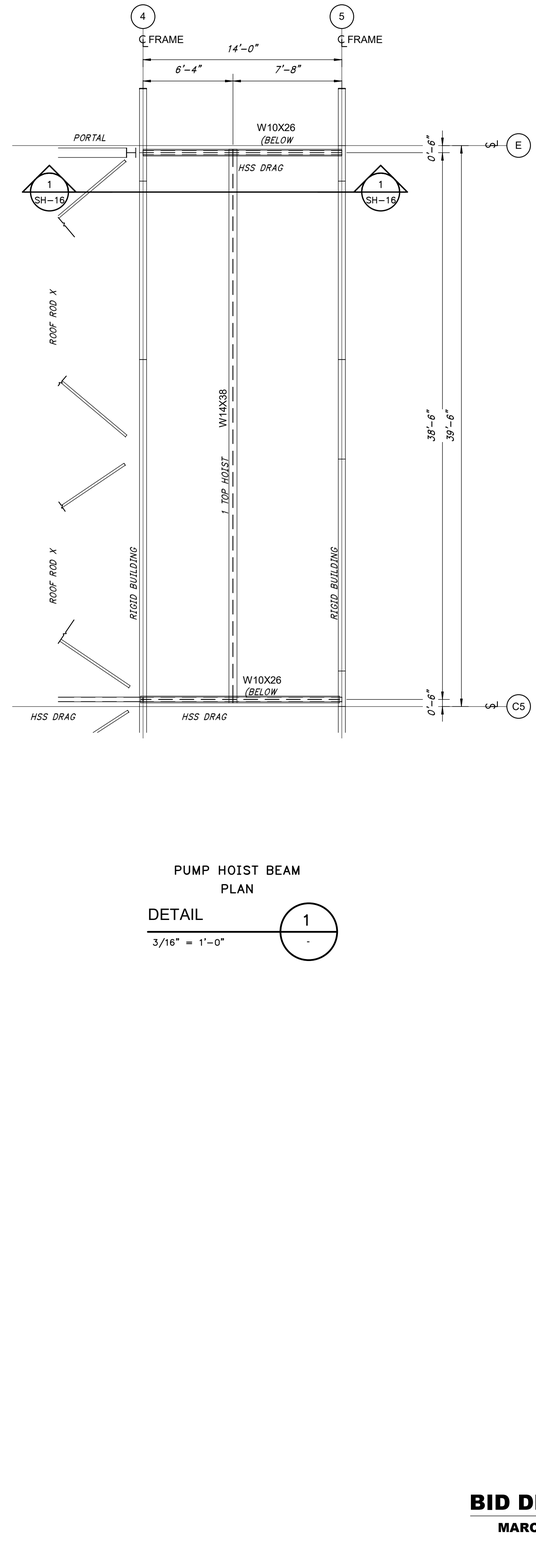
SHEET NO.
SH-16 2

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/S-TERTIARY-PR.rvt 4/22/2025 10:31:35 AM / TL / TERTIARTY TREATMENT, UV DISINFECTION,




HOIST BEAM PLAN

DETAIL 2 / 3/16" = 1'-0"




PUMP HOIST BEAM PLAN

DETAIL 1 / 3/16" = 1'-0"

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
LICENSED PROFESSIONAL ENGINEER
JOHN M. RIGGS
No. 14516
4/22/25

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

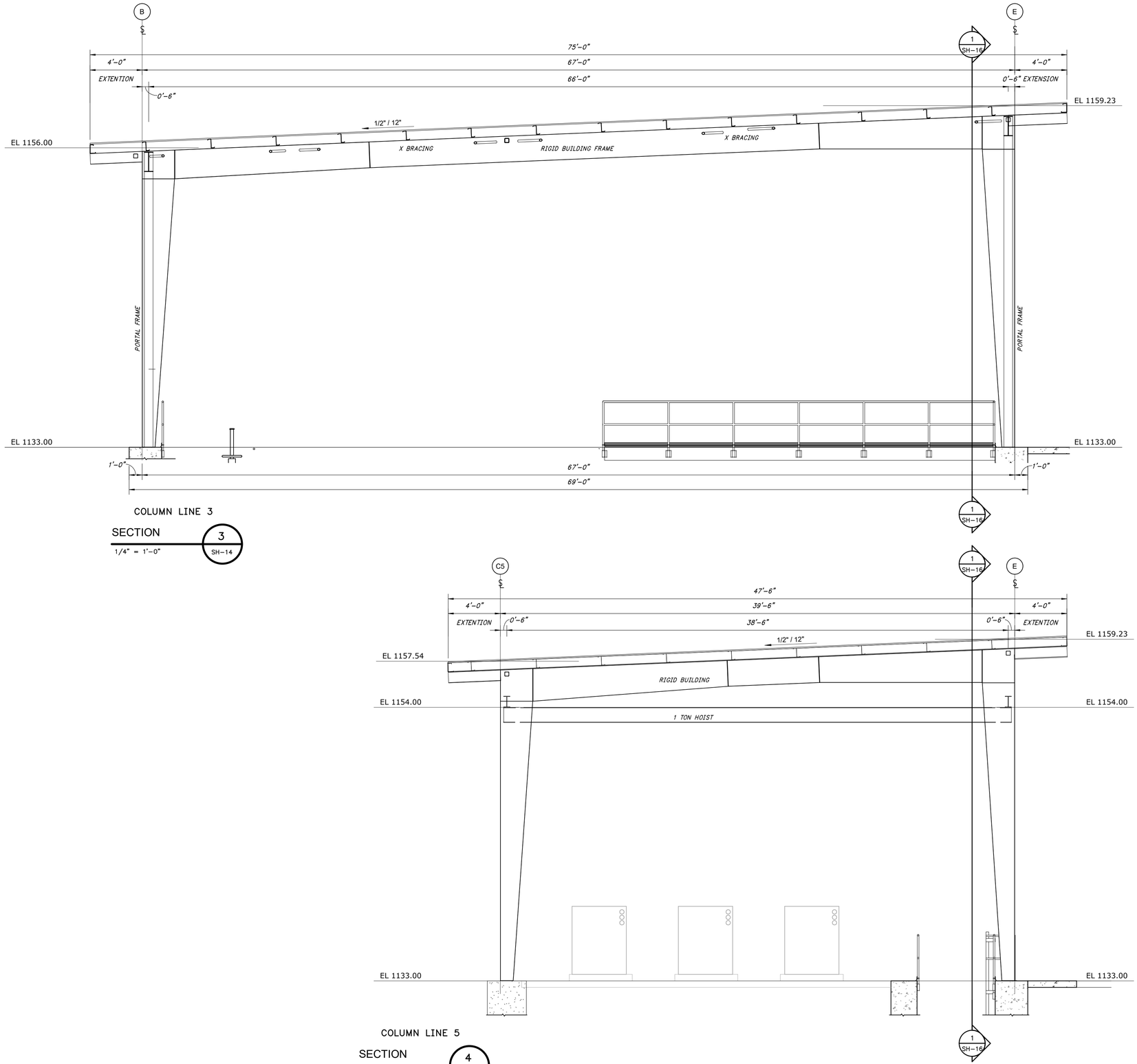
TERTIARTY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME CANOPY HOIST BEAM PLANS

FOR: BENTONVILLE WATER UTILITIES

DATE: MARCH 2025
SCALE: 3/16" = 1'-0"
DESIGNED BY: JR
DRAWN BY: TL
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SH-17 2

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/S-TERTIARY-PR.rvt 4/22/2025 10:31:29 AM / TL / TERTIARTY TREATMENT, UV DISINFECTION,




COLUMN LINE 3

SECTION 3 / SH-14

1/4" = 1'-0"




COLUMN LINE 5

SECTION 4 / SH-14

1/4" = 1'-0"

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS LICENSED PROFESSIONAL ENGINEER JOHN M. RIGGINS No. 14516

HAWKINS WEIR ENGINEERS, INC.

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

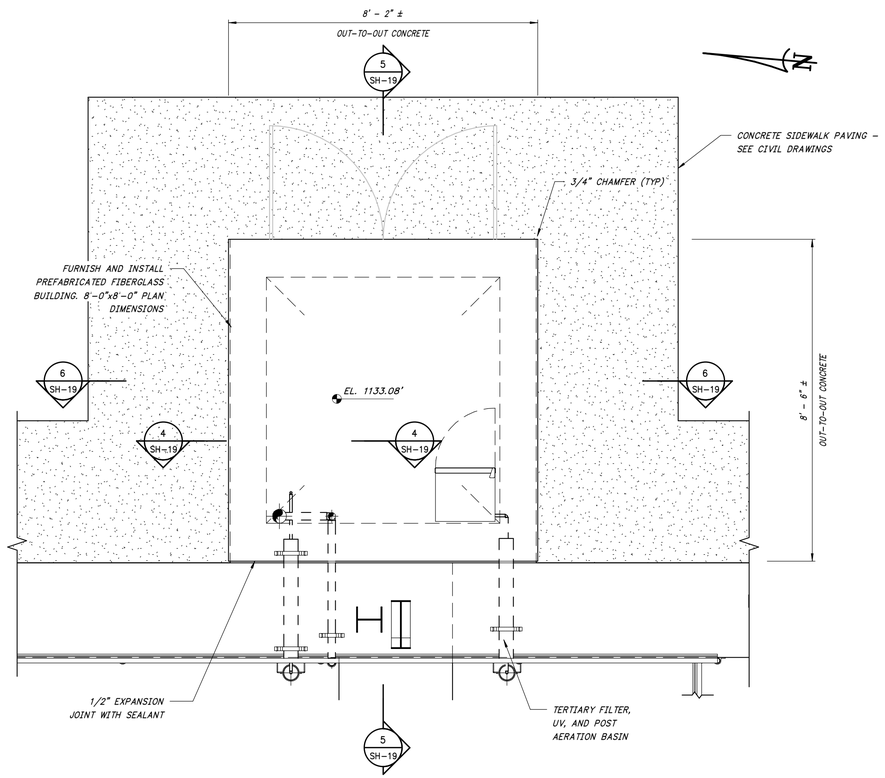
# TERTIARY TREATMENT, UV DISINFECTION, POST AERATION, AND PARSHALL FLUME FRAMING SECTION

FOR: BENTONVILLE WATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: JR
DRAWN BY: TL
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

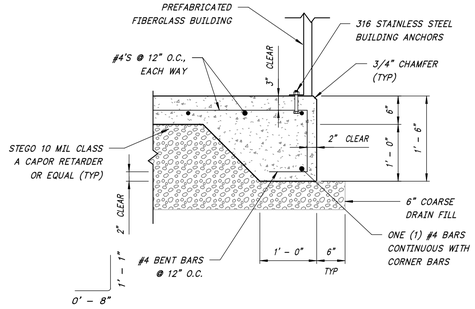
SHEET NO. SH-18 2

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/S-TERTIARY-PR.rvt 4/22/2025 10:31:36 AM / TL / TERTIARY TREATMENT, UV DISINFECTION,




SAMPLER BUILDING
FOUNDATION PLAN

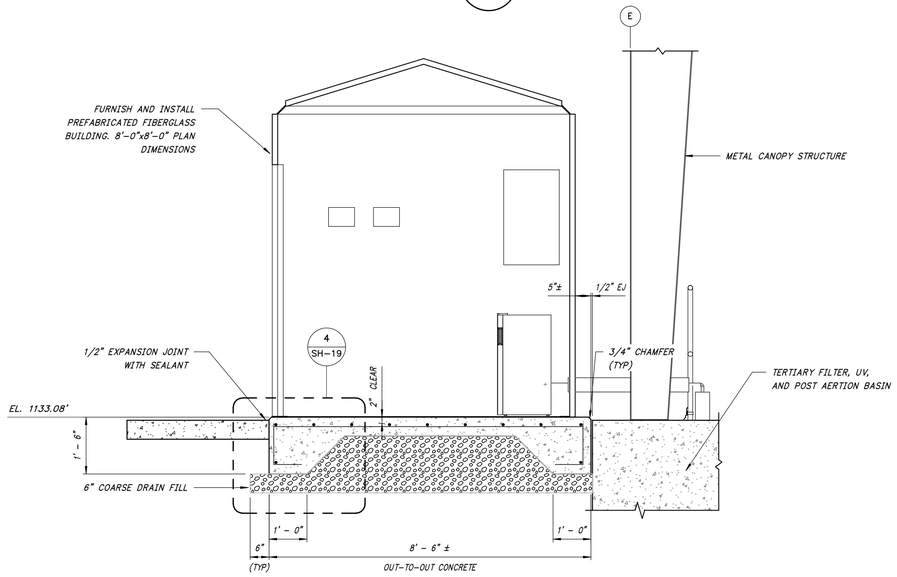
DETAIL B
1/2" = 1'-0"



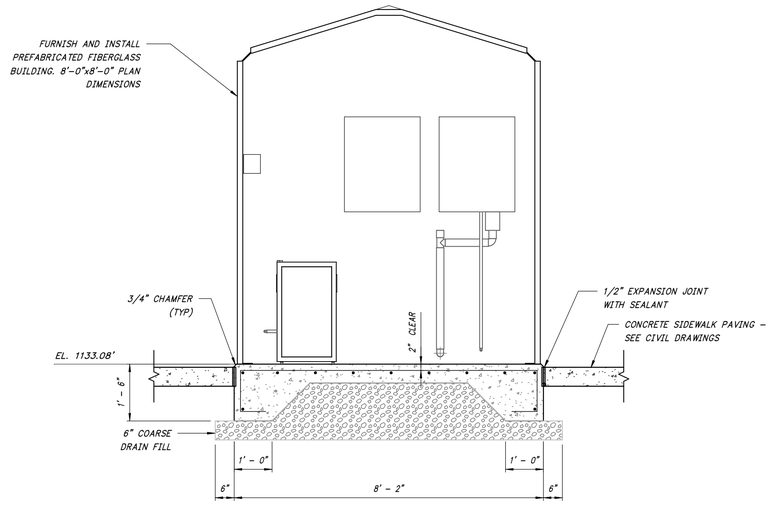

SECTION 4
3/4" = 1'-0"
SH-19

NOTES:

1. CONTRACTOR SHALL COORDINATE AND VERIFY PREFABRICATED BUILDING FOUNDATION PLAN DIMENSIONS WITH THE PROPOSED PREFABRICATED BUILDING TO BE PROVIDED PRIOR TO CONSTRUCTION OF FOUNDATION.
2. REFER TO SPECIFICATION SECTION 13121 FOR PREFABRICATED FIBERGLASS BUILDING.
3. PREFABRICATED BUILDING ANCHORS FOR ATTACHING BUILDING TO CONCRETE FOUNDATION SHALL BE 316 STAINLESS STEEL UNLESS INDICATED OTHERWISE. ANCHOR TYPE, SIZE, AND EMBEDMENT DEPTH SHALL BE SUBMITTED WITH PREFABRICATED BUILDING SUBMITTAL.
4. REFER TO OTHER DISCIPLINE DRAWINGS FOR LOCATION AND SIZE OF WALL AND/OR SLAB PENETRATIONS.
5. COARSE DRAIN FILL PER ASTM C33 (3/4" MAXIMUM AGGREGATE SIZE) SHALL BE PLACED IN MAXIMUM 6" LIFTS AND COMPACTED WITH A VIBRATORY PLATE [MINIMUM OF TWO (2) PASSES PER LIFT].




SECTION 5
1/2" = 1'-0"
SH-19




SECTION 6
1/2" = 1'-0"
SH-19

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS
REGISTERED PROFESSIONAL ENGINEER
NO. 13205
LARRY C. HARTLEY
11/21/2025

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

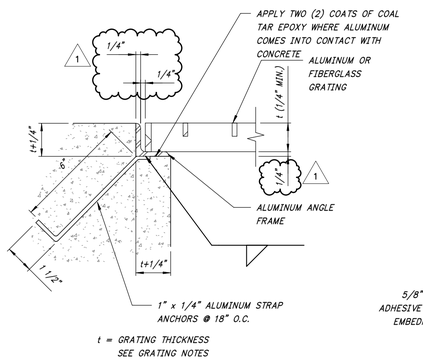
SAMPLER BUILDING
DETAIL AND SECTIONS

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: As indicated
DESIGNED BY: LCH
DRAWN BY: JEB
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

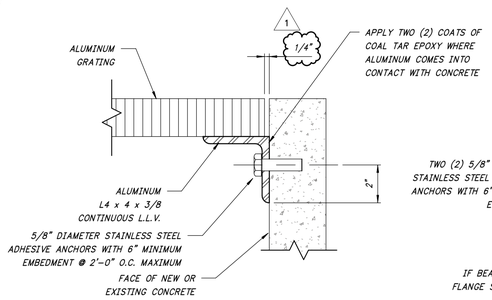
SHEET NO.
SH-19
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Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/22/2025 11:06:18 AM / JEB / SAMPLER BUILDING



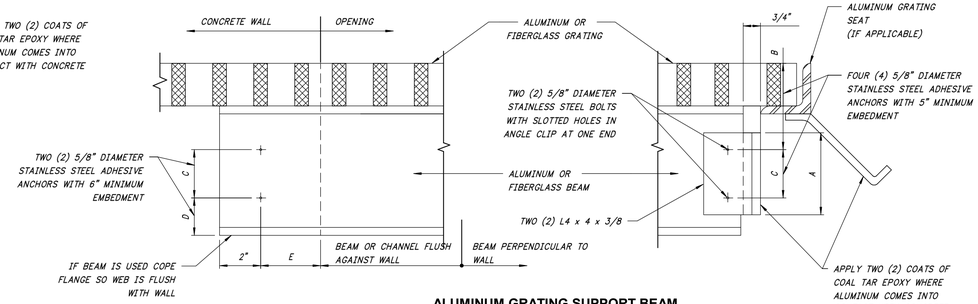

**ALUMINUM GRATING SEAT**

**DETAIL S201**
N.T.S



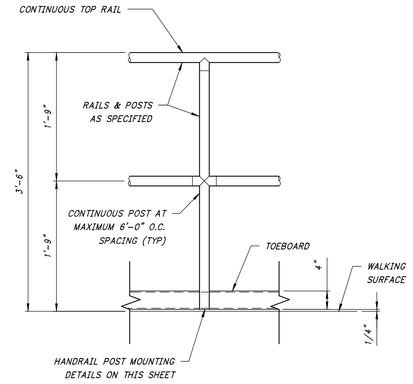

**ALUMINUM GRATING WALL SUPPORT**

**DETAIL S202**
N.T.S



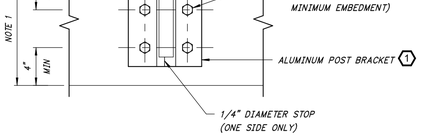

**ALUMINUM GRATING SUPPORT BEAM TO CONCRETE CONNECTION**

**DETAIL S203**
N.T.S



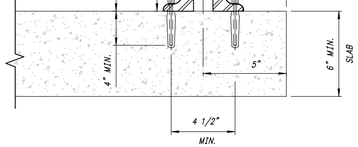

**ALUMINUM HANDRAIL**

**DETAIL S204**
N.T.S



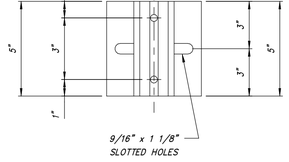

**SIDE-MOUNTED ALUMINUM HANDRAIL POST**

**DETAIL S205**
N.T.S



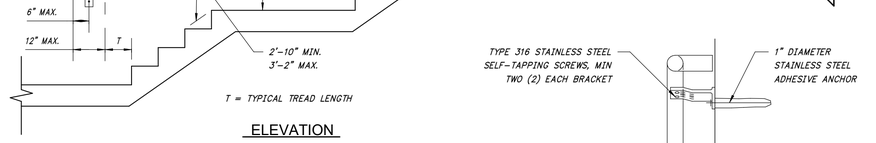

**TOP-MOUNTED ALUMINUM HANDRAIL POST**

**DETAIL S206**
N.T.S



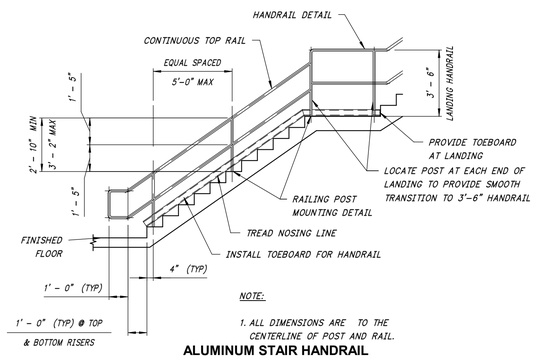

**ALUMINUM HANDRAIL STANDOFF CONNECTION**

**DETAIL S207**
N.T.S




**ALUMINUM STAIR HANDRAIL**

**DETAIL S208**
N.T.S




**ALUMINUM STAIR HANDRAIL**

**DETAIL S209**
N.T.S

KEYED NOTES:

1 APPLY TWO (2) COATS OF COAL TAR EPOXY WHERE ALUMINUM COMES INTO CONTACT WITH CONCRETE.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

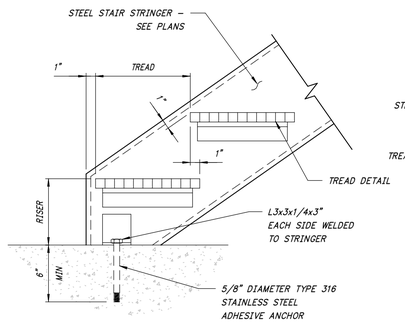
# STRUCTURAL DETAILS II

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: LCH
DRAWN BY: ADF
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SZ-2

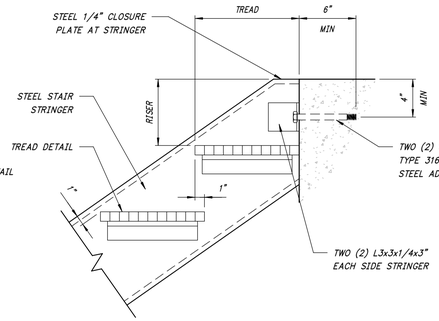
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:50 AM / ADF / STRUCTURAL DETAILS II




**STRINGER CONNECTON AT CONCRETE SLAB (BOTTOM)**

**DETAIL** S301

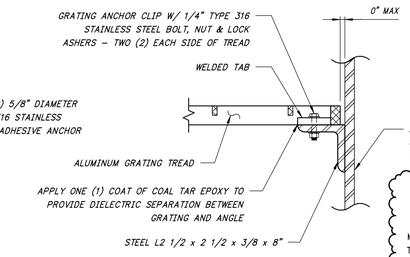
N.T.S




**STRINGER CONNECTION AT CONCRETE WALL (TOP)**

**DETAIL** S302

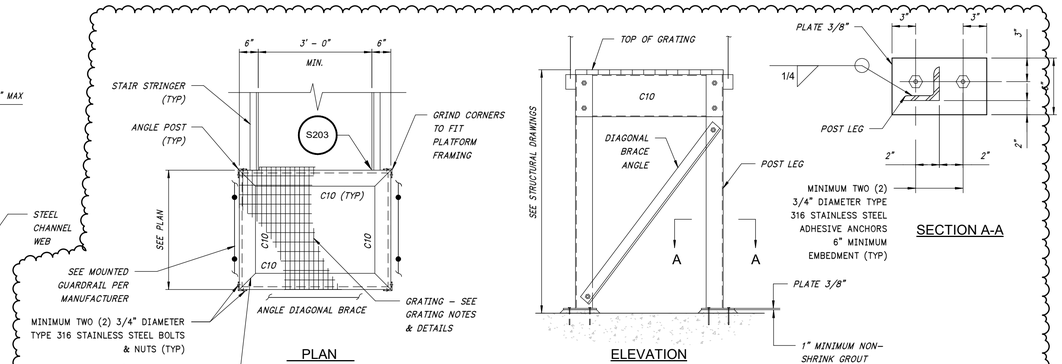
N.T.S




**GRATING STAIR TREAD**

**DETAIL** S303

N.T.S




**STAIR PLATFORM FRAMING**

**DETAIL** S304 (1)

N.T.S




**STRINGER CONNECTION AT PLATFORM (TOP)**

**DETAIL** S305

N.T.S




**STRINGER CONNECTION AT PLATFORM (BOTTOM)**

**DETAIL** S306

N.T.S




**STAIR LANDING SLAB**

**DETAIL** S307

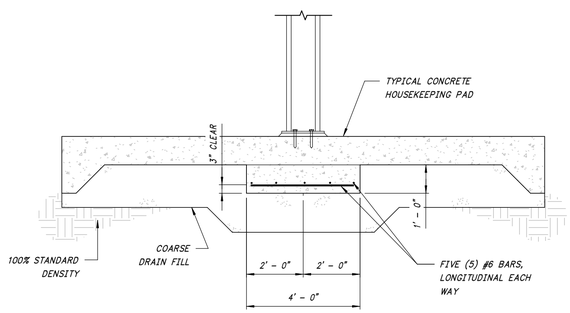
N.T.S




**CONCRETE STAIR NOSING**

**DETAIL** S308

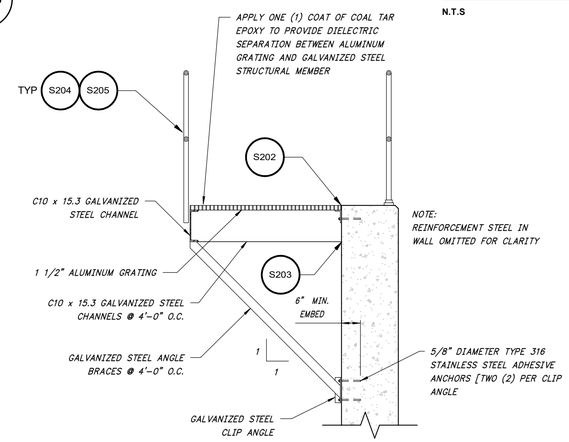
N.T.S




**PLATFORM COLUMN FOUNDATION**

**DETAIL** S309

N.T.S




**CANTILEVERED ACCESS PLATFORM**

**DETAIL** S310

N.T.S

NOTES:

1. ALL STRUCTURAL STEEL MEMBERS IDENTIFIED IN DETAILS S301 THROUGH S306 AND DETAIL S310 FOR CONSTRUCTION OF ACCESS PLATFORMS, EQUIPMENT PLATFORMS, AND ACCESS STAIRS SHALL BE HOT-DIPPED GALVANIZED.
2. DETAILS IDENTIFIED ON THIS PLAN SHEET ARE FOR GUIDANCE AND TO ESTABLISH CERTAIN MINIMUM REQUIREMENTS. THE MISCELLANEOUS STEEL FABRICATOR MAY SUBMIT ALTERNATE DETAILS DURING THE SHOP DRAWING SUBMITAL PROCESS FOR REVIEW AND APPROVAL BY THE ENGINEER.

KEYED NOTES:

(1) APPLY TWO (2) COATS OF COAL TAR EPOXY WHERE ALUMINUM COMES INTO CONTACT WITH CONCRETE.

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

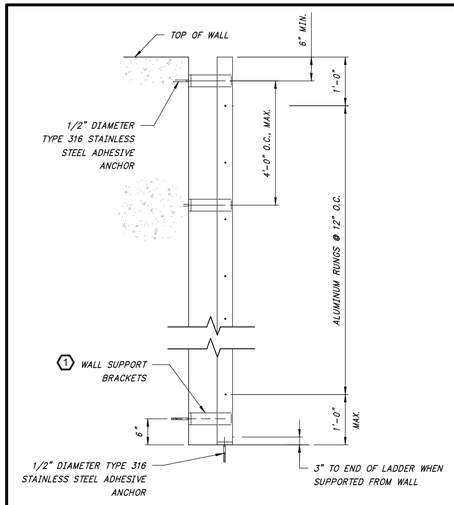
**STRUCTURAL DETAILS III**

FOR: BENTONVILLE WASTEWATER UTILITIES

| | |
|---|---|
| DATE: | MARCH 2025 |
| SCALE: | AS SHOWN |
| DESIGNED BY: | LCH |
| DRAWN BY: | ADF |
| HWEI NO.: | 2021037 |
| FILENAME: | WWRF21037-ST |

SHEET NO.
SZ-3

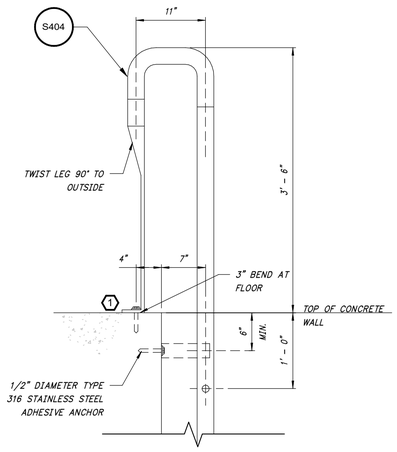
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:51 AM / ADF / STRUCTURAL DETAILS III




**ALUMINUM LADDER**

**DETAIL S401**

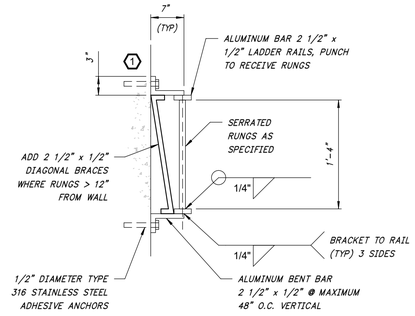
N.T.S




**LADDER TO T.O. WALL CONNECTION**

**DETAIL S402**

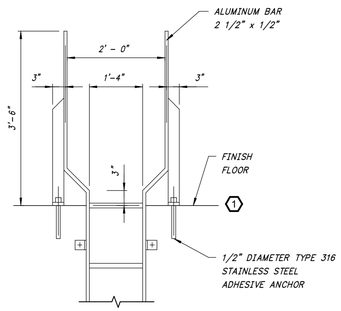
N.T.S




**ALUMINUM LADDER PLAN**

**DETAIL S403**

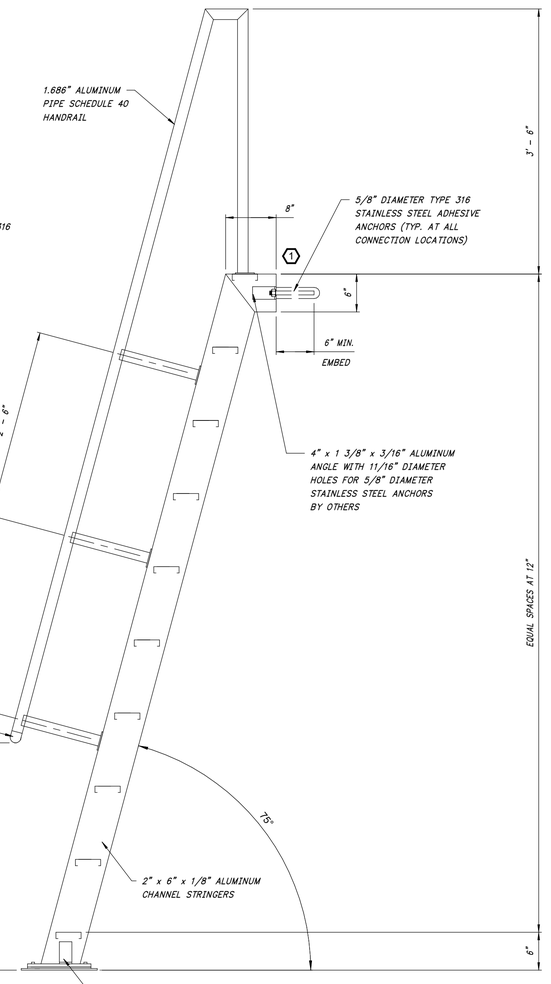
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**ALUMINUM GOOSENECK LADDER**

**DETAIL S404**

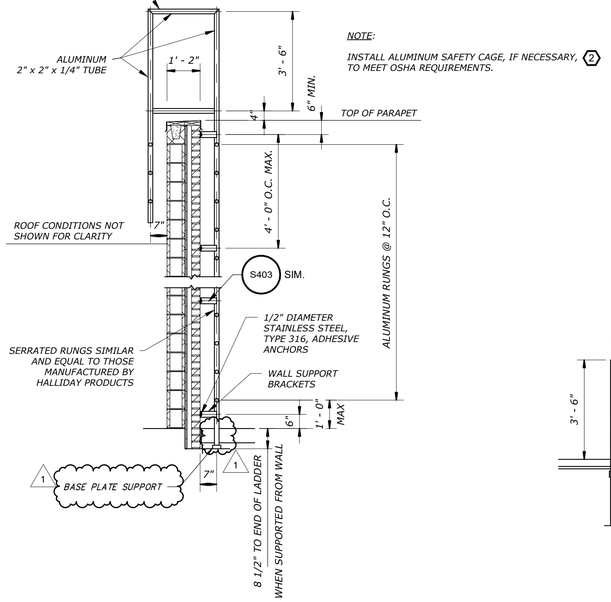
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**SHIP LADDER**

**DETAIL S405**

N.T.S



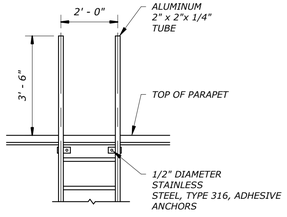

NOTE:

INSTALL ALUMINUM SAFETY CAGE, IF NECESSARY, 2 TO MEET OSHA REQUIREMENTS.

**ALUMINUM LADDER FOR BUILDING ACCESS**

**DETAIL S406**

N.T.S




**ALUMINUM BUILDING LADDER**

**DETAIL S407**

N.T.S

1 NOTES:

1. DETAILS IDENTIFIED ON THIS PLAN SHEET ARE FOR GUIDANCE AND TO ESTABLISH CERTAIN MINIMUM REQUIREMENTS. THE MISCELLANEOUS STEEL FABRICATOR MAY SUBMIT ALTERNATE DETAILS DURING THE SHOP DRAWING SUBMITAL PROCESS FOR REVIEW AND APPROVAL BY THE ENGINEER.

KEYED NOTES:

1 APPLY TWO (2) COATS OF COAL TAR EPOXY WHERE ALUMINUM COMES INTO CONTACT WITH CONCRETE.

2 INSTALL NEW SAF-T-CLIMB STAINLESS STEEL FALL PROTECTION CABLES AND HARDWARE ON THE ALUMINUM LADDER. PROVIDE THE OWNER WITH TWO (2) COMPLETE SETS OF HARNESSES FOR THE PROJECT.

**BID DRAWINGS**

**MARCH 21, 2025**

1"

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER LARRY C. HAWKINS NO. 13205 11/21/2025

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BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

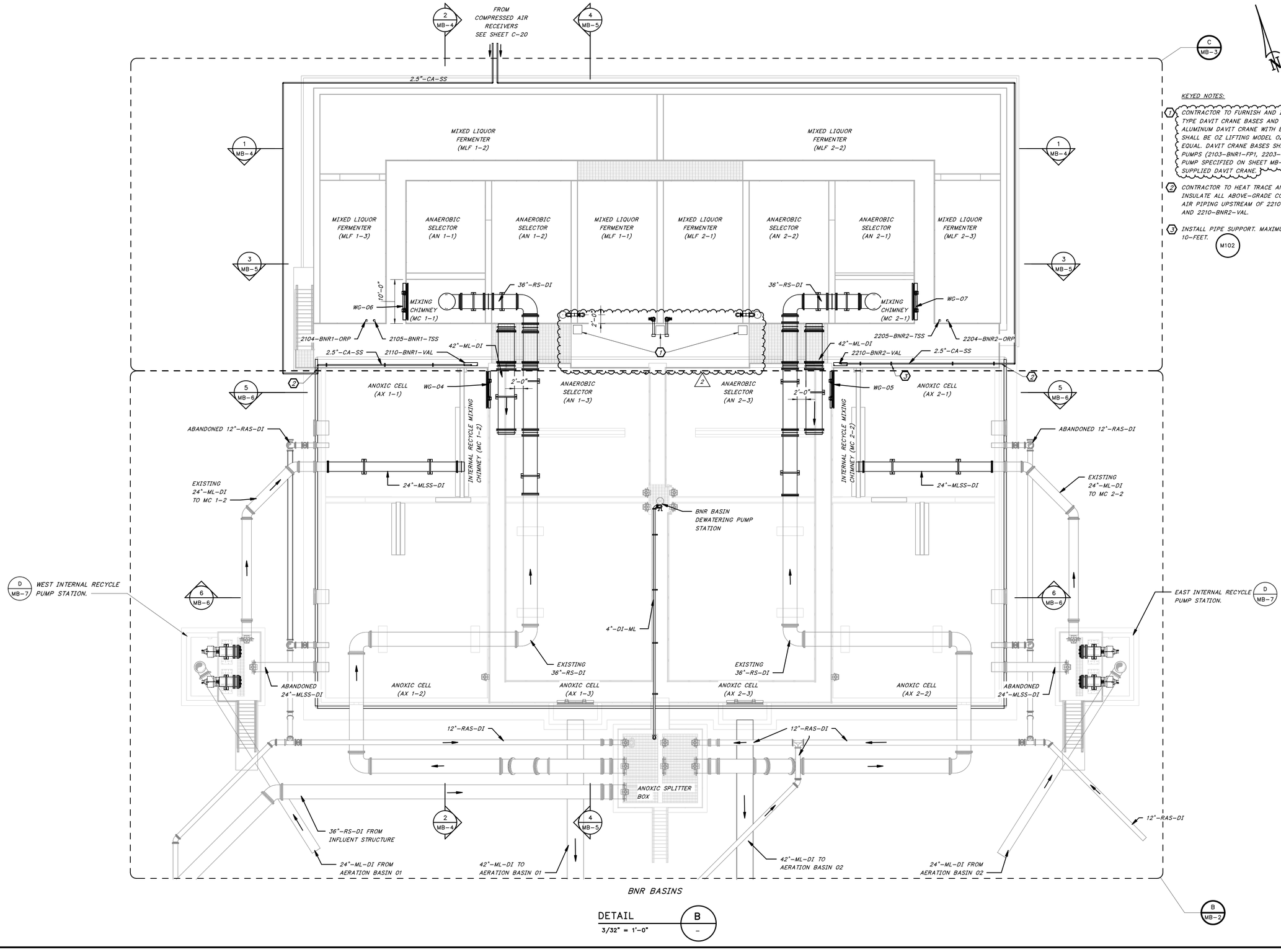
# STRUCTURAL DETAILS IV

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: LCH
DRAWN BY: ADF
HWEI NO.: 2021037
FILENAME: WWRF21037-ST

SHEET NO.
SZ-4

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ST.rvt 4/24/2025 10:32:52 AM / ADF / STRUCTURAL DETAILS IV




BNR BASINS

DETAIL B
3/32" = 1'-0"

KEYED NOTES:

7. CONTRACTOR TO FURNISH AND INSTALL THREE (3) PEDESTAL-TYPE DAVIT CRANE BASES AND ONE (1) 500 LB CAPACITY ALUMINUM DAVIT CRANE WITH ELECTRIC HOIST. DAVIT CRANE SHALL BE OZ LIFTING MODEL OZA500DAV-ACW OR APPROVED EQUAL. DAVIT CRANE BASES SHALL BE PLACED SUCH THAT ALL PUMPS (2103-BNR1-FP1, 2203-BNR2-FP2, AND BASIN DRAIN PUMP SPECIFIED ON SHEET MB-3) CAN BE REACHED WITH THE SUPPLIED DAVIT CRANE.
2. CONTRACTOR TO HEAT TRACE AND INSULATE ALL ABOVE-GRADE COMPRESSED AIR PIPING UPSTREAM OF 2210-BNR1-VAL AND 2210-BNR2-VAL.
3. INSTALL PIPE SUPPORT. MAXIMUM SPACING 10-FEET.

M102

1" ONE AT FULL IF NOT ONE SCALE

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED ON MARCH 21, 2025 BY AMANDA K. JOHNSON, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF ARKANSAS, E-22360

HAWKINS-WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

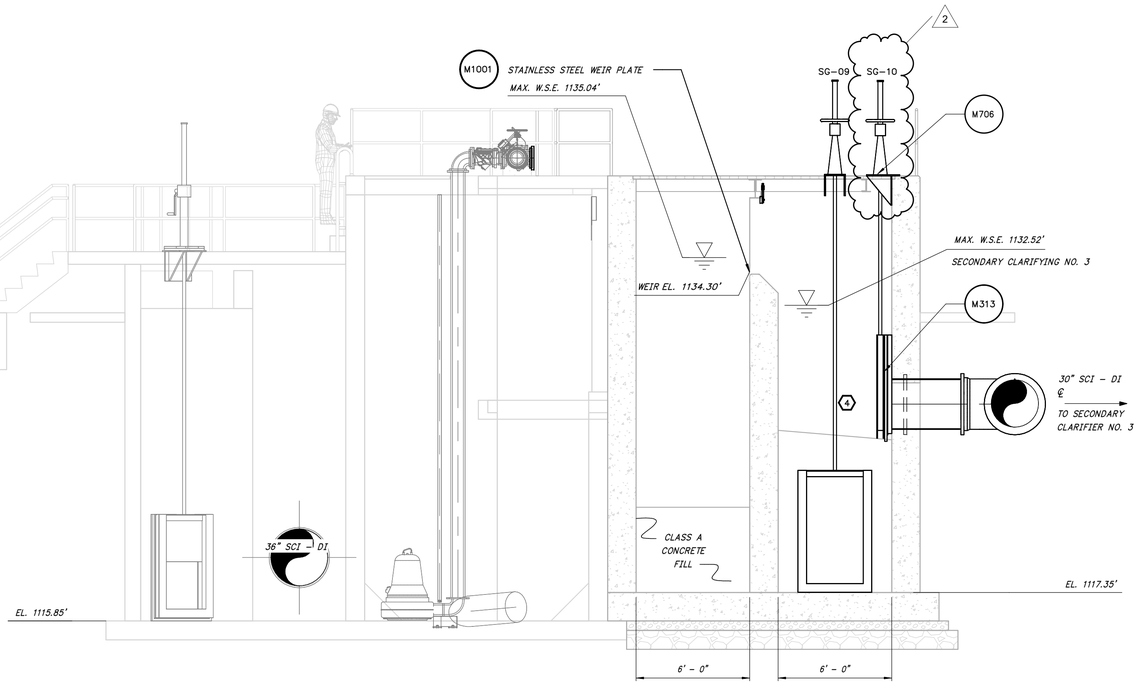
# BNR BASINS DETAIL

BENTONVILLE, ARKANSAS

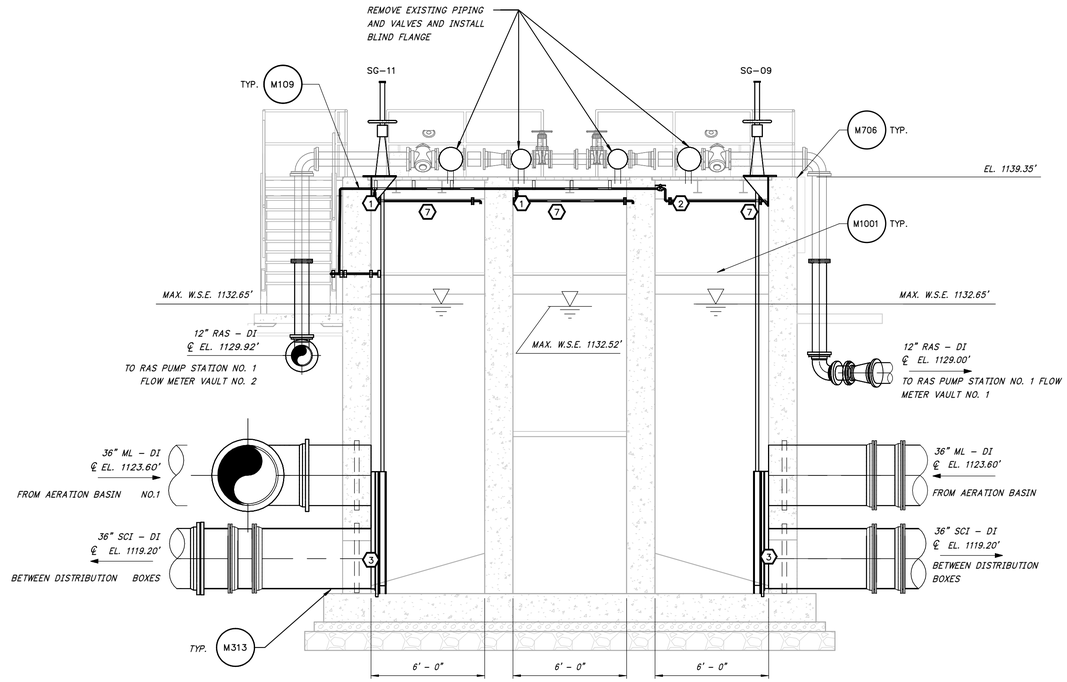
DATE: FEBRUARY 2025
SCALE: 3/32" = 1'-0"
DESIGNED BY: BGM
DRAWN BY: MD
HWEI NO.: 2021037
FILENAME: M-BNR BASIN

SHEET MB-1

4/22/2025 11:45:15 AM / MD / BNR BASINS DETAIL
Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/M-BNR Basin.rvt




SECTION 1
1/4" = 1'-0" MD-1




SECTION 2
1/4" = 1'-0" MD-1

NOTES:
1. ALL HARDWARE SHALL BE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED. ANTISEIZE LUBRICANTS SHALL BE USED WHEN ASSEMBLING STAINLESS STEEL HARDWARE.
2. PAINT ALL EXPOSED PIPING IN ACCORDANCE WITH SPECIFICATION SECTION 09902.
3. SEQUENCE CONSTRUCTION SO THAT ONE (1) AERATION BASIN IS MAINTAINED IN SERVICE AT ALL TIMES.

KEYED NOTES:
1. INSTALL 3/4" x 1/2" TEE AND 1/2" PVC BALL VALVE
2. INSTALL 3/4"x1/2" REDUCER, 1/2" PVC BALL VALVE
3. INSTALL 36"x36" STAINLESS STEEL SLIDE GATE WITH MANUAL OPERATOR
4. INSTALL 30"x30" STAINLESS STEEL SLIDE GATE WITH MANUAL OPERATOR
5. INSTALL CONCRETE PIPE SUPPORT
6. INSULATE AND HEAT TRACE ALUMINUM CHEMICAL FEED LINE ABOVE GRADE.
7. INSTALL PVC CHEMICAL DIFFUSER (M1005)

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NUMBER 2 | 04/22/2025 |

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STATE OF ARKANSAS
STEVEN KELLEY MARGARET
LICENSED PROFESSIONAL ENGINEER
No. 20465

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

SECONDARDY CLARIFIER DISTRIBUTION BOX AND RAS PUMP STATION
SECTIONS
FOR: BENTONVILLE WATER UTILITIES

DATE: MARCH 2025
SCALE: 1/4" = 1'-0"
DESIGNED BY: MEK
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME: WWRF21037-ME

SHEET NO.
MD-2

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-ME.rvt 4/25/2025 6:19:28 AM / DKS / SECONDARDY CLARIFIER DISTRIBUTION BOX AND RAS PUMP STATION

60 30 0 60

SCALE IN FEET

*COORDINATION RESPONSIBILITIES:*

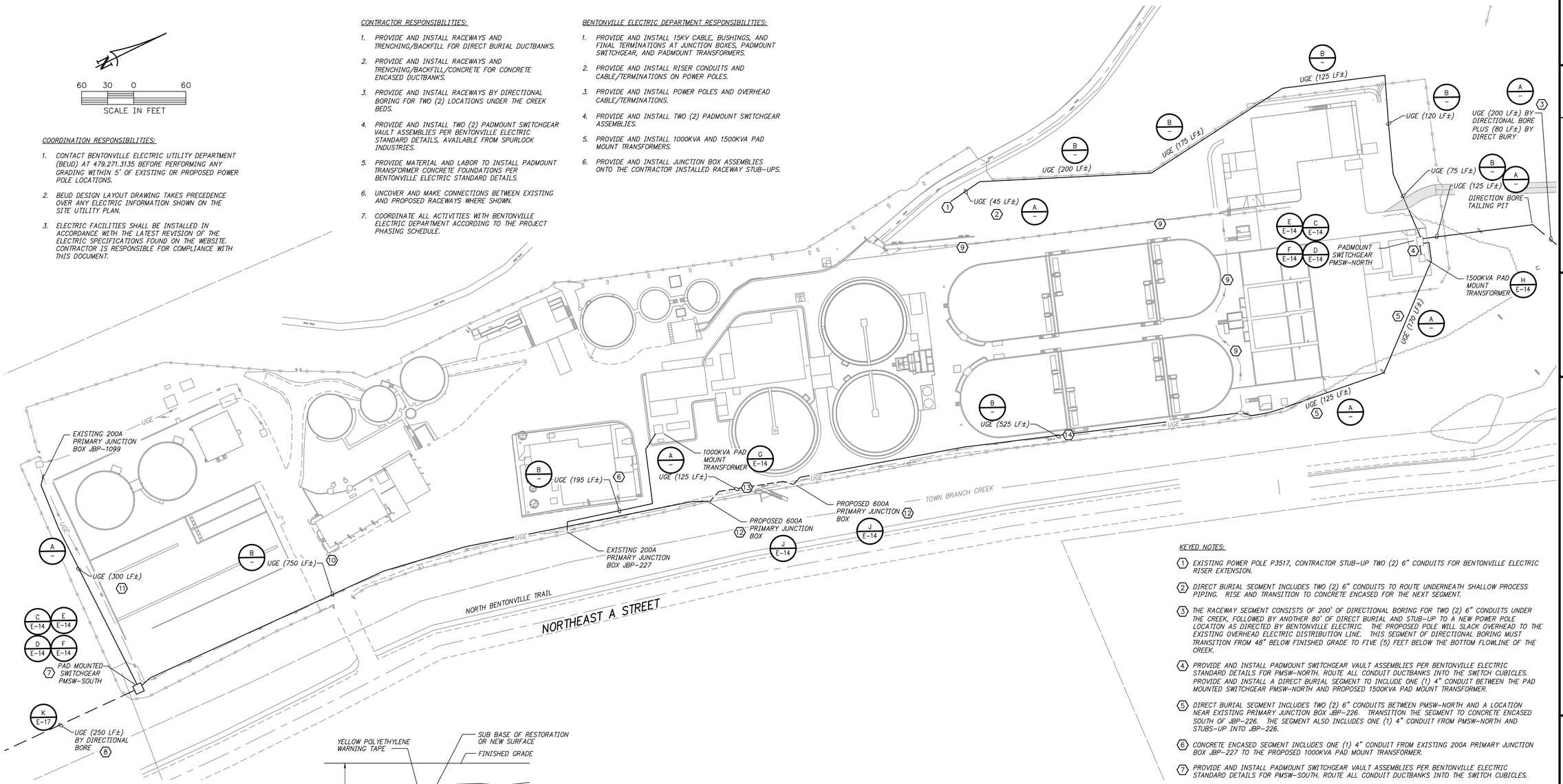
1. *CONTACT BENTONVILLE ELECTRIC UTILITY DEPARTMENT (BEUD) AT 479.271.3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLE LOCATIONS.*
2. *BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLAN.*
3. *ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.*

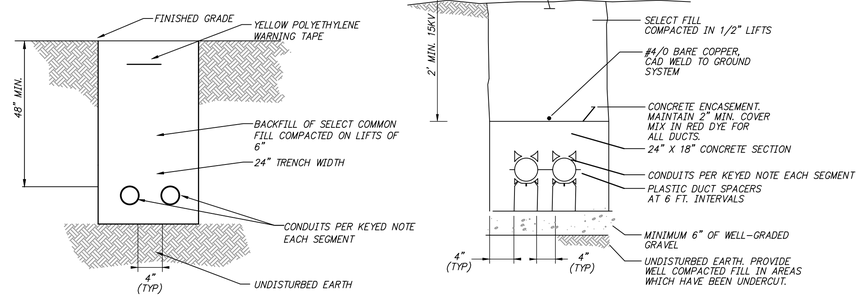
*CONTRACTOR RESPONSIBILITIES:*

1. *PROVIDE AND INSTALL RACEWAYS AND TRENCHING/BACKFILL FOR DIRECT BURIAL DUCTBANKS.*
2. *PROVIDE AND INSTALL RACEWAYS AND TRENCHING/BACKFILL/CONCRETE FOR CONCRETE ENCASED DUCTBANKS.*
3. *PROVIDE AND INSTALL RACEWAYS BY DIRECTIONAL BORING FOR TWO (2) LOCATIONS UNDER THE CREEK BEDS.*
4. *PROVIDE AND INSTALL TWO (2) PADMOUNT SWITCHGEAR VAULT ASSEMBLIES PER BENTONVILLE ELECTRIC STANDARD DETAILS, AVAILABLE FROM SPURLOCK INDUSTRIES.*
5. *PROVIDE MATERIAL AND LABOR TO INSTALL PADMOUNT TRANSFORMER CONCRETE FOUNDATIONS PER BENTONVILLE ELECTRIC STANDARD DETAILS.*
6. *UNCOVER AND MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED RACEWAYS WHERE SHOWN.*
7. *COORDINATE ALL ACTIVITIES WITH BENTONVILLE ELECTRIC DEPARTMENT ACCORDING TO THE PROJECT PHASING SCHEDULE.*

*BENTONVILLE ELECTRIC DEPARTMENT RESPONSIBILITIES:*

1. *PROVIDE AND INSTALL 15KV CABLE, BUSHINGS, AND FINAL TERMINATIONS AT JUNCTION BOXES, PADMOUNT SWITCHGEAR, AND PADMOUNT TRANSFORMERS.*
2. *PROVIDE AND INSTALL RISER CONDUITS AND CABLE/TERMINATIONS ON POWER POLES.*
3. *PROVIDE AND INSTALL POWER POLES AND OVERHEAD CABLE/TERMINATIONS.*
4. *PROVIDE AND INSTALL TWO (2) PADMOUNT SWITCHGEAR ASSEMBLIES.*
5. *PROVIDE AND INSTALL 1000KVA AND 1500KVA PAD MOUNT TRANSFORMERS.*
6. *PROVIDE AND INSTALL JUNCTION BOX ASSEMBLIES ONTO THE CONTRACTOR INSTALLED RACEWAY STUB-UPS.*




PRIMARY DIRECT BURIAL DUCTBANK

DETAIL A – NTS




PRIMARY CONCRETE ENCASED DUCTBANK

DETAIL B – NTS

*KEYED NOTES:*

1. *EXISTING POWER POLE P3517, CONTRACTOR STUB-UP TWO (2) 6" CONDUITS FOR BENTONVILLE ELECTRIC RISER EXTENSION.*
2. *DIRECT BURIAL SEGMENT INCLUDES TWO (2) 6" CONDUITS TO ROUTE UNDERNEATH SHALLOW PROCESS PIPING. RISE AND TRANSITION TO CONCRETE ENCASED FOR THE NEXT SEGMENT.*
3. *THE RACEWAY SEGMENT CONSISTS OF 200' OF DIRECTIONAL BORING FOR TWO (2) 6" CONDUITS UNDER THE CREEK, FOLLOWED BY ANOTHER 80' OF DIRECT BURIAL AND STUB-UP TO A NEW POWER POLE LOCATION AS DIRECTED BY BENTONVILLE ELECTRIC. THE PROPOSED POLE WILL SLACK OVERHEAD TO THE EXISTING OVERHEAD ELECTRIC DISTRIBUTION LINE. THIS SEGMENT OF DIRECTIONAL BORING MUST TRANSITION FROM 48" BELOW FINISHED GRADE TO FIVE (5) FEET BELOW THE BOTTOM FLOWLINE OF THE CREEK.*
4. *PROVIDE AND INSTALL PADMOUNT SWITCHGEAR VAULT ASSEMBLIES PER BENTONVILLE ELECTRIC STANDARD DETAILS FOR PMSW-NORTH. ROUTE ALL CONDUIT DUCTBANKS INTO THE SWITCH CUBICLES. PROVIDE AND INSTALL A DIRECT BURIAL SEGMENT TO INCLUDE ONE (1) 4" CONDUIT BETWEEN THE PAD MOUNTED SWITCHGEAR PMSW-NORTH AND PROPOSED 1500KVA PAD MOUNT TRANSFORMER.*
5. *DIRECT BURIAL SEGMENT INCLUDES TWO (2) 6" CONDUITS BETWEEN PMSW-NORTH AND A LOCATION NEAR EXISTING PRIMARY JUNCTION BOX JBP-226. TRANSITION THE SEGMENT TO CONCRETE ENCASED SOUTH OF JBP-226. THE SEGMENT ALSO INCLUDES ONE (1) 4" CONDUIT FROM PMSW-NORTH AND STUBS-UP INTO JBP-226.*
6. *CONCRETE ENCASED SEGMENT INCLUDES ONE (1) 4" CONDUIT FROM EXISTING 200A PRIMARY JUNCTION BOX JBP-227 TO THE PROPOSED 1000KVA PAD MOUNT TRANSFORMER.*
7. *PROVIDE AND INSTALL PADMOUNT SWITCHGEAR VAULT ASSEMBLIES PER BENTONVILLE ELECTRIC STANDARD DETAILS FOR PMSW-SOUTH. ROUTE ALL CONDUIT DUCTBANKS INTO THE SWITCH CUBICLES.*
8. *PROVIDE DIRECTIONAL BORING FOR THE DUCTBANK SECTION BETWEEN JBP 228 AND THE PROPOSED PAD MOUNTED SWITCH PMSW SOUTH ON THE WRRF PROPERTY. THIS SEGMENT OF DIRECTIONAL BORING MUST TRANSITION FROM 48" BELOW FINISHED GRADE TO FIVE (5) FEET BELOW THE BOTTOM FLOWLINE OF THE CREEK. SEE SHEET E-17 FOR CONTINUATION.*
9. *MAINTAIN THE EXISTING OVERHEAD ELECTRIC ALONG WITH WEST SIDE OF THE WRRF, AND THE UNDERGROUND FEED FROM WEST TO EAST WHILE THE PROPOSED PRIMARY IS BEING INSTALLED. COORDINATE WITH BENTONVILLE ELECTRIC TO REMOVE THESE PRIMARY FEEDS ONCE DE-ENERGIZED.*
10. *CONCRETE ENCASED SEGMENT INCLUDES TWO (2) 6" CONDUITS BETWEEN PMSW-SOUTH AND THE PROPOSED 600A JBP, AND ONE (1) 4" CONDUIT BETWEEN PMSW-SOUTH AND EXISTING JBP-227. MAINTAIN THE EXISTING 4" CONDUIT SEGMENT BETWEEN JBP-227 AND JBP-226.*
11. *DIRECT BURIAL SEGMENT INCLUDES ONE (1) 4" CONDUIT BETWEEN PMSW-SOUTH AND THE EXISTING 200A JBP-1099.*
12. *INSTALL TWO (2) 600A PRIMARY JUNCTION BOXES PROVIDED BY BENTONVILLE ELECTRIC. THESE JUNCTION BOXES WILL BE USED TO TRANSITION FROM CONCRETE ENCASED DUCTBANKS TO A DIRECTIONAL BORED SEGMENT REQUIRED TO ROUTE UNDER THE EXISTING 10' DEEP EFFLUENT CHANNEL. ROUTE THE CONDUITS 3' BENEATH THE BOTTOM OF THE EFFLUENT CHANNEL.*
13. *PROVIDE DIRECTIONAL BORING FOR CONDUIT SEGMENT BETWEEN THE JUNCTION BOXES. THE SEGMENT INCLUDES TWO (2) 6" CONDUITS AND ONE (1) 4" CONDUIT. THE 4" CONDUIT SHALL BE SPARE, TO BE USED ONLY IF THE EXISTING 4" CONDUIT AND CIRCUIT BETWEEN JBP-226 AND JBP-227 IS DAMAGED.*
14. *CONCRETE ENCASED SEGMENT INCLUDES TWO (2) 6" CONDUITS BETWEEN THE TRANSITION POINT FROM DIRECT BURIAL SOUTH OF JBP-226 AND THE PROPOSED 600A JUNCTION BOX. THE SEGMENT ALSO INCLUDES A 4" CONDUIT WHICH WILL BE SPARE, TO BE USED ONLY IF THE EXISTING 4" CONDUIT AND CIRCUIT BETWEEN JBP-226 AND JBP-227 IS DAMAGED.*

1"

ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS MATTHEW A. WEIR 2025.04.22 REGISTERED PROFESSIONAL ENGINEER No. 9686 BLACK & VEATCH

HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

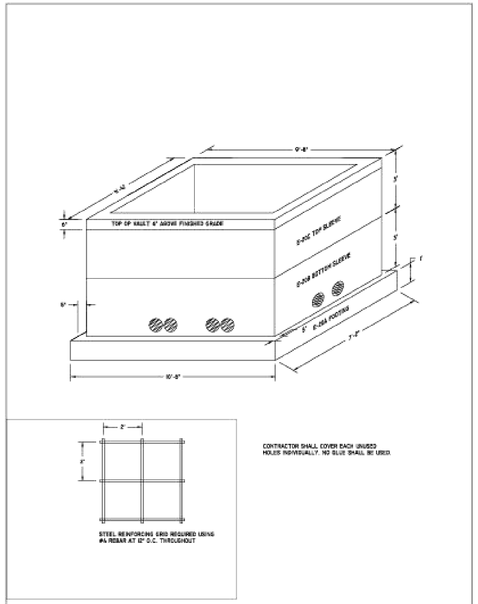
**BENTONVILLE ELECTRIC UTILITY PRIMARY ELECTRIC ROUTING AND COORDINATION ELECTRICAL PLAN**

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 1"=60'
DESIGNED BY: LSM
DRAWN BY: MAW
HWEI NO.: 2021037
FILENAME: E-13

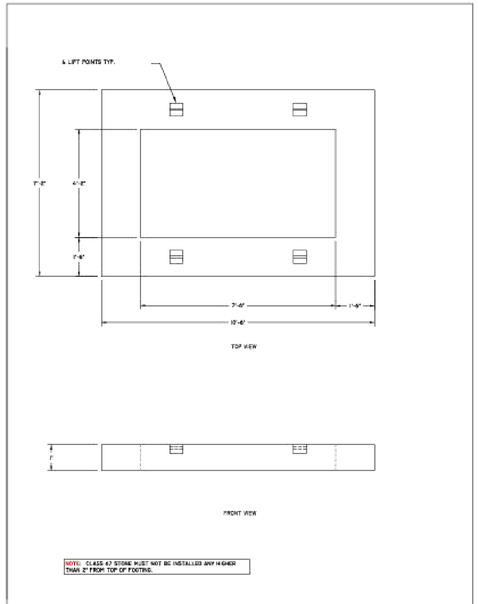
SHEET NO. E-13

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\E-13.DWG, 4/22/2025 10:11 AM, MATT WEIR, LAYOUT1



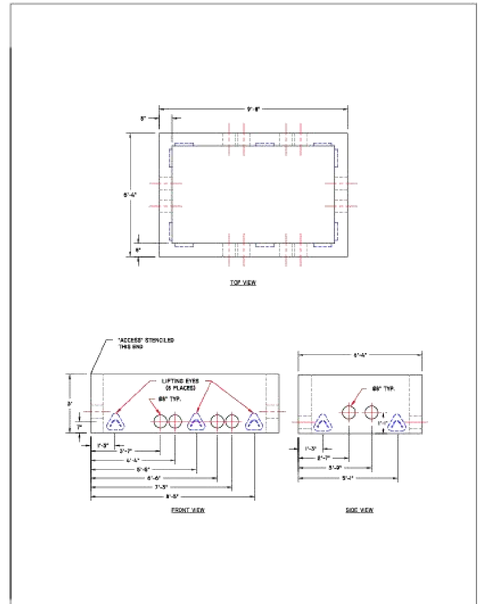

PADMOUNT SWITCHGEAR VAULT ASSEMBLY

DETAIL C NTS E-13



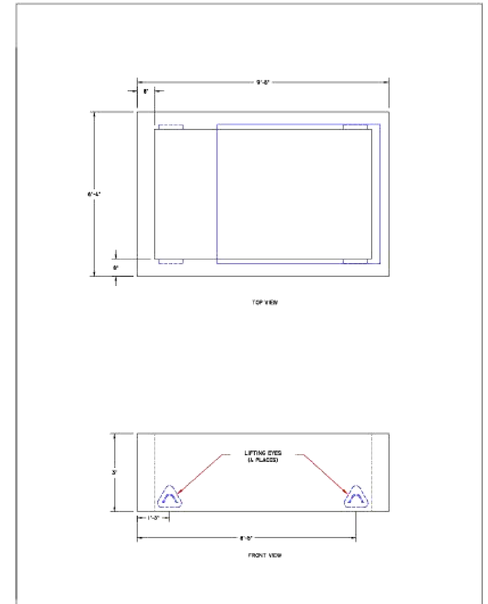

PADMOUNT SWITCHGEAR VAULT FOOTER

DETAIL D NTS E-13



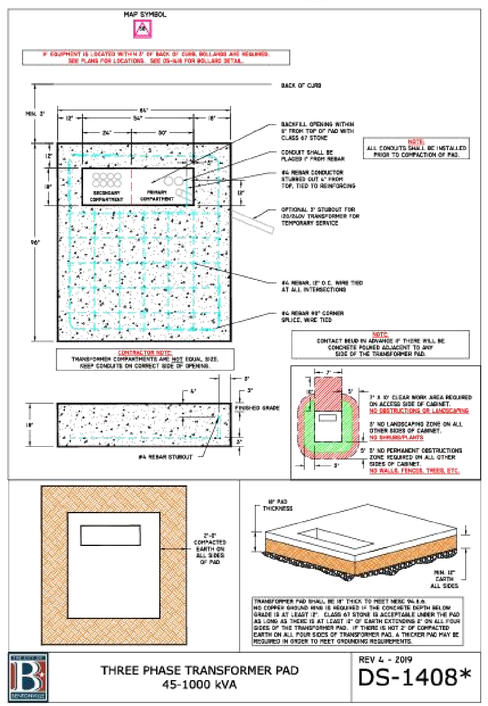

PADMOUNT SWITCHGEAR BOTTOM SLEEVE

DETAIL E NTS E-13




PADMOUNT SWITCHGEAR TOP SLEEVE

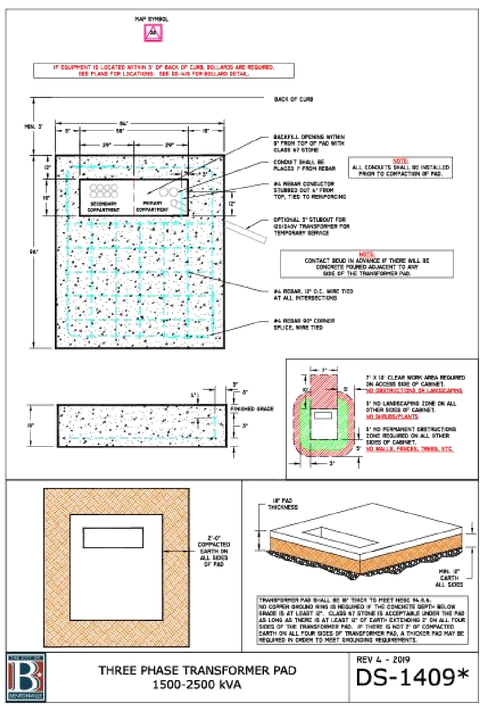
DETAIL F NTS E-13




THREE PHASE TRANSFORMER PAD 45-1000 kVA | REV 4 - 2019 | DS-1408*

1000KVA PAD DETAIL

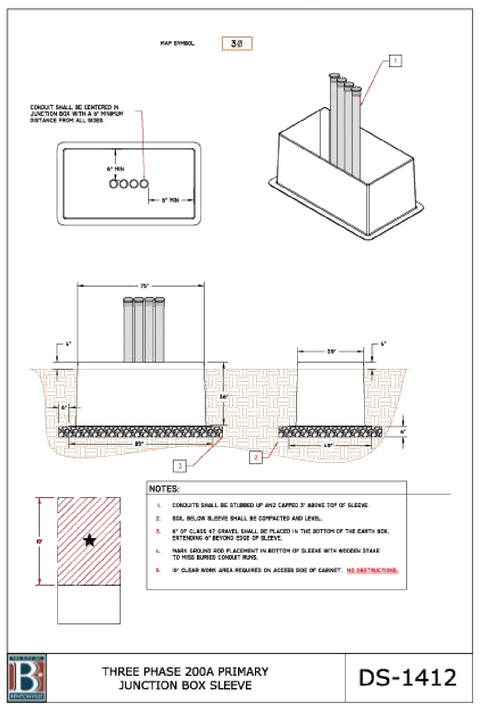
DETAIL G NTS E-13




THREE PHASE TRANSFORMER PAD 1500-2500 kVA | REV 4 - 2019 | DS-1409*

1500KVA PAD DETAIL

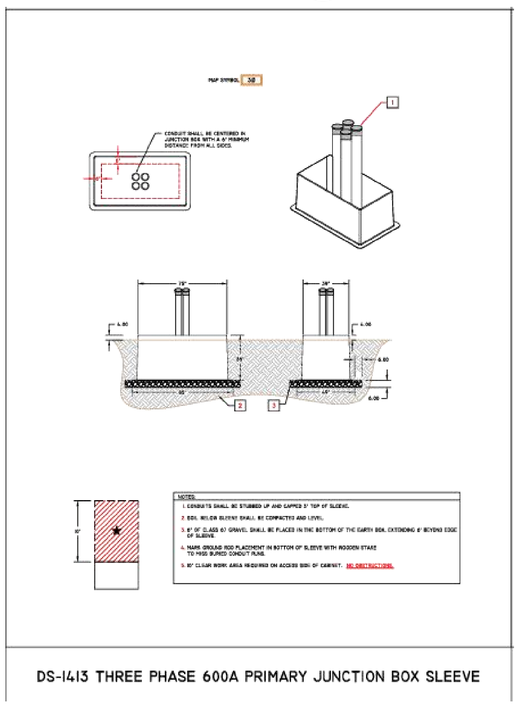
DETAIL H NTS E-13




THREE PHASE 200A PRIMARY JUNCTION BOX SLEEVE | DS-1412

200A PRIMARY JUNCTION BOX SLEEVE

DETAIL I NTS E-13




DS-1413 THREE PHASE 600A PRIMARY JUNCTION BOX SLEEVE

600A PRIMARY JUNCTION BOX SLEEVE

DETAIL J NTS E-13

ONE INCH AT FULL SIZE
IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS MATTHEW E. WEIR REGISTERED PROFESSIONAL ENGINEER No. 9686 L. SCOTT MORRIS

HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

CITY OF BENTONVILLE
PRIMARY ELECTRIC DISTRIBUTION
STANDARD ELECTRICAL DETAILS
FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: LSM
DRAWN BY: LSM
HWEI NO.: 2021037
FILENAME: E-14

SHEET NO. E-14

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\E-14.DWG, 4/22/2025 10:11 AM, MATT WEIR, LAYOUT1




WRRF SOUTH CIRCUIT UPGRADE PLAN

DETAIL K / NTS / E-13

KEYED NOTES:

1. EXISTING PAD MOUNTED SWITCH PMSW186, SERVING AS THE SOURCE OF THE SOUTH CIRCUIT TO THE WRRF.
2. PROVIDE AND INSTALL TRENCHING, RACEWAYS, AND BACKFILL FOR DIRECT BURIAL DUCTBANK. CONTRACTOR SHALL COORDINATE WITH BENTONVILLE ELECTRIC DEPARTMENT FOR MINOR ROUTE ADJUSTMENTS DUE TO INTERFERENCE WITH FRANCHISE UTILITIES OR OBSTRUCTIONS..
3. EXISTING 200A PRIMARY JUNCTION BOX (JBP 228) TO BE UPGRADED BY BENTONVILLE ELECTRIC TO 600A. THE CONTRACTOR SHALL INSTALL THE JUNCTION BOX AND RISER CONDUITS PER DETAIL.
4. PROVIDE DIRECTIONAL BORING FOR THE DUCTBANK SECTION BETWEEN JBP 228 AND THE PROPOSED PAD MOUNTED SWITCH PMSW SOUTH ON THE WRRF PROPERTY. THIS SEGMENT OF DIRECTIONAL BORING MUST TRANSITION FROM 48" BELOW FINISHED GRADE TO FIVE (5) FEET BELOW THE BOTTOM FLOWLINE OF THE CREEK.
5. SEE SHEET E-13 FOR CONTINUATION AND LOCATION OF THE PAD MOUNTED SWITCH PMSW-SOUTH FOR FINAL DUCTBANK TERMINATION OF THE SOUTH CIRCUIT.

CONTRACTOR RESPONSIBILITIES:

1. PROVIDE AND INSTALL RACEWAYS AND TRENCHING/BACKFILL FOR DIRECT BURIAL DUCTBANKS.
2. PROVIDE AND INSTALL RACEWAYS BY DIRECTIONAL BORING FOR ONE (1) LOCATION UNDER THE CREEK BED, ROADWAY, GREENWAY, AND PARKING LOT.
3. COORDINATE ALL ACTIVITIES WITH BENTONVILLE ELECTRIC DEPARTMENT ACCORDING TO THE PROJECT PHASING SCHEDULE.

BENTONVILLE ELECTRIC DEPARTMENT RESPONSIBILITIES:

1. PROVIDE AND INSTALL 15KV CABLE, BUSHINGS, AND FINAL TERMINATIONS AT JUNCTION BOXES AND PADMOUNT SWITCHGEAR.
2. DEMO EXISTING OVERHEAD LINES, POWER POLES, AND SWITCH ASSEMBLIES.
3. PROVIDE AND INSTALL JUNCTION BOX ASSEMBLIES ONTO THE CONTRACTOR INSTALLED RACEWAY STUB-UPS.

COORDINATION RESPONSIBILITIES:

1. CONTACT BENTONVILLE ELECTRIC UTILITY DEPARTMENT (BEUD) AT 479.271.3135 BEFORE PERFORMING ANY GRADING WITHIN 5' OF EXISTING OR PROPOSED POWER POLE LOCATIONS.
2. BEUD DESIGN LAYOUT DRAWING TAKES PRECEDENCE OVER ANY ELECTRIC INFORMATION SHOWN ON THE SITE UTILITY PLAN.
3. ELECTRIC FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF THE ELECTRIC SPECIFICATIONS FOUND ON THE WEBSITE. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THIS DOCUMENT.



PMSW186 LOOKING NORTH

PHOTO 58 / –



LOOKING SOUTH TO PMSW186

PHOTO 59 / –



LOOKING NORTH TO PEDESTRIAN XING

PHOTO 60 / –



LOOKING NORTH TO JBP228

PHOTO 61 / –



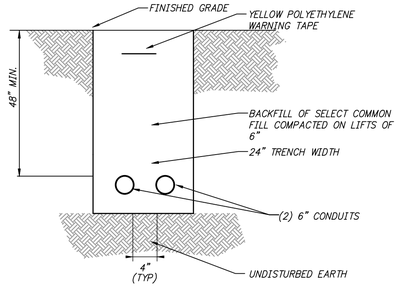
LOOKING NORTH TO WRRF

PHOTO 62 / –



LOOKING SOUTH FROM WRRF

PHOTO 63 / –




PRIMARY DIRECT BURIAL DUCTBANK

DETAIL A / NTS / –

1" ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM NO. 2 | 04/22/2025 |

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STATE OF ARKANSAS MATTHEW S. WEIR 15852 REGISTERED PROFESSIONAL ENGINEER No. 9508 SCOTT, ARKANSAS

HAWKINS WEIR ENGINEERS, INC.

BLACK & VEATCH

BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

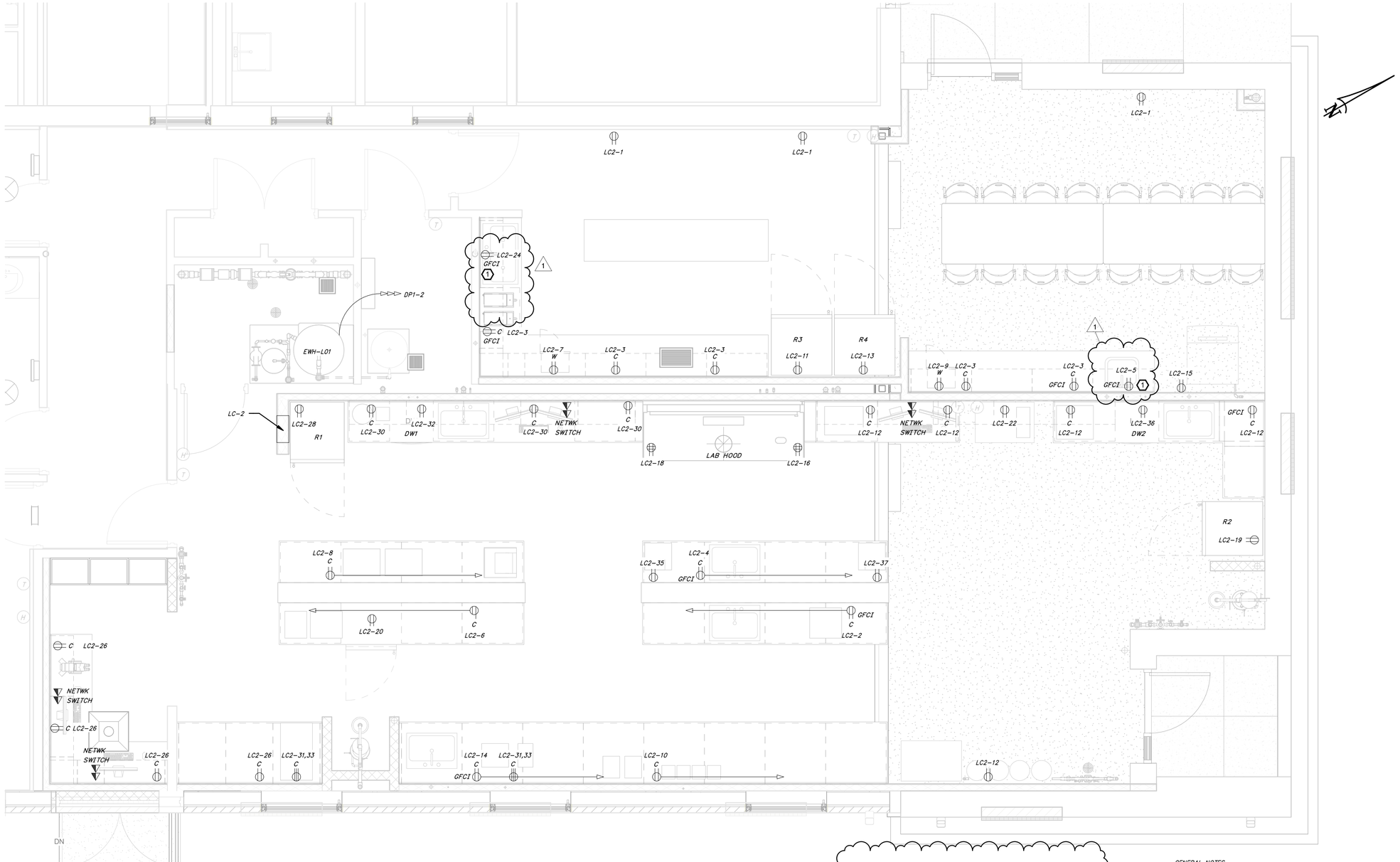
BENTONVILLE ELECTRIC UTILITY
PRIMARY ELECTRIC ROUTING AND COORDINATION
WRRF SOUTH CIRCUIT UPGRADE PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: LSM
DRAWN BY: LSM
HWEI NO.: 2021037
FILENAME: E-17

SHEET NO. E-17 ⚠

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\E-17.DWG, 4/22/2025 10:11 AM, MATT WEIR, LAYOUT1




DETAIL H
3/8" = 1'-0" EL-3

1

KEYED NOTES

1 PROVIDE AND INSTALL A SWITCH WITH EACH GARBAGE DISPOSAL MOUNTED AT COUNTER HEIGHT.

GENERAL NOTES

1. CABLE INSIDE THE WALLS AND CEILING MAY BE METAL-CLAD (MC) CABLE AND IS NOT REQUIRED TO BE INSIDE OF CONDUIT.
2. EXPOSED CONDUITS SHALL BE RIGID ALUMINUM (RAC).
3. CONDUITS EMBEDDED IN THE SLAB SHALL BE SCHEDULE 40 PVC (PVC40).
4. RECEPTACLES SHOWN WITH "C" DESIGNATION SHALL BE INSTALLED COUNTER HEIGHT.
5. RECEPTACLES SHOWN WITH "W" DESIGNATION SHALL BE INSTALLED IN THE WALL AT CABINET HEIGHT FOR USE WITH MICROWAVES AND OTHER DEVICED MOUNTED AT CABINET LEVEL.
6. RECEPTACLES SHOWN WITH NO LETTER DESIGNATION SHALL BE INSTALLED AT STANDARD HEIGHT ABOVE FINISHED FLOOR.

**BID DRAWINGS**
**MARCH 21, 2025**

1"
ONE INCH
AT FULL SIZE
IF NOT ONE INCH
SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 1 REVISED PER ADDENDUM 2 | 4/22/2025 |

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STATE OF ARKANSAS
L. SCOTT McGEHEE
No. 9686
REGISTERED PROFESSIONAL ENGINEER

HAWKINS WEIR ENGINEERS, INC.
BLACK & VEATCH

CITY OF BENTONVILLE ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

ADMINISTRATION BUILDING
PROPOSED POWER PLAN

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: 3/8" = 1'-0"
DESIGNED BY: WJL
DRAWN BY: DKS
HWEI NO.: 2021037
FILENAME:

SHEET NO.
EL-5

Autodesk Docs://410144 - Bentonville Water Resource Recovery Facility Improvements/WWRF21037-EL.rvt 4/25/2025 8:20:57 AM / DKS / ADMINISTRATION BUILDING

## EXISTING PANEL LC

| CKT # | DESCRIPTION | WIRE (GND) | CB | CONDUIT | LOAD AMPS PHASE A CONNECTED | LOAD AMPS PHASE A DEMAND | LOAD AMPS PHASE B CONNECTED | LOAD AMPS PHASE B DEMAND | CONDUIT | CB | WIRE (GND) | DESCRIPTION | CKT # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 7.5 | 6 | | | | | | SPACE | 2 |
| 3 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | | | 7.5 | 6 | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 4 |
| 5 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 7.5 | 6 | | | 3/4" | 20 | #12 (#12) | ? – | 6 |
| 7 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | | | 7.5 | 6 | 3/4" | 20 | #12 (#12) | ? – | 8 |
| 9 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 7.5 | 6 | | | | | | SPACE – | 10 |
| 11 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | | | 7.5 | 6 | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 12 |
| 13 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 7.5 | 6 | | | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 14 |
| 1 15 | CONTROL PANEL TCP–L01 | #12 (#12) | 20 | 3/4" | | | – | – | 3/4" | 20 | #12 (#12) | WALL HEATER WH–A01 | 16 1 |
| 1 17 | CONTROL PANEL ECP–L01 | #12 (#12) | 20 | 3/4" | – | – | 6 | 6 | " | " | " | " | 18 |
| 1 19 | SPARE – | | 20 | | 6 | 6 | | | 3/4" | 20 | #12 (#12) | WALL HEATER WH–A02 | 20 1 |
| 1 21 | SPARE – | | 20 | | – | – | | | " | " | " | " | 22 |
| 23 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 6 | 6 | | | | | | SPACE – | 24 |
| 1 25 | SPARE – | | 20 | | – | – | 7.5 | 6 | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 26 |
| 27 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | 7.5 | 6 | | | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 28 |
| 29 | RECEPTACLES – | #12 (#12) | 20 | 3/4" | | | 7.5 | 6 | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 30 |
| 1 31 | SPARE – | | 20 | | 7.5 | 6 | | | 3/4" | 20 | #12 (#12) | EF FOR AA UNIT – | 32 |
| 1 33 | SPARE – | | 20 | | – | – | 5 | 5 | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 34 |
| 1 35 | SPARE – | | 20 | | – | – | – | – | 3/4" | 20 | #12 (#12) | RECEPTACLES – | 36 |
| 1 37 | SPARE – | | 20 | | – | – | 102 | 78 | 1 1/2" | 150 | #1/0 (#6) | PANEL LC2 FEEDER | 38 |
| 39 | ? – | | 20 | | – | – | – | – | " | " | " | " | 40 |
| 41 | " | " | " | " | – | – | – | – | " | " | " | " | 42 |
| | | | | TOTAL CONNECTED | 129 | 107 | | | | | | | |
| | | | | TOTAL DEMAND | 197 | | 167 | | | | | | |
| | | | | | | 161 | | 133 | | | | | |

TYPE: SQUARE D NQOD LIGHTING AND APPLIANCE
VOLTS: 120/240, SINGLE PHASE, THREE WIRE
MAIN: 225 AMP MAIN BREAKER
BUS: 225 AMP
RATING: 10 KAIC
MOUNTING: SURFACE
ENCLOSURE RATING: NEMA 1
BRANCH BREAKERS: BOLT–ON

CONNECTED KVA: 43
DEMAND KVA: 35
DESIGN KVA: 50

ADMIN/LAB BUILDING
EXISTING PANEL LC SCHEDULE

DETAIL N
NTS –

## EXISTING PANEL LC 1

| CKT # | DESCRIPTION | WIRE (GND) | CB | CONDUIT | LOAD AMPS PHASE A CONNECTED | LOAD AMPS PHASE A DEMAND | LOAD AMPS PHASE B CONNECTED | LOAD AMPS PHASE B DEMAND | CONDUIT | CB | WIRE (GND) | DESCRIPTION | CKT # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LIGHTS – | – (–) | 20 | – | 5 | 5 | | | 3/4" | 20 | #12 (#12) | LIGHTS – | 2 |
| 3 | LIGHTS – | – (–) | 20 | – | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LIGHTS – | 4 |
| 5 | LIGHTS – | – (–) | 20 | – | 5 | 5 | | | 3/4" | 20 | #12 (#12) | LIGHTS – | 6 |
| 7 | LIGHTS – | – (–) | 20 | – | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LIGHTS – | 8 |
| 9 | SPACE – | | | | – | – | | | 3/4" | 20 | #12 (#12) | LIGHTS – | 10 |
| 11 | ? – | | | | – | – | | | 3/4" | 20 | #12 (#12) | ? – | 12 |
| 13 | ? – | | | | – | – | | | 3/4" | 20 | #12 (#12) | ? – | 14 |
| 1 15 | ? – | (–) | | | – | – | | | 3/4" | 20 | #12 (#12) | ? – | 16 |
| 2 17 | EXHAUST FAN EF–L02 | #12 (#12) | 20 | 3/4" | 4 | 4 | | | | | | LIGHTS – | 18 |
| 1 19 | " | " | " | " | | | 4 | 4 | 3/4" | 20 | #12 (#12) | LIGHTS – | 20 |
| 2 21 | EXHAUST FAN EF–L03 | #12 (#12) | 20 | 3/4" | 4 | 4 | | | 3/4" | 20 | #12 (#12) | LIGHTS – | 22 |
| 23 | " | " | " | " | | | 4 | 4 | 3/4" | 20 | #12 (#12) | LIGHTS – | 24 |
| 2 25 | EXHAUST FAN EF–L04 | #12 (#12) | 20 | 3/4" | 3 | 3 | | | 3/4" | 20 | #12 (#12) | LIGHTS – | 26 |
| 27 | " | " | " | " | | | 3 | 3 | | | | SPACE – | 28 |
| 2 29 | EXHAUST FAN EF–L05 | #12 (#12) | 20 | 3/4" | 4 | 4 | | | | | | SPACE – | 30 |
| 31 | " | " | " | " | | | 4 | 4 | | | | SPACE – | 32 |
| 2 33 | EXHAUST FAN EF–L06 | #12 (#12) | 20 | 3/4" | 4 | 4 | | | | | | SPACE – | 34 |
| 1 35 | " | " | " | " | | | 4 | 4 | | | | SPACE – | 36 |
| 37 | SPACE – | | | | – | – | | | | | | SPACE – | 38 |
| 39 | SPACE – | | | | – | – | | | | | | SPACE – | 40 |
| 41 | SPACE – | | | | – | – | | | | | | SPACE – | 42 |
| | | | | TOTAL CONNECTED | 59 | 59 | 49 | 49 | | | | | |
| | | | | TOTAL DEMAND | | | | | | | | | |

TYPE: SQUARE D NQOD LIGHTING AND APPLIANCE
VOLTS: 120/240, SINGLE PHASE, THREE WIRE
MAIN: MLO
BUS: 225 AMP
RATING: 10 KAIC
MOUNTING: SURFACE
ENCLOSURE RATING: NEMA 1
BRANCH BREAKERS: BOLT–ON

CONNECTED KVA: 13
DEMAND KVA: 13
DESIGN KVA: 50

ADMIN/LAB BUILDING
EXISTING PANEL LC 1 SCHEDULE

DETAIL O
NTS –

## PROPOSED PANEL LC 2 (3)

| CKT # | DESCRIPTION | WIRE (GND) | CB | CONDUIT | LOAD AMPS PHASE A CONNECTED | LOAD AMPS PHASE A DEMAND | LOAD AMPS PHASE B CONNECTED | LOAD AMPS PHASE B DEMAND | CONDUIT | CB | WIRE (GND) | DESCRIPTION | CKT # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BREAK ROOM LGTS & RECEPTS | #12 (#12) | 20 | 3/4" | 6 | 6 | | | | | | N ISLAND E SIDE PLUGSTRIP | 2 |
| 3 | BREAK ROOM COUNTER RECEPS | #12 (#12) | 20 | 3/4" | | | 7.5 | 0 | 3/4" | 20 | #12 (#12) | N ISLAND W SIDE PLUGSTRIP | 4 |
| 5 | DISPOSAL – | #12 (#12) | 20 | 3/4" | 10 | 0 | | | 3/4" | 20 | #12 (#12) | S ISLAND E SIDE PLUGSTRIP | 6 |
| 7 | BREAK ROOM MICROWAVE 1 | #12 (#12) | 20 | 3/4" | | | 10 | 10 | 3/4" | 20 | #12 (#12) | S ISLAND W SIDE PLUGSTRIP | 8 |
| 9 | BREAK ROOM MICROWAVE 2 | #12 (#12) | 20 | 3/4" | 10 | 10 | | | 3/4" | 20 | #12 (#12) | NE WALL PLUGSTRIP | 10 |
| 11 | BREAK ROOM FRIDGE R3 | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LAB NORTH AREA RECEPTACLES | 12 |
| 13 | BREAK ROOM FRIDGE R4 | #12 (#12) | 20 | 3/4" | 5 | 5 | | | 3/4" | 20 | #12 (#12) | SE WALL PLUGSTRIP | 14 |
| 15 | BREAK ROOM ICE MACHINE | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | FUME HOOD QUAD N RECEPTACLES | 16 |
| 17 | LAB ROOM LIGHTS | #12 (#12) | 20 | 3/4" | 6 | 6 | | | 3/4" | 20 | #12 (#12) | FUME HOOD QUAD S RECEPTACLES | 18 |
| 19 | LAB ROOM FRIDGE R2 | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | INCUBATOR – | 20 |
| 21 | HOT WATER CIRC CP–L01 | #12 (#12) | 20 | 3/4" | 1 | 1 | | | 3/4" | 20 | #12 (#12) | SCALE & SPECT RECEPTACLE | 22 |
| 23 | MUFFLE FURNACE – | #12 (#12) | 20 | 3/4" | | | 10 | 10 | 3/4" | 20 | #12 (#12) | DISPOSAL – | 24 |
| 25 | " | " | " | " | – | – | | | 3/4" | 20 | #12 (#12) | LAB SOUTH AREA RECEPTACLES | 26 |
| 27 | DISTILLER – | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LAB ROOM REFRIGERATOR R1 | 28 |
| 29 | " | " | " | " | 5 | 5 | | | 3/4" | 20 | #12 (#12) | LAB ROOM SW RECEPTACLES | 30 |
| 31 | AUTOCLAVE – | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LAB ROOM DISHWASHER DW1 | 32 |
| 33 | " | " | " | " | 5 | 5 | | | 3/4" | 20 | #12 (#12) | WATER FOUNT EAST HEWC–1 | 34 |
| 35 | VACUUM PUMP 1 – | #12 (#12) | 20 | 3/4" | | | 5 | 5 | 3/4" | 20 | #12 (#12) | LAB ROOM DISHWASHER DW2 | 36 |
| 37 | VACUUM PUMP 2 – | #12 (#12) | 20 | 3/4" | – | – | | | 3/4" | 20 | #12 (#12) | SPARE – | 38 |
| 39 | AMMONIA UNIT | #12 (#12) | 20 | 3/4" | | | – | – | 3/4" | 20 | #12 (#12) | SPARE – | 40 |
| 41 | " | " | " | " | – | – | | | 3/4" | 20 | #12 (#12) | SPARE – | 42 |
| | | | | TOTAL CONNECTED | 101.5 | | 129 | | | | | | |
| | | | | TOTAL DEMAND | | 67.5 | | 107 | | | | | |

TYPE: SQUARE D NQOD LIGHTING AND APPLIANCE
VOLTS: 120/240, SINGLE PHASE, THREE WIRE
MAIN: 225 AMP MAIN BREAKER
BUS: 225 AMP
RATING: 10 KAIC
MOUNTING: FLUSH MOUNT
ENCLOSURE RATING: NEMA 1
BRANCH BREAKERS: BOLT–ON

CONNECTED KVA: 28
DEMAND KVA: 22
DESIGN KVA: 28

ADMIN/LAB BUILDING
PROPOSED PANEL LC 2 SCHEDULE

DETAIL P
NTS –

KEYED NOTES:

1. PROVIDE NINE (9) SQUARE D QO1020 SPARE 20 AMP BREAKERS IN EXISTING PANEL LC FOR HVAC CONTROL AND FUTURE USE. THE LABELS SHOWN ON THE PANEL SCHEDULE ARE NOT VERIFIED. THE CONTRACTOR SHALL DETERMINE THE PURPOSE AND LOCATION OF EACH CIRCUIT AND PROVIDE A CORRECT SCHEDULE. PROVIDE AND INSTALL ONE (1) SQUARE D QO2150 CIRCUIT BREAKER TO SUBFEED PANEL LC2 (FOUR SPACES REQUIRED). PROVIDE AND INSTALL TWO (2) SQUARE D QO2020 CIRCUIT BREAKERS FOR THE PROPOSED WALL HEATER CIRCUITS.
2. PROVIDE AND INSTALL FIVE (5) SQUARE D QO2020 2 POLE 20 AMP BREAKERS FOR EXHAUST FANS IN EXISTING PANEL LC 1. THE LABELS SHOWN ON THE PANEL SCHEDULE ARE NOT VERIFIED. THE CONTRACTOR SHALL DETERMINE THE PURPOSE AND LOCATION OF EACH CIRCUIT AND PROVIDE A CORRECT SCHEDULE.
3. PROPOSED PANEL LC2 WILL POWER MOST CIRCUITS INSTALLED DURING THE ADMIN/LAB EXPANSION AND RENOVATION. SOME CIRCUITS IN PANELS LC AND LC1 WILL BE DISCONNECTED.

1"
ONE INCH AT FULL SIZE IF NOT ONE INCH SCALE ACCORDINGLY

| REVISION | DATE |
|---|---|
| 2 REVISED PER ADDENDUM 2 | 4/22/2025 |

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STATE OF ARKANSAS MATTHEW S. WEIR REGISTERED PROFESSIONAL ENGINEER No. 9686 4/22/25

HAWKINS WEIR ENGINEERS, INC.
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BENTONVILLE, ARKANSAS
BENTONVILLE WATER RESOURCE RECOVERY FACILITY IMPROVEMENTS

ADMINISTRATION BUILDING
BREAKER PANEL SCHEDULES II

FOR: BENTONVILLE WASTEWATER UTILITIES

DATE: MARCH 2025
SCALE: AS SHOWN
DESIGNED BY: LSM
DRAWN BY: LSM
HWEI NO.: 2021037
FILENAME: EL–09

SHEET NO.
EL–9

Z:\21\2021037 BENTONVILLE WWTP CAPACITY STUDY\DRAWINGS\CONST PLANS\EL–09.DWG, 4/22/2025 10:11 AM, MATT WEIR, LAYOUT1

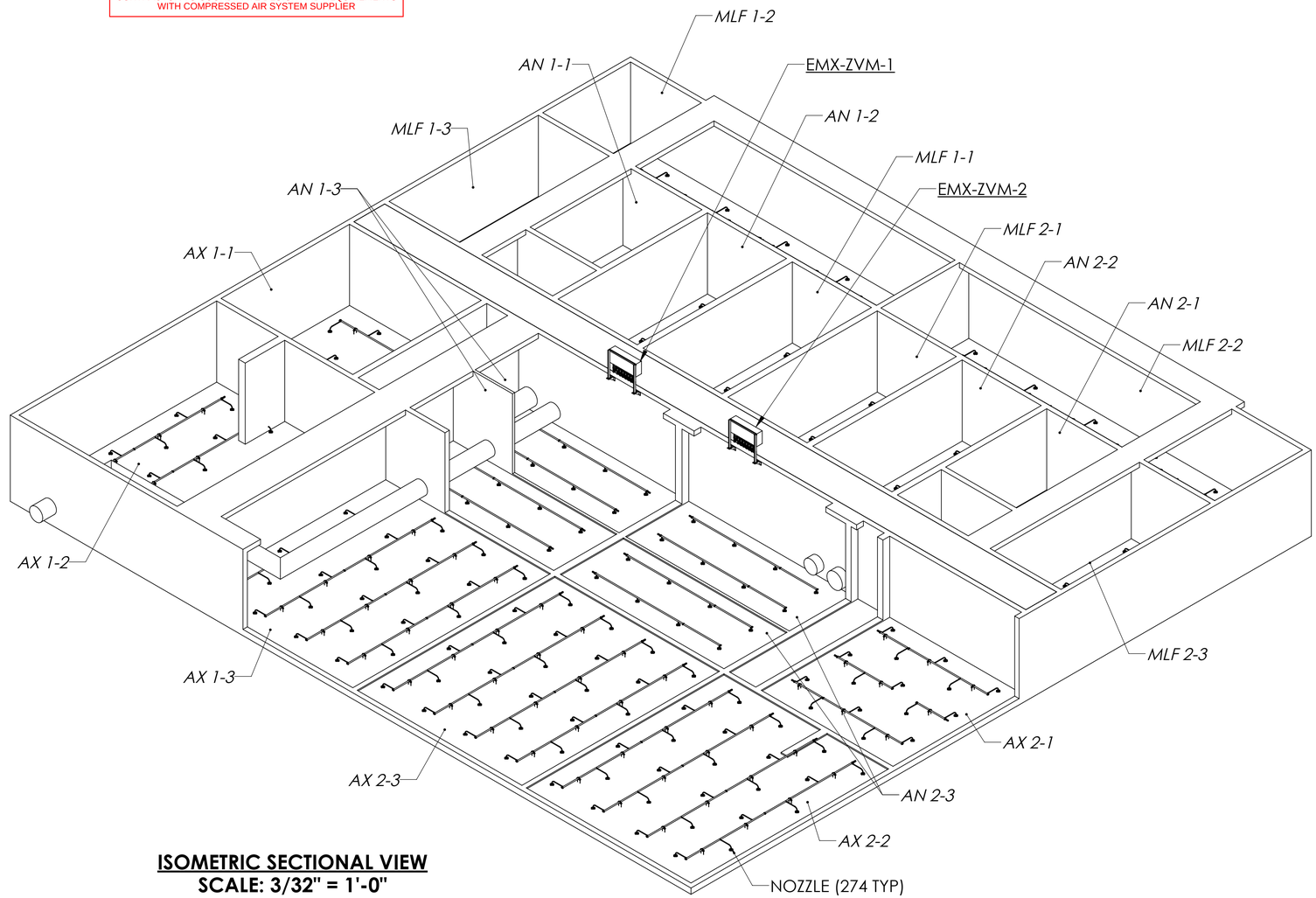
# BENTONVILLE, AR - BNR DESIGN
# BIOMIX COMPRESSED GAS MIXING SYSTEM WITH BIOMIX-DC

PRELIMINARY - NOT FOR CONSTRUCTION

FOR INFORMATION PURPOSES ONLY
CONTRACTOR TO COORDINATE DESIGN AND REQUIREMENTS WITH COMPRESSED AIR SYSTEM SUPPLIER

## INSTALLATION & OPERATION NOTES:

1. TO ADEQUATELY PROTECT AIR VALVES IN VALVE MODULE(S), REMOVE ALL DIRT, SAND, & DEBRIS FROM COMPRESSED AIR PIPING PRIOR TO INSTALLATION AND FOLLOWING ASSEMBLY. FLUSH WITH AIR AND/OR WATER THOROUGHLY.
2. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS AND CLEARANCES OF INSTALLED EQUIPMENT FOR CODE COMPLIANCE AND ADHERENCE TO PROJECT SPECIFIC REQUIREMENTS PRIOR TO EQUIPMENT RELEASE.
3. FIELD MODIFICATION TO HEADER, DROP LEG, OR NOZZLE IS NOT REQUIRED OR PERMITTED. COORDINATE WITH ENVIROMIX REGARDING ANY PROPOSED DEVIATIONS FROM THESE DRAWINGS.
4. LAYOUT HEADER(S) IN ACCORDANCE WITH PLAN DIMENSIONS. FIELD LOCATE NOZZLES AND ANCHORS USING ASSEMBLED HEADER TO INSURE DROP LEGS ARE INSTALLED AS THEY LAY. DO NOT PRE-DRILL ANCHORS BASED ON FABRICATED DIMENSIONS.
5. DRILL AND INSTALL ALL THREADED ROD VERTICAL WITH EPOXY ADHESIVE (EPOXY BY OTHERS UNLESS OTHERWISE STATED).
6. ALL HEADER SUPPLY PIPES SHALL BE LEVEL OR SLOPING DOWN FROM THE VALVE MODULE TO THE HEADERS UNLESS SHOWN OTHERWISE HEREIN.
7. ROUTE ALL HEADER SUPPLY PIPES BELOW THE NORMAL MINIMUM WATER SURFACE ELEVATION WHEN POSSIBLE.
8. APPLY PIPE TAPE AND THREAD COMPOUND TO ALL THREADED PIPING CONNECTIONS.
9. DO NOT INTRODUCE CONSTRUCTION DEBRIS INTO THE COMPRESSED AIR PIPING SYSTEM.
10. IF VALVE MODULE(S) AND COMPRESSED AIR ARE NOT ONLINE AND TANK MUST BE PUT BACK INTO SERVICE, PRIOR TO FILLING TANK WITH PROCESS LIQUID, ALL HEADERS, NOZZLES, AND HEADER SUPPLY PIPING SHALL BE INSTALLED. HEADER SUPPLY PIPING SHALL BE INSTALLED TO THE ISOLATION VALVES AND THE ISOLATION VALVES SHALL BE CLOSED. HEADER SUPPLY PIPING AND HEADERS MUST BE FLUSHED WITH COMPRESSED AIR FOR ONE (1) MINUTE ONCE (1) EVERY TWO (2) WEEKS MINIMUM UNTIL THE MIXING SYSTEM IS COMMISSIONED.
11. MIXING SYSTEM SHALL BE ON (ENABLED AND MIXING) PRIOR TO FILLING WITH PROCESS LIQUID AND/OR ADDING ADDITIONAL LIQUID TO A PARTIALLY FULLY TANK AND REMAIN ON AS A NORMAL OPERATING PROCEDURE. SYSTEM SHOULD BE DISABLED FOR ONLY SHORT DURATIONS FOR ROUTINE MAINTENANCE OR WHEN TANK IS EMPTY.
12. IF OFF CYCLING IS TO OCCUR FOR MORE THAN 24 HOURS, REFER TO O&M MANUAL FOR OFF CYCLING OPERATION.
13. REFERENCE SCOPE AND P&ID FOR ENVIROMIX SCOPE OF SUPPLY.
14. COLD WEATHER STORAGE FOR INSTALLED HEADERS AND HORIZONTAL RUN HEADER SUPPLY PIPING NOT ONLINE: FILL TANK(S) WITH CLEAN WATER OR PROCESS LIQUID 3-FT MIN. ABOVE ALL HEADERS AND HORIZONTAL PIPE RUNS OF HEADER SUPPLY PIPING. BRACE ALL VERTICAL HEADER SUPPLY PIPES AT THE LIQUID SURFACE WITH STYROFOAM TO PREVENT DAMAGE FROM THE ICE. WHEN ICE FORMS AT THE SURFACE, DO NOT DRAIN UNTIL ALL ICE HAS MELTED.
15. A SPECIFIC VALVE IS ASSIGNED TO EACH HEADER AS LABELED IN PLAN VIEW. VALVE ASSIGNMENTS MAY BE CHANGED ONLY WITH EMX APPROVAL.




**ISOMETRIC SECTIONAL VIEW**
**SCALE: 3/32" = 1'-0"**

| CURRENT STATUS | NAME | DATE |
|---|---|---|
| PRELIMINARY | | |
| DRAWN | JER | 12/20/2023 |
| CHECKED | NMT | 12/20/2023 |
| ENGINEER | W. KING | |

| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | PRELIMINARY | JER | 12/20/2023 |
| B | PRELIMINARY | WV | 2/8/2024 |
| C | PRELIMINARY | WV | 4/1/2024 |

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MATERIAL: 304L SS
QUANTITY: N/A

EnviroMix

PROJECT # N/A
BENTONVILLE AR - BNR DESIGN BIOMIX COMPRESSED GAS MIXING SYSTEM WITH BIOMIX-DC
BENTONVILLE, AR

COMMENTS

ITEM: MECHANICAL
SHEET SCALE: 1:128
0FT 1FT 2FT
This bar measures 2" when printed full scale.

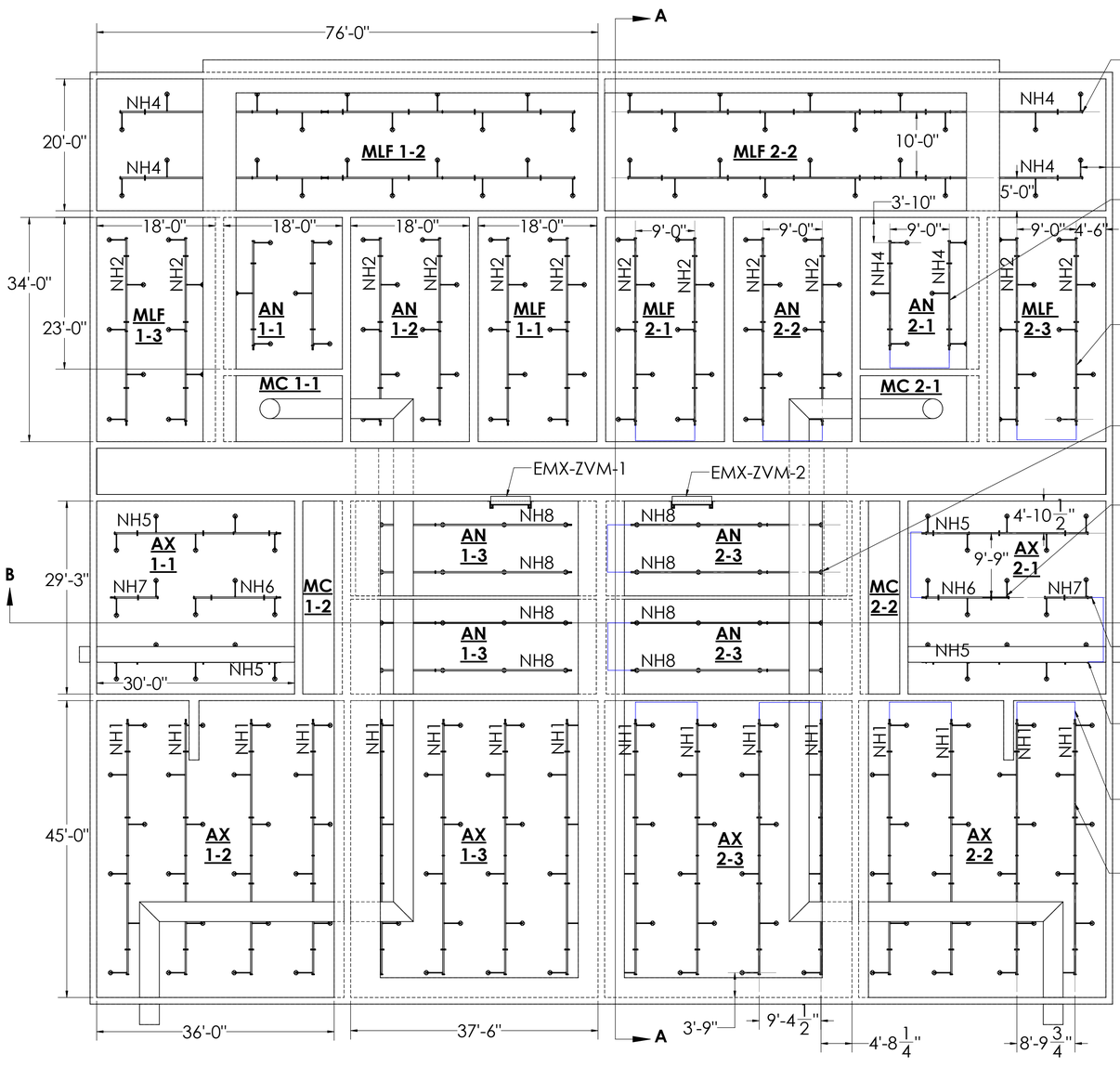
4/1/2024

REV: C
SHEET: P1 OF 6

NOTES:
1. EMX MIXING EQUIPMENT LOCATIONS CAN BE ADJUSTED 6" TO AVOID IN TANK OBSTRUCTIONS. FOR LARGER DEVIATIONS, CONSULT ENVIROMIX.
2. ALL NOZZLES ON A GIVEN HEADER (AND/OR SHARING THE SAME HEADER SUPPLY PIPE) TO BE INSTALLED LEVEL WITHIN 1/2" ELEVATION OF EACH OTHER. SUBMIT LEVEL DOCUMENTATION TO EMX AT TIME OF STARTUP.
4. V### CORRELATES HEADER WITH HEADER SUPPLY PIPE AND VALVE. REFERENCE PANEL DETAIL ON SHEET P9.
5. FLUSH ALL PIPING THOROUGHLY WITH AIR OR WATER PRIOR TO INSTALLATION.
6. APPLY PIPE TAPE AND THREAD COMPOUND TO ALL THREADED PIPING CONNECTIONS.
7. DO NOT INTRODUCE CONSTRUCTION DEBRIS TO THE COMPRESSED AIR PIPING SYSTEM.
8. REFERENCE ADDITIONAL NOTES ON SHEET P1 AND THE P&ID.

PRELIMINARY - NOT FOR CONSTRUCTION

FOR INFORMATION PURPOSES ONLY
CONTRACTOR TO COORDINATE DESIGN AND REQUIREMENTS WITH COMPRESSED AIR SYSTEM SUPPLIER




HEADER NO.4 (NH4):
11 NOZZLES TYP PER HEADER
QTY = 4

HEADER NO.3 (NH3):
3 NOZZLES TYP PER HEADER
QTY = 4

HEADER NO.2 (NH2):
5 NOZZLES TYP PER HEADER
QTY = 12

HEADER NO.8 (NH8):
4 NOZZLES TYP PER HEADER
QTY = 8

HEADER NO.6 (NH6):
3 NOZZLES TYP PER HEADER
QTY = 2

HEADER NO.7 (NH7):
2 NOZZLES TYP PER HEADER
QTY = 2

HEADER NO.5 (NH5):
5 NOZZLES TYP PER HEADER
QTY = 4

JOIN HEADERS LIKE SHOWN WITH PROVIDED PIPE TO SHARE SINGLE HEADER SUPPLY PIPE

HEADER NO.1 (NH1):
6 NOZZLES TYP PER HEADER
QTY = 16

**PLAN VIEW**
**SCALE: 3/32" = 1'-0"**

| CURRENT STATUS | NAME | DATE |
|---|---|---|
| PRELIMINARY | | |
| DRAWN | JER | 12/20/2023 |
| CHECKED | NMT | 12/20/2023 |
| ENGINEER | W. KING | |

| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | PRELIMINARY | JER | 12/20/2023 |
| B | PRELIMINARY | WV | 2/8/2024 |
| C | PRELIMINARY | WV | 4/1/2024 |


**PROPRIETARY AND CONFIDENTIAL**
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**MATERIAL**
304L SS

**QUANTITY**
N/A

EnviroMix

**PROJECT #** *N/A*
**BENTONVILLE AR - BNR DESIGN BIOMIX COMPRESSED GAS MIXING SYSTEM WITH BIOMIX-DC**
BENTONVILLE, AR

**COMMENTS**

**ITEM**
**MECHANICAL**

**SHEET SCALE**
**1:128**

0FT 1FT 2FT
This bar measures 2" when printed full scale.

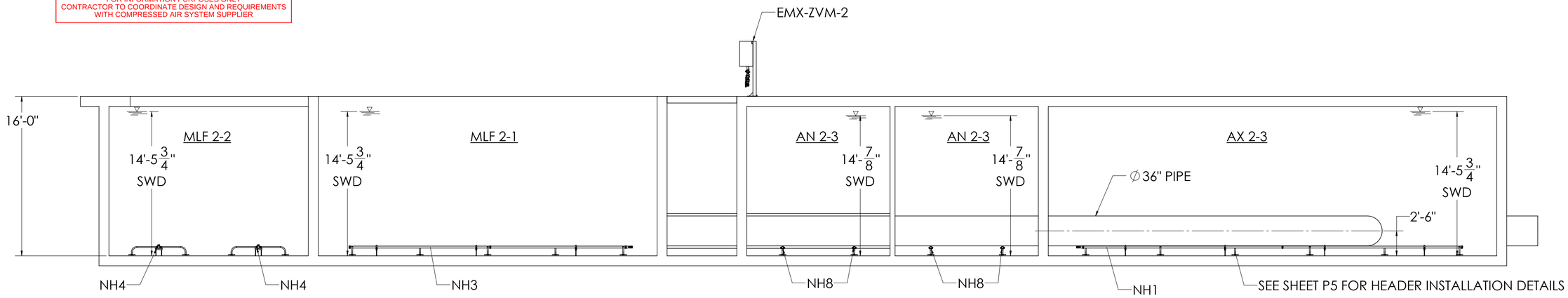
4/1/2024

**REV**
**C**

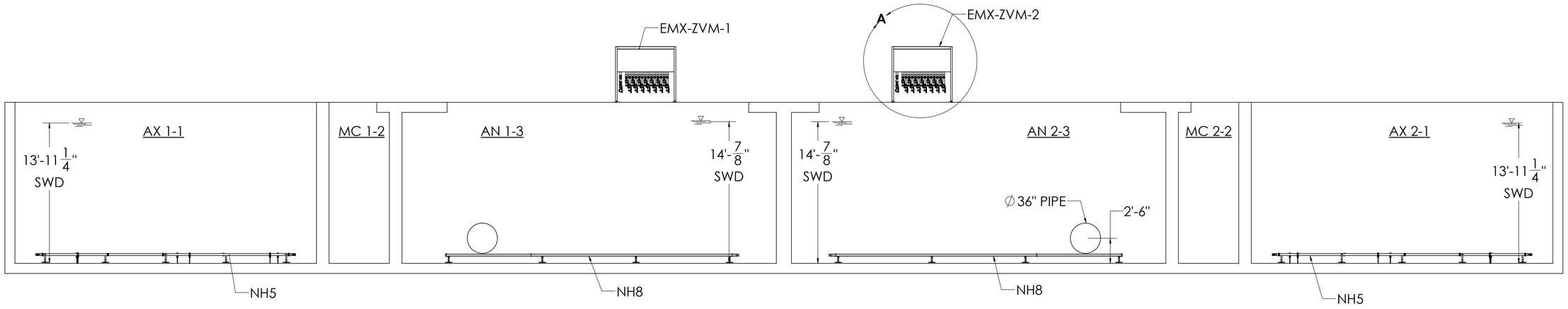
**SHEET**
**P2 OF 6**

PRELIMINARY - NOT FOR CONSTRUCTION

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CONTRACTOR TO COORDINATE DESIGN AND REQUIREMENTS WITH COMPRESSED AIR SYSTEM SUPPLIER




**SECTION A-A**
**SCALE: 3/16" = 1'-0"**




**SECTION B-B**
**SCALE: 3/16" = 1'-0"**

| CURRENT STATUS | NAME | DATE |
|---|---|---|
| PRELIMINARY | | |
| DRAWN | JER | 12/20/2023 |
| CHECKED | NMT | 12/20/2023 |
| ENGINEER | W. KING | |

| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | PRELIMINARY | JER | 12/20/2023 |
| B | PRELIMINARY | WV | 2/8/2024 |
| C | PRELIMINARY | WV | 4/1/2024 |

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**MATERIAL**
304L SS

**QUANTITY**
N/A

EnviroMix

**PROJECT #** *N/A*
**BENTONVILLE AR - BNR DESIGN BIOMIX COMPRESSED GAS MIXING SYSTEM WITH BIOMIX-DC**
BENTONVILLE, AR

**COMMENTS**

**ITEM**
**MECHANICAL**

**SHEET SCALE**
**1:64**
0FT 1FT 2FT
This bar measures 2" when printed full scale.

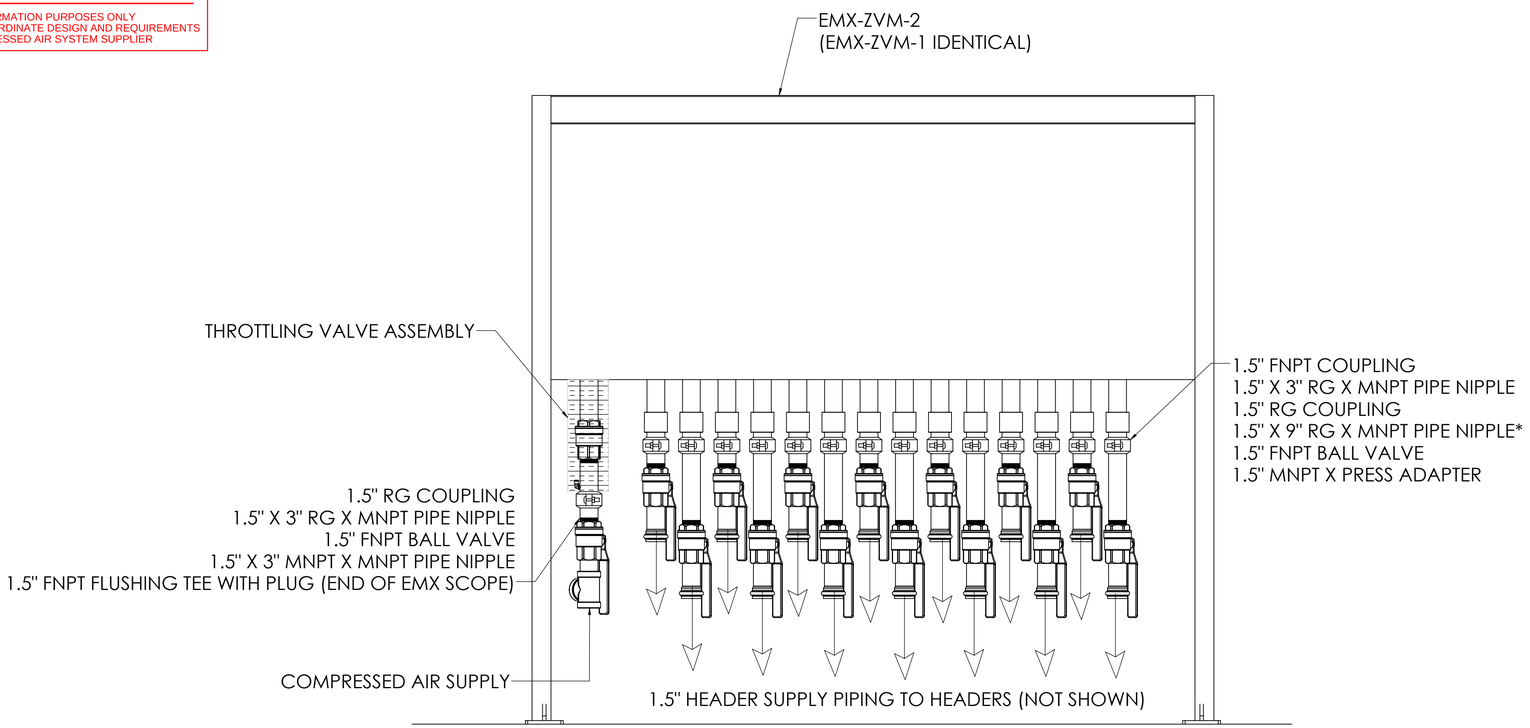
4/1/2024

**REV**
**C**

**SHEET**
**P3 OF 6**

PRELIMINARY - NOT FOR CONSTRUCTION

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CONTRACTOR TO COORDINATE DESIGN AND REQUIREMENTS WITH COMPRESSED AIR SYSTEM SUPPLIER




**DETAIL A**
**SCALE: 1'-1/2" = 1'-0"**

| CURRENT STATUS | NAME | DATE |
|---|---|---|
| PRELIMINARY | | |
| DRAWN | JER | 12/20/2023 |
| CHECKED | NMT | 12/20/2023 |
| ENGINEER | W. KING | |

| REV | DESCRIPTION | BY | DATE |
|---|---|---|---|
| A | PRELIMINARY | JER | 12/20/2023 |
| B | PRELIMINARY | WV | 2/8/2024 |
| C | PRELIMINARY | WV | 4/1/2024 |

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**MATERIAL**
304L SS

**QUANTITY**
N/A

EnviroMix

PROJECT # *N/A*
**BENTONVILLE AR - BNR DESIGN**
**BIOMIX COMPRESSED GAS MIXING SYSTEM WITH BIOMIX-DC**
BENTONVILLE, AR

**COMMENTS**

**ITEM**
**MECHANICAL**

**SHEET SCALE**
**1:64**

0FT 1FT 2FT
This bar measures 2" when printed full scale.

4/1/2024

**REV**
**C**

**SHEET**
**P4 OF 6**

**Exhibit A.1 Detailed Price Bid Form(s):**

# 2 Earthwork

** Provided quantities are for reference only. Unit Price and Extended Price shall reflect bidder's generated quantities.**

| Bid Item No. | Bid Package Description | Quantity | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|
| B1 | PHASE 1 - EROSION CONTROL - CONSTRUCTION ENTRANCE | 2 | EA | | |
| B2 | PHASE 1 - EROSION CONTROL - CONCRETE WASHOUT | 2 | EA | | |
| B3 | PHASE 1 - EROSION CONTROL - CONCRETE WASHOUT MAINTENANCE - ALLOWANCE | 1 | LS | $ 20,000 | |
| B9 | PHASE 1 - EROSION CONTROL - DITCH CHECK | 9 | EA | | |
| C1 | PHASE 1 - GENERAL SITEWORK - CLEAR & GRUB (NO BURING ONSITE) | 1 | LS | | |
| C2 | PHASE 1 - GENERAL SITEWORK - STRIP TOPSOIL | 26,932 | SY | | |
| C3 | PHASE 1 - GENERAL SITEWORK - EARTHWORK CUT/FILL | 1,230 | CY | | |
| C5 | PHASE 1 - GENERAL SITEWORK - WEST ACCESS DRIVE EARTHWORK | 1 | LS | | |
| C6 | PHASE 1 - GENERAL SITEWORK - WEST ACCESS DRIVE ASPHALT DEMO EXISTING | 1 | LS | | |
| C10 | PHASE 1 - GENERAL SITEWORK - MISC EXCAVATION & AGG BASE INSTALL | 1 | LS | | |
| C11 | PHASE 1 - GENERAL SITEWORK - REMOVE ASPHALT PAVING | 16,969 | SY | | |
| C12 | PHASE 1 - GENERAL SITEWORK - LAYDOWN & STORAGE | 151,280 | SF | | |
| C14 | PHASE 1 - GENERAL SITEWORK - HAUL OFF EXTRA SPOILS (OFFSITE) | 2,875 | CY | | |
| C23 | PHASE 1 - GENERAL SITEWORK - UNDERCUT & BACKFILL FOR ASPHALT PAVEMENT | 4,441 | CY | | |
| I1 | PHASE 1 - INFLUENT STR. - EARTHWORK | 1 | LS | | |
| J1 | PHASE 1 - INFLUENT ELEC. BLDG - EARTHWORK | 1 | LS | | |
| K1 | PHASE 1 - PUMPED INFLUENT METER VAULT - EARTHWORK | 1 | LS | | |

| | | | | | |
|---|---|---|---|---|---|
| L1 | PHASE 1 - LIFT STATION NO.4 VLV VAULT & WETWELL - EARTHWORK | 1 | LS | | |
| M1 | PHASE 2 - WET WEATHER METER VAULT - EARTHWORK | 1 | LS | | |
| N1 | PHASE 1 - ANOXIC BASINS - EARTHWORK | 1 | LS | | |
| O1 | PHASE 1 - AERATION BASINS - EARTHWORK | 1 | LS | | |
| P1 | PHASE 1 - SURFACE WASTING PS - EARTHWORK | 1 | LS | | |
| Q1 | PHASE 1 - SEC CLAR DIST & RAS PS - EARTHWORK | 1 | LS | | |
| R1 | PHASE 2 - SEC CLAR NO.1- EARTHWORK | 1 | LS | | |
| T1 | PHASE 1 - SEC CLAR NO.3- EARTHWORK | 1 | LS | | |
| U1 | PHASE 1 - RAS PS NO.2 - EARTHWORK | 1 | LS | | |
| V1 | PHASE 1 - RAS PS NO.2 METER VAULT - EARTHWORK | 1 | LS | | |
| W1 | PHASE 1 - WASTING METER VAULT - EARTHWORK | 1 | LS | | |
| Z1 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - EARTHWORK | 1 | LS | | |
| AA1 | PHASE 2 - EFF PS & ELEC BLDG. - EARTHWORK | 1 | LS | | |
| BB1 | PHASE 2 - BLWR BLDG VALVE VAULT - EARTHWORK | 1 | LS | | |
| CC1 | PHASE 2 - DIGESTER NO. 4 & 5 VALVE VAULT - EARTHWORK | 1 | LS | | |
| DD1 | PHASE 2 - DIGESTER NO. 4 VALVE VAULT - EARTHWORK | 1 | LS | | |
| EE1 | PHASE 2 - DIGESTER NO. 5 VALVE VAULT - EARTHWORK | 1 | LS | | |
| FF31 | PHASE 1 - MAINTENANCE BLDG - EARTHWORK | 1 | LS | | |
| FF32 | PHASE 1 - MAINTENANCE BLDG - GRAVEL PAVING | 723 | SY | | |
| II3 | PHASE 2 - OPERATIONS BLDG - EARTHWORK | 1 | LS | | |
| JJ1 | PHASE 2 - SOUTH GENERATOR - EARTHWORK | 1 | LS | | |
| KK1 | PHASE 1 - NORTH GENERATOR - EARTHWORK | 1 | LS | | |

| | | | | | |
|---|---|---|---|---|---|
| LL1 | PHASE 1 - TEMP NORTH ACCESS DR - EARTHWORK | 1 | **LS** | | |
| LL5 | PHASE 1 - TEMP NORTH ACCESS DR - B STONE | 1 | **LS** | | |
| LL8 | PHASE 1 - TEMP NORTH ACCESS DR - CONSTRUCTION ENTRANCE | 1 | **EA** | | |
| OO1 | PHASE 1 - EXISTING RAS PS NO.1 METER VAULT NO.1 & NO.2 - EARTHWORK | 1 | **LS** | | |
| PP1 | PHASE 1 - 8" METER VAULT & RPZ - EARTHWORK | 1 | **LS** | | |
| ZZ3 | BP 02 - EARTHWORK SUB MOBILIZATION | 1 | **LS** | | |
| ZZ4 | BP 02 - EARTHWORK SUB BONDING | 1 | **LS** | | |
| | | | | **Bid Package Total:** | |

The Total Firm Lump Sum Price stated above includes the cost of all the Work which is required or implied by the RFP documents, or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work of its kind. Further, any and all alterations, modifications, and adjustments to the Work, which are reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the kind required by the resultant Subcontract, will be performed without additional compensation.

**Performance and Payment Bond**

Insert Cost for Separate Performance and Payment Bonds valued at 100% of the Bid Package Total Above: $ _____

**General Clarifications**

There will be no ability to store spoils on-site. A remote spoils site may be necessary for storage of material to be utilized for fill and

The construction manager will provide a centralized dewatering point when water is present within each excavation. The earthwork contractor will be responsible for the excavation of a sump consisting of an area no larger than 6'x6' at a depth of 5'. Until the centralized dewatering system is in place it will be the responsibility of the earthwork contractor to de-water while excavating.

It is the responsibility of the bidding contractor to review the milestone schedule, and site logistics plan to incorporate mobilization costs. Additional mobilizations post bid will not be allowed.

# Methods of Measurement

## Bid Package 2 - Earthwork

### B1 PHASE 1 - EROSION CONTROL - CONSTRUCTION ENTRANCE

The price bid shall include full compensation for labor, equipment, and material for the installation and routine maintenance of the stabilized construction entrance for the duration of earthwork package as part of the overall scope of the earthwork. Construction of the said item shall be per the plans and specifications. Maintenance of the said item shall be directed by the Construction Manager. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### B2 PHASE 1 - EROSION CONTROL - CONCRETE WASHOUT

This price bid shall include full compensation for the labor, equipment, and material to construct the concrete washout as shown in the contract documents. Location for the concrete washout shall be determined by construction manager. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### B3 PHASE 1 - EROSION CONTROL - CONCRETE WASHOUT MAINTENANCE - ALLOWANCE

The price bid shall include full compensation for the labor, equipment, and material for maintenance of the concrete washout as shown on the plans. Items to be hauled off-site are part of the overall scope of the sitework and or earthwork. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 4**

### B9 PHASE 1 - EROSION CONTROL - DITCH CHECK

The price bid shall include full compensation for the labor, equipment, and material to install ditch check(s) as shown in the contract documents. Items to be hauled off-site are part of the overall scope of the sitework. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C1 PHASE 1 - GENERAL SITEWORK - CLEAR & GRUB (NO BURING ONSITE)

The price bid shall include full compensation for labor, equipment, and material to clear and grub as part of the overall scope of the earthwork as defined in the contract documents. BURNING ONSITE WILL NOT BE ALLOWED. Clearing shall consist of: cutting, removing, and disposing of trees, snags, stumps, shrubs, brush, limbs, and other vegetative growth; removal and disposal of existing fences, drainage structures, abandoned pipelines or utilities, paving, curbs and gutters, rubbish and trash, and other objectionable material(s). Clearing shall also include the preservation of trees, shrubs, and vegetative growth, which are not designated for removal. Grubbing shall consist of the removal and disposal of wood or root matter below the ground surface remaining after clearing and shall include stumps, trunks, roots, or root systems greater than 2 inches in diameter to a depth of two feet below the natural ground surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C2 PHASE 1 - GENERAL SITEWORK - STRIP TOPSOIL

The price bid shall include full compensation for labor, equipment, and material for stripping of topsoil within a tolerance of +/- .10' as part of the overall scope of the earthwork. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C3 PHASE 1 - GENERAL SITEWORK - EARTHWORK CUT/FILL

The price bid shall include full compensation for labor, equipment, and material for cut and fill to grade as part of the overall scope of the earthwork. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C5 PHASE 1 - GENERAL SITEWORK - WEST ACCESS DRIVE EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for cut and fill of the west access drive per contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C6 PHASE 1 - GENERAL SITEWORK - WEST ACCESS DRIVE ASPHALT DEMO EXISTING

The price bid shall include full compensation for the removal and haul-off of asphalt pavement as defined in the contract documents. Cost shall include the contractor's labor, material, equipment and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C10 PHASE 1 - GENERAL SITEWORK - MISC EXCAVATION & AGG BASE INSTALL

The price bid shall include full compensation for the labor, equipment, and material for the excavations and the placement of aggregate base below slabs as shown on the plans. This item includes, but not limited to site generator pads, HVAC pads, transformer pads, etc. as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C11 PHASE 1 - GENERAL SITEWORK - REMOVE ASPHALT PAVING

The price bid shall include full compensation for the removal and haul-off of asphalt pavement as defined in the contract documents. Cost shall include the contractor's labor, material, equipment and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C12 PHASE 1 - GENERAL SITEWORK - LAYDOWN & STORAGE

The price bid shall include full compensation for the labor, equipment, and material to construct and remove temporary laydown and storage to include placement of 4" aggregate base over nonwoven geotextile fabric Mirafi 140N or equivalent for laydown and storage areas for materials, temporary parking, and jobsite trailers etc. as part of the overall scope of the earthwork. Removal of the temporary laydown shall be coordinated with the construction manager. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C14 PHASE 1 - GENERAL SITEWORK - HAUL OFF EXTRA SPOILS (OFFSITE)

The price bid shall include full compensation for the labor, equipment, and material for haul-off of extra spoils off site as part of the overall scope of the earthwork. Haul off and stockpile off site location(s) shall be the responsibility of the bidder. This haul-off bid item is for general site work cut-fill operation. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## C23 PHASE 1 - GENERAL SITEWORK - UNDERCUT & BACKFILL FOR ASPHALT PAVEMENT

The price bid shall include full compensation for labor, equipment, and material to perform undercut and backfill of the asphalt pavement as part of the overall scope of the earthwork. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I1 PHASE 1 - INFLUENT STR. - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. Slopes shall be constructed on a 1.5:1. An entry/exit ramp shall be constructed at a 5:1 slope. Location of the ramp shall be coordinated with the Construction Manager prior to commencement of the work. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. The slopes of the excavation shall be protected by 10 mill (minimum) impermeable polyethylene sheeting fastened at the top of the slope with a 24”x24” anchor trench backfilled holding the sheeting in place. The sheeting shall be held to the slope with sandbags or other means necessary. Anchor methods shall not penetrate the sheeting. Sheeting sections shall have a 24” overlap. Removal and disposal of sheeting shall be included in this bid item. Where anchor trenches are not feasable the sheeting shall be fastened to the top of slope with 2x4's and nail stakes. Nail Stakes shall be on 4'-0" centers. Excavation of all concrete footings and foundations shall be included within this bid package. Bidder is responsible for providing and maintaining all slopes. Drilled Pier and or Micro Pile spoils removal shall be included within this scope. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## J1 PHASE 1 - INFLUENT ELEC. BLDG - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## K1 PHASE 1 - PUMPED INFLUENT METER VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Slide rail shoring shoring installation shall be included within this scope of work and shall be done concurrently with the excavation. The slide rail system for this structure shall be provided by the Construction Manager. The dimensions of the system are 26' long x 18' wide at a 11'-6"' depth. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## L1 PHASE 1 - LIFT STATION NO.4 VLV VAULT & WETWELL - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Slide rail shoring shoring installation shall be included within this scope of work and shall be done concurrently with the excavation. The slide rail system for this structure shall be provided by the Construction Manager. The dimensions of the system are 28' long x 19' wide at a 25' depth. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## M1 PHASE 2 - WET WEATHER METER VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N1 PHASE 1 - ANOXIC BASINS - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. Slopes shall be constructed on a 1.5:1. An entry/exit ramp shall be constructed at a 5:1 slope. Location of the ramp shall be coordinated with the Construction Manager prior to commencement of the work. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. The slopes of the excavation shall be protected by 10 mill (minimum) impermeable polyethylene sheeting fastened at the top of the slope with a 24"x24" anchor trench backfilled holding the sheeting in place. The sheeting shall be held to the slope with sandbags or other means necessary. Anchor methods shall not penetrate the sheeting. Sheeting sections shall have a 24" overlap. Removal and disposal of sheeting shall be included in this bid item. Where anchor trenches are not feasable the sheeting shall be fastened to the top of slope with 2x4's and nail stakes. Nail Stakes shall be on 4'-0" centers. Excavation of all concrete footings and foundations shall be included within this bid package. Bidder is responsible for providing and maintaining all slopes. Drilled Pier and or Micro Pile spoils removal shall be included within this scope. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## O1 PHASE 1 - AERATION BASINS - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P1 PHASE 1 - SURFACE WASTING PS - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Slide rail shoring shoring installation shall be included within this scope of work and shall be done concurrently with the excavation. The slide rail system for this structure shall be provided by the Construction Manager. The dimensions of the system are 32' long x 21' wide at a 18' depth. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Q1 PHASE 1 - SEC CLAR DIST & RAS PS - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. Slopes shall be constructed on a 1.5:1. An entry/exit ramp shall be constructed at a 5:1 slope. Location of the ramp shall be coordinated with the Construction Manager prior to commencement of the work. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. The slopes of the excavation shall be protected by 10 mill (minimum) impermeable polyethylene sheeting fastened at the top of the slope with a 24”x24” anchor trench backfilled holding the sheeting in place. The sheeting shall be held to the slope with sandbags or other means necessary. Anchor methods shall not penetrate the sheeting. Sheeting sections shall have a 24” overlap. Removal and disposal of sheeting shall be included in this bid item. Where anchor trenches are not feasable the sheeting shall be fastened to the top of slope with 2x4's and nail stakes. Nail Stakes shall be on 4'-0" centers. Excavation of all concrete footings and foundations shall be included within this bid package. Bidder is responsible for providing and maintaining all slopes. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R1 PHASE 2 - SEC CLAR NO.1- EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T1 PHASE 1 - SEC CLAR NO.3- EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U1 PHASE 1 - RAS PS NO.2 - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Slide rail shoring shoring installation shall be included within this scope of work and shall be done concurrently with the excavation. The slide rail system for this structure shall be provided by the Construction Manager. The dimensions of the system are 21' long x 21' wide at a 26'-6" depth. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## V1 PHASE 1 - RAS PS NO.2 METER VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor’s labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## W1 PHASE 1 - WASTING METER VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z1 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA1 PHASE 2 - EFF PS & ELEC BLDG. - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## BB1 PHASE 2 - BLWR BLDG VALVE VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## CC1 PHASE 2 - DIGESTER NO. 4 & 5 VALVE VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## DD1 PHASE 2 - DIGESTER NO. 4 VALVE VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## EE1 PHASE 2 - DIGESTER NO. 5 VALVE VAULT - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## FF31 PHASE 1 - MAINTENANCE BLDG - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. Slopes shall be constructed on a 1.5:1. An entry/exit ramp shall be constructed at a 5:1 slope. Location of the ramp shall be coordinated with the Construction Manager prior to commencement of the work. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. The slopes of the excavation shall be protected by 10 mill (minimum) impermeable polyethylene sheeting fastened at the top of the slope with a 24"x24" anchor trench backfilled holding the sheeting in place. The sheeting shall be held to the slope with sandbags or other means necessary. Anchor methods shall not penetrate the sheeting. Sheeting sections shall have a 24" overlap. Removal and disposal of sheeting shall be included in this bid item. Where anchor trenches are not feasable the sheeting shall be fastened to the top of slope with 2x4's and nail stakes. Nail Stakes shall be on 4'-0" centers. Excavation of all concrete footings and foundations shall be included within this bid package. Bidder is responsible for providing and maintaining all slopes. Drilled Pier and or Micro Pile spoils removal shall be included within this scope. The bidders shall reference the preliminary shoring design. Where shoring is present excavations shall be done concurrently with the shoring installation. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## FF32 PHASE 1 - MAINTENANCE BLDG - GRAVEL PAVING

The price bid shall include full compensation for fabric, placement, and fine-grading of gravel paving within a tolerance of +/- .10' as part of the overall scope of the earthwork. Gravel Paving work shall be done in accordance with design documents and Geotechnical Report. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## II3 PHASE 2 - OPERATIONS BLDG - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## JJ1 PHASE 2 - SOUTH GENERATOR - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## KK1 PHASE 1 - NORTH GENERATOR - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## LL1 PHASE 1 - TEMP NORTH ACCESS DR - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for cut and fill of the specified area per contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## LL5 PHASE 1 - TEMP NORTH ACCESS DR - B STONE

The price bid shall include full compensation for the labor, equipment, and material to construct and place of 12" B-Stone within a tolerance of +/- one tenth of a foot for the temporary north access drive as part of the overall scope of the earthwork. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## LL8 PHASE 1 - TEMP NORTH ACCESS DR - CONSTRUCTION ENTRANCE

The price bid shall include full compensation for labor, equipment, and material for the installation and routine maintenance of the stabilized construction entrance for the duration of earthwork package as part of the overall scope of the earthwork. Construction of the said item shall be per the plans and specifications. Maintenance of the said item shall be directed by the Construction Manager. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## OO1 PHASE 1 - EXISTING RAS PS NO.1 METER VAULT NO.1 & NO.2 - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## PP1 PHASE 1 - 8" METER VAULT & RPZ - EARTHWORK

The price bid shall include full compensation for the labor, equipment, and material for excavation and backfill of the structure including aggregate subgrade installation below foundation slabs per contract documents. Bottom of excavations shall be a 3' offset from foundation slabs. The aggregate base shall cover the 3' offset areas (bottom of slope/excavation) to allow for a clean working surface. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## ZZ3 BP 02 - EARTHWORK SUB MOBILIZATION

Mobilization shall be included within the bid items as seen fit by the bidding subcontractor. Additional mobilizations shall be included as seen fit to perform the work unless specifically stated within the individual bid package's methods of measurement. The price bid shall include full compensation for mobilization as part of the overall scope of the bid package. Mobilization shall not exceed 5% of the total bid package. No more than 75% of the total mobilization cost shall be billed with the first pay application. The remaining 25% of the total mobilization cost shall be billed at 90% completion of the work to compensate for the demobilization of equipment.

**Compensation Type 1**

## ZZ4 BP 02 - EARTHWORK SUB BONDING

The price shall cover the cost for separate Performance and Payment Bonds valued at 100% of the Bid Package Total.

**Compensation Type 1**

**Exhibit A.1 Detailed Price Bid Form(s):**

# 5 Concrete - Headworks & Anoxic Basin

** Provided quantities are for reference only. Unit Price and Extended Price shall reflect bidder's generated quantities.**

| Bid Item No. | Bid Package Description | Quantity | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|
| I3 | PHASE 1 - INFLUENT STR. - CIP FOUNDATIONS/FOOTINGS | 939 | CY | | |
| I4 | PHASE 1 - INFLUENT STR. - CIP WALLS | 1,237 | CY | | |
| I5 | PHASE 1 - INFLUENT STR. - CIP INVERTED CONE | 112 | CY | | |
| I6 | PHASE 1 - INFLUENT STR. - CIP COLUMNS | 3 | CY | | |
| I8 | PHASE 1 - INFLUENT STR. - CIP SOFFIT SLAB | 192 | CY | | |
| I9 | PHASE 1 - INFLUENT STR. - HOUSE KEEPING, ELECTRICAL, & EQUIPMENT PADS | 22 | CY | | |
| I10 | PHASE 1 - INFLUENT STR. - CIP FILL CLASS A CONCRETE | 106 | CY | | |
| I11 | PHASE 1 - INFLUENT STR. - GRAVEL INFILL USED IN STRUCTURE | 732 | CY | | |
| I12 | PHASE 1 - INFLUENT STR. - CIP GROUT INVERTS CLASS A CONCRETE | 85 | EA | | |
| J3 | PHASE 1 - INFLUENT ELEC. BLDG - CIP FOUNDATIONS/FOOTINGS | 21 | CY | | |
| J4 | PHASE 1 - INFLUENT ELEC. BLDG - CIP STEM WALLS | 12 | CY | | |
| J5 | PHASE 1 - INFLUENT ELEC. BLDG - CIP SLAB | 18 | CY | | |
| J6 | PHASE 1 - INFLUENT ELEC. BLDG - HOUSE KEEPING & EQUIPMENT PADS | 3 | CY | | |
| N3 | PHASE 1 - ANOXIC BASINS - CIP FOUNDATIONS/FOOTINGS | 601 | CY | | |
| N4 | PHASE 1 - ANOXIC BASINS - CIP WALLS | 757 | CY | | |

| | | | | | |
|---|---|---|---|---|---|
| N5 | PHASE 1 - ANOXIC BASINS - GRAVEL INFILL USED BETWEEN WALLS | 590 | CY | | |
| N6 | PHASE 1 - ANOXIC BASINS - CIP WALLS (INTERIOR OF EXISTING ANOXIC) | 55 | CY | | |
| N7 | PHASE 1 - ANOXIC BASINS - CIP UPPER WALKWAYS SUSPENDED | 88 | CY | | |
| N18 | PHASE 1 – RECYCLE PUMP STATION – LANDING & SUPPORT CONCRETE | 6 | CY | | |
| ZZ9 | BP 05 - HEADWORKS AND ANOX CONCRETE SUB MOBILIZATION | 1 | LS | | |
| ZZ10 | BP 05 - HEADWORKS AND ANOX CONCRETE SUB BONDING | 1 | LS | | |
| | | | | **Bid Package Total:** | |

The Total Firm Lump Sum Price stated above includes the cost of all the Work which is required or implied by the RFP documents, or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work of its kind. Further, any and all alterations, modifications, and adjustments to the Work, which are reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the kind required by the resultant Subcontract, will be performed without additional compensation.

**Performance and Payment Bond**

Insert Cost for Separate Performance and Payment Bonds valued at 100% of the Bid Package Total Above: $ _____

**General Requirements:**

- **Cold and Hot weather protection shall be included within the individual bid items.**
- **Surrounding areas shall be protected from concrete splatters as necessary. Cleaning of concrete splatter shall be at the expense of the bidding contractors.**
- **Installation of all concrete embedded items including, but not limited to, embeds, sleeves, pipe, anchors, etc. shall be included within this bid package.**
- **Bidders shall read, understand, and utilize the preliminary shoring design documents provided prior to submitting all bids. The preliminary shoring design documents have been provided in Exhibit form and can be found on CivCast along with all other available design documents.**
- **Water tightness testing shall be provided by the construction manager. Bidder shall be responsible for costs associated with repair and remedy of a failed water tightness test.**
- **Cast in-Place concrete pour plans shall be submitted for review by the construction and design team within 14 calendar days of placement or as identified by the contract documents.**

# Methods of Measurement

## Bid Package 5 - Concrete - Headworks & Anoxic Basin

### I3 PHASE 1 - INFLUENT STR. - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### I4 PHASE 1 - INFLUENT STR. - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### I5 PHASE 1 - INFLUENT STR. - CIP INVERTED CONE

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete inverted cones per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### I6 PHASE 1 - INFLUENT STR. - CIP COLUMNS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete columns. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I8 PHASE 1 - INFLUENT STR. - CIP SOFFIT SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds, pipe penetrations, or hatches supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I9 PHASE 1 - INFLUENT STR. - HOUSE KEEPING, ELECTRICAL, & EQUIPMENT PADS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I10 PHASE 1 - INFLUENT STR. - CIP FILL CLASS A CONCRETE

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I11 PHASE 1 - INFLUENT STR. - GRAVEL INFILL USED IN STRUCTURE

The price bid shall include full compensation for the labor, equipment, and material to completely install the interior fill material per the contract documents. This bid item shall be all-inclusive of but not limited to placement, compaction, grading, protection of utilities, etc. Access to fill locations may be limited, bidders shall be responsible for all costs associated with mechanical placement if necessary. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## I12 PHASE 1 - INFLUENT STR. - CIP GROUT INVERTS CLASS A CONCRETE

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## J3 PHASE 1 - INFLUENT ELEC. BLDG - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## J4 PHASE 1 - INFLUENT ELEC. BLDG - CIP STEM WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete. This bid item shall be all-inclusive of but not limited to, cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## J5 PHASE 1 - INFLUENT ELEC. BLDG - CIP SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## J6 PHASE 1 - INFLUENT ELEC. BLDG - HOUSE KEEPING & EQUIPMENT PADS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N3 PHASE 1 - ANOXIC BASINS - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N4 PHASE 1 - ANOXIC BASINS - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N5 PHASE 1 - ANOXIC BASINS - GRAVEL INFILL USED BETWEEN WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely install the interior fill material per the contract documents. This bid item shall be all-inclusive of but not limited to placement, compaction, grading, protection of utilities, etc. Access to fill locations may be limited, bidders shall be responsible for all costs associated with mechanical placement if necessary. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N6 PHASE 1 - ANOXIC BASINS - CIP WALLS (INTERIOR OF EXISTING ANOXIC)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, pipe penetrations, point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N7 PHASE 1 - ANOXIC BASINS - CIP UPPER WALKWAYS SUSPENDED

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## N18 PHASE 1 – RECYCLE PUMP STATION – LANDING & SUPPORT CONCRETE

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## ZZ9 BP 05 - HEADWORKS AND ANOX CONCRETE SUB MOBILIZATION

Mobilization shall be included within the bid items as seen fit by the bidding subcontractor. Additional mobilizations shall be included as seen fit to perform the work unless specifically stated within the individual bid package's methods of measurement. The price bid shall include full compensation for mobilization as part of the overall scope of the bid package. Mobilization shall not exceed 5% of the total bid package. No more than 75% of the total mobilization cost shall be billed with the first pay application. The remaining 25% of the total mobilization cost shall be billed at 90% completion of the work to compensate for the demobilization of equipment.

**Compensation Type 1**

## ZZ10 BP 05 - HEADWORKS AND ANOX CONCRETE SUB BONDING

The price shall cover the cost for separate Performance and Payment Bonds valued at 100% of the Bid Package Total.

**Compensation Type 1**

**Exhibit A.1 Detailed Price Bid Form(s):**

# 6 Concrete - Effluent PS, Filtration UV, Clarifiers

** Provided quantities are for reference only. Unit Price and Extended Price shall reflect bidder's generated quantities.**

| Bid Item No. | Bid Package Description | Quantity | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|
| O3 | PHASE 1 - AERATION BASINS - CIP FOUNDATIONS/FOOTINGS | 6 | CY | | |
| O4 | PHASE 1 - AERATION BASINS - CIP WALLS | 22 | CY | | |
| O5 | PHASE 1 - AERATION BASINS - CIP GROUTED INVERT | 3 | CY | | |
| P3 | PHASE 1 - SURFACE WASTING PS - CIP FOUNDATIONS/FOOTINGS (VLV VAULT) | 6 | CY | | |
| P4 | PHASE 1 - SURFACE WASTING PS - CIP WALLS (VLV VAULT) | 12 | CY | | |
| P5 | PHASE 1 - SURFACE WASTING PS - GROUTED INVERT (VLV VAULT) | 4 | CY | | |
| P6 | PHASE 1 - SURFACE WASTING PS - CIP SUSPENDED SLAB (VLV VAULT) | 6 | CY | | |
| P7 | PHASE 1 - SURFACE WASTING PS - CIP FOUNDATIONS/FOOTINGS (WETWELL) | 21 | CY | | |
| P8 | PHASE 1 - SURFACE WASTING PS - CIP WALLS (WETWELL) | 47 | CY | | |
| P9 | PHASE 1 - SURFACE WASTING PS - CIP GROUTED INVERT (WETWELL) | 7 | CY | | |
| P10 | PHASE 1 - SURFACE WASTING PS - CIP SUSPENDED SLAB (WETWELL) | 7 | CY | | |
| Q3 | PHASE 1 - SEC CLAR DIST & RAS PS - CIP FOUNDATIONS/FOOTINGS | 28 | CY | | |
| Q4 | PHASE 1 - SEC CLAR DIST & RAS PS - CIP WALLS | 119 | CY | | |
| Q5 | PHASE 1 - SEC CLAR DIST & RAS PS - CIP CONCRETE INFILL | 33 | CY | | |
| R3 | PHASE 2 - SEC CLAR NO.1- CIP FOUNDATIONS/FOOTINGS | 305 | CY | | |
| R4 | PHASE 2 - SEC CLAR NO.1- CIP WALLS | 149 | CY | | |

| | | | | | |
|---|---|---|---|---|---|
| R5 | PHASE 2 - SEC CLAR NO.1- CIP SUSPENDED SLAB LAUNDER & GROUTED INVERT | 47 | CY | | |
| R6 | PHASE 2 - SEC CLAR NO.1- CIP LAUNDER WALLS | 26 | CY | | |
| R7 | PHASE 2 - SEC CLAR NO.1- CIP LAUNDER GROUTED INVERT | 14 | CY | | |
| R8 | PHASE 2 - SEC CLAR NO.1- CIP GROUTED TOPPING SLAB | 41 | CY | | |
| R9 | PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX SLAB | 2 | CY | | |
| R10 | PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX WALLS | 6 | CY | | |
| R11 | PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX GROUTED INVERT | 4 | CY | | |
| R12 | PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX SLAB | 1 | CY | | |
| R13 | PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX WALLS | 1 | CY | | |
| R14 | PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX GROUTED INVERT | 1 | CY | | |
| T3 | PHASE 1 - SEC CLAR NO.3- CIP FOUNDATIONS/FOOTINGS | 305 | CY | | |
| T4 | PHASE 1 - SEC CLAR NO 3- CIP WALLS | 149 | CY | | |
| T5 | PHASE 1 - SEC CLAR NO.3- CIP SUSPENDED SLAB LAUNDER & GROUTED INVERT | 47 | CY | | |
| T6 | PHASE 1 - SEC CLAR NO.3- CIP LAUNDER WALLS | 26 | CY | | |
| T7 | PHASE 1 - SEC CLAR NO.3- CIP LAUNDER GROUTED INVERT | 14 | CY | | |
| T8 | PHASE 1 - SEC CLAR NO.3- CIP GROUTED TOPPING SLAB | 41 | CY | | |
| T9 | PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX SLAB | 2 | CY | | |
| T10 | PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX WALLS | 6 | CY | | |
| T11 | PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX GROUTED INVERT | 4 | CY | | |
| T12 | PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX SLAB | 1 | CY | | |
| T13 | PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX WALLS | 1 | CY | | |
| T14 | PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX GROUTED INVERT | 1 | CY | | |

| | | | | | |
|---|---|---|---|---|---|
| U3 | PHASE 1 - RAS PS NO.2 - CIP FOUNDATIONS/FOOTINGS | 21 | CY | | |
| U4 | PHASE 1 - RAS PS NO.2 - CIP WALLS | 58 | CY | | |
| U5 | PHASE 1 - RAS PS NO.2 - CIP SUSPENDED SLAB | 6 | CY | | |
| U6 | PHASE 1 - RAS PS NO.2 - CIP GROUTED INVERT | 9 | CY | | |
| U7 | PHASE 1 - RAS PS NO.2 - CIP UPPER SLAB | 11 | CY | | |
| V3 | PHASE 1 - RAS PS NO.2 METER VAULT- CIP FOUNDATIONS/FOOTINGS | 4 | CY | | |
| V4 | PHASE 1 - RAS PS NO.2 METER VAULT- CIP WALLS | 9 | CY | | |
| V6 | PHASE 1 - RAS PS NO.2 METER VAULT- CIP GROUTED INVERT | 1 | CY | | |
| Z4 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP FOUNDATIONS/FOOTINGS (SLAB EL. 1108.50, 1114.75, 1116.00) | 580 | CY | | |
| Z5 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP WALLS | 1327 | CY | | |
| Z6 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP SLABS ON GRAVEL FILL (UV, FILTERS, FLUME AREAS) | 61 | CY | | |
| Z7 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- GRAVEL FILL IN STRUCTURE (UV, FILTERS, FLUME AREAS) | 320 | CY | | |
| Z8 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP ELEVATED/DECK SLABS (BY UV EQUIPMENT) | 7 | CY | | |
| Z9 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP GROUT (UNDER FILTERS/FUME) | 65 | CY | | |
| Z10 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP SAMPLING BUILDING SLAB | 3.5 | CY | | |
| AA3 | PHASE 2 - EFF PS & ELEC BLDG. - CIP LOWER SLAB | 64 | CY | | |
| AA4 | PHASE 2 - EFF PS & ELEC BLDG. - CIP WALLS | 263 | CY | | |
| ~~AA5~~ | ~~PHASE 2 - EFF PS & ELEC BLDG. - CIP CONC. INFILL~~ | ~~28~~ | ~~CY~~ | | |
| AA6 | PHASE 2 - EFF PS & ELEC BLDG. - CIP SUSPENDED SLAB | 40 | CY | | |
| AA7 | PHASE 2 - EFF PS & ELEC BLDG. - CIP EXTERIOR FOOTINGS | 50 | CY | | |
| AA8 | PHASE 2 - EFF PS & ELEC BLDG. - CIP EXTERIOR STEM WALLS | 19 | CY | | |
| AA9 | PHASE 2 - EFF PS & ELEC BLDG. - CIP INTERIOR UPPER SLAB | 45 | CY | | |

| | | | | | |
|---|---|---|---|---|---|
| AA10 | PHASE 2 - EFF PS & ELEC BLDG. - CIP CLASS A INVERTS | 10 | **CY** | | |
| AA11 | PHASE 2 - EFF PS & ELEC BLDG. - CIP PUMP STANDS | 8 | **CY** | | |
| AA12 | PHASE 2 - EFF PS & ELEC BLDG. - CIP ELECTRICAL PADS | 4 | **CY** | | |
| ZZ11 | BP 06 - EFFLUENT PS, FILTRATION UV, CLARIFIERS CONCRETE SUB MOBILIZATION | 1 | **LS** | | |
| ZZ12 | BP 06 - EFFLUENT PS, FILTRATION UV, CLARIFIERS CONCRETE SUB BONDING | 1 | **LS** | | |
| | | | | **Bid Package Total:** | |

The Total Firm Lump Sum Price stated above includes the cost of all the Work which is required or implied by the RFP documents, or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work of its kind. Further, any and all alterations, modifications, and adjustments to the Work, which are reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the kind required by the resultant Subcontract, will be performed without additional compensation.

**Performance and Payment Bond**

Insert Cost for Separate Performance and Payment Bonds valued at 100% of the Bid Package Total Above: $ _____

**General Requirements:**

- **Cold and Hot weather protection shall be included within the individual bid items.**
- **Surrounding areas shall be protected from concrete splatters as necessary. Cleaning of concrete splatter shall be at the expense of the bidding contractors.**
- **Installation of all concrete embedded items including, but not limited to, embeds, sleeves, pipe, anchors, etc. shall be included within this bid package.**
- **Bidders shall read, understand, and utilize the preliminary shoring design documents provided prior to submitting all bids. The preliminary shoring design documents have been provided in Exhibit form and can be found on CivCast along with all other available design documents.**
- **Water tightness testing shall be provided by the construction manager. Bidder shall be responsible for costs associated with repair and remedy of a failed water tightness test.**
- **Cast in-Place concrete pour plans shall be submitted for review by the construction and design team within 14 calendar days of placement or as identified by the contract documents.**

# Methods of Measurement

## Bid Package 6 - Concrete - Effluent PS, Filtration UV, Clarifiers

### O3 PHASE 1 - AERATION BASINS - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### O4 PHASE 1 - AERATION BASINS - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### O5 PHASE 1 - AERATION BASINS - CIP GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### P3 PHASE 1 - SURFACE WASTING PS - CIP FOUNDATIONS/FOOTINGS (VLV VAULT)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P4 PHASE 1 - SURFACE WASTING PS - CIP WALLS (VLV VAULT)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P5 PHASE 1 - SURFACE WASTING PS - GROUTED INVERT (VLV VAULT)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P6 PHASE 1 - SURFACE WASTING PS - CIP SUSPENDED SLAB (VLV VAULT)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P7 PHASE 1 - SURFACE WASTING PS - CIP FOUNDATIONS/FOOTINGS (WETWELL)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P8 PHASE 1 - SURFACE WASTING PS - CIP WALLS (WETWELL)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P9 PHASE 1 - SURFACE WASTING PS - CIP GROUTED INVERT (WETWELL)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P10 PHASE 1 - SURFACE WASTING PS - CIP SUSPENDED SLAB (WETWELL)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Q3 PHASE 1 - SEC CLAR DIST & RAS PS - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Q4 PHASE 1 - SEC CLAR DIST & RAS PS - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Q5 PHASE 1 - SEC CLAR DIST & RAS PS - CIP CONCRETE INFILL

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R3 PHASE 2 - SEC CLAR NO.1- CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R4 PHASE 2 - SEC CLAR NO.1- CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R5 PHASE 2 - SEC CLAR NO.1- CIP SUSPENDED SLAB LAUNDER & GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R6 PHASE 2 - SEC CLAR NO.1- CIP LAUNDER WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R7 PHASE 2 - SEC CLAR NO.1- CIP LAUNDER GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R8 PHASE 2 - SEC CLAR NO.1- CIP GROUTED TOPPING SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the grouted topping slab per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, saw cutting, expansion/isolation joint treatment, honeycomb/defect repair, finishing and curing methods as well as protection of surrounding equipment/metals/facilities. The bidder shall bear the entire cost of mechanical material placement. Use of the clarifier mechanism shall be available to the bidder during grout placement. Damage to the clarifier mechanisms shall be at the expense of the bidder. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R9 PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R10 PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R11 PHASE 2 - SEC CLAR NO.1- CIP SCUM BOX GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R12 PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R13 PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R14 PHASE 2 - SEC CLAR NO.1- CIP EFFLUENT BOX GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T3 PHASE 1 - SEC CLAR NO.3- CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T4 PHASE 1 - SEC CLAR NO 3- CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T5 PHASE 1 - SEC CLAR NO.3- CIP SUSPENDED SLAB LAUNDER & GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

## T6 PHASE 1 - SEC CLAR NO.3- CIP LAUNDER WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T7 PHASE 1 - SEC CLAR NO.3- CIP LAUNDER GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T8 PHASE 1 - SEC CLAR NO.3- CIP GROUTED TOPPING SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the grouted topping slab per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, saw cutting, expansion/isolation joint treatment, honeycomb/defect repair, finishing and curing methods as well as protection of surrounding equipment/metals/facilities. The bidder shall bear the entire cost of mechanical material placement. Use of the clarifier mechanism shall be available to the bidder during grout placement. Damage to the clarifier mechanisms shall be at the expense of the bidder. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T9 PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T10 PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T11 PHASE 1 - SEC CLAR NO.3- CIP SCUM BOX GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T12 PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T13 PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## T14 PHASE 1 - SEC CLAR NO.3- CIP EFFLUENT BOX GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U3 PHASE 1 - RAS PS NO.2 - CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U4 PHASE 1 - RAS PS NO.2 - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U5 PHASE 1 - RAS PS NO.2 - CIP SUSPENDED SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U6 PHASE 1 - RAS PS NO.2 - CIP GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## U7 PHASE 1 - RAS PS NO.2 - CIP UPPER SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## V3 PHASE 1 - RAS PS NO.2 METER VAULT- CIP FOUNDATIONS/FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## V4 PHASE 1 - RAS PS NO.2 METER VAULT- CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## V6 PHASE 1 - RAS PS NO.2 METER VAULT- CIP GROUTED INVERT

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z4 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP FOUNDATIONS/FOOTINGS (SLAB EL. 1108.50, 1114.75, 1116.00)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z5 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z6 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP SLABS ON GRAVEL FILL (UV, FILTERS, FLUME AREAS)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z7 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- GRAVEL FILL IN STRUCTURE (UV, FILTERS, FLUME AREAS)

The price bid shall include full compensation for the labor, equipment, and material to completely install the interior fill material per the contract documents. This bid item shall be all-inclusive of but not limited to placement, compaction, grading, protection of utilities, etc. Access to fill locations may be limited, bidders shall be responsible for all costs associated with mechanical placement if necessary. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z8 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP ELEVATED/DECK SLABS (BY UV EQUIPMENT)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z9 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP GROUT (UNDER FILTERS/FUME)

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z10 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME- CIP SAMPLING BUILDING SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading of aggregate base course, concrete placement (footings, stem walls, slabs, thickened edges, etc), cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA3 PHASE 2 - EFF PS & ELEC BLDG. - CIP LOWER SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA4 PHASE 2 - EFF PS & ELEC BLDG. - CIP WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, concrete placement, reinforcement, saw cutting, expansion/isolation joint treatment, block outs, pipe penetrations (supplied by others), point & patching, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## ~~AA5 PHASE 2 - EFF PS & ELEC BLDG. - CIP CONC. INFILL~~

~~The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.~~

~~**Compensation Type 1**~~

## AA6 PHASE 2 - EFF PS & ELEC BLDG. - CIP SUSPENDED SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to concrete placement, cold weather protection, reinforcement, integrated concrete beams, shoring and shoring design, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA7 PHASE 2 - EFF PS & ELEC BLDG. - CIP EXTERIOR FOOTINGS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA8 PHASE 2 - EFF PS & ELEC BLDG. - CIP EXTERIOR STEM WALLS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA9 PHASE 2 - EFF PS & ELEC BLDG. - CIP INTERIOR UPPER SLAB

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds or pipe penetrations supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA10 PHASE 2 - EFF PS & ELEC BLDG. - CIP CLASS A INVERTS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, and curing methods as well as installing any required embeds supplied by others. The bid item includes protection of surrounding equipment and other work items. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA11 PHASE 2 - EFF PS & ELEC BLDG. - CIP PUMP STANDS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to cold weather protection, reinforcement, concrete placement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Bidder shall coordinate with the Construction Manager for size & orientation of pump anchors prior to commencement of work. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA12 PHASE 2 - EFF PS & ELEC BLDG. - CIP ELECTRICAL PADS

The price bid shall include full compensation for the labor, equipment, and material to completely construct the cast in-place concrete per the contract documents. This bid item shall be all-inclusive of but not limited to fine grading, concrete placement, cold weather protection, reinforcement, saw cutting, expansion/isolation joint treatment, honeycomb repair, rub finish, and curing methods as well as installing any required embeds supplied by others. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## ZZ11 BP 06 - EFFLUENT PS, FILTRATION UV, CLARIFIERS CONCRETE SUB MOBILIZATION

Mobilization shall be included within the bid items as seen fit by the bidding subcontractor. Additional mobilizations shall be included as seen fit to perform the work unless specifically stated within the individual bid package's methods of measurement. The price bid shall include full compensation for mobilization as part of the overall scope of the bid package. Mobilization shall not exceed 5% of the total bid package. No more than 75% of the total mobilization cost shall be billed with the first pay application. The remaining 25% of the total mobilization cost shall be billed at 90% completion of the work to compensate for the demobilization of equipment.

**Compensation Type 1**

## ZZ12 BP 06 - EFFLUENT PS, FILTRATION UV, CLARIFIERS CONCRETE SUB BONDING

The price shall cover the cost for separate Performance and Payment Bonds valued at 100% of the Bid Package Total.

**Compensation Type 1**

**Exhibit A.1 Detailed Price Bid Form(s):**

# 10 Yard Piping

** Provided quantities are for reference only. Unit Price and Extended Price shall reflect bidder's generated quantities.**

| Bid Item No. | Bid Package Description | Quantity | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|
| G1 | PHASE 1 - 4", 6", & 8" DRAINS W/MH'S PROFILES (34-36) | 327 | **LF** | | |
| G2 | PHASE 1 - 8" DRAIN PROFILE (8) W/MH'S | 39 | **LF** | | |
| G3 | PHASE 1 - 6" DRAIN PROFILE W/MH'S PROFILES (33) | 96 | **LF** | | |
| G4 | PHASE 1 - 6" DRAIN PROFILES (23-24) | 58 | **LF** | | |
| G5 | PHASE 2 - 6" & 8" DRAINS W/ MH'S PROFILES (38) | 488 | **LF** | | |
| G6 | PHASE 2 - 8" DRAIN AT LS NO. 2 (NO PROFILE) | 16 | **LF** | | |
| G7 | PHASE 2 - 4" DRAINS @ EXISTING DIGESTERS #4 & #5 (NO PROFILES) | 118 | **LF** | | |
| G8 | PHASE 2 - 4" & 6" DRAINS FROM PS NO.1 TO OPERATIONS BLDG (NO PROFILES) | 67 | **LF** | | |
| G9 | PHASE 2 - 4" & 6" DRAINS FROM PUMPED INFLUENT METER VAULT TO LS #4 & INFLUENT BUILDING TO LS #4 (NO PROFILES) | 40 | **LF** | | |
| G10 | PHASE 1 - 1" WATER LINE FROM INFLUENT STRUCTURE TO 4" TIE-IN | 134 | **LF** | | |
| G11 | PHASE 1 - 2" & 3" WATER LINE FROM EXT. 6" WATER LINE TO MAINTENANCE BUILDING AND YARD HYDRANTS | 220 | **LF** | | |
| G12 | PHASE 2 - 2", 3", & 6" WATER LINE @ OPERATIONS BUILDING TO RPZ @ SEC CLAR #3 TO SLUDGE THICKENER PS | 497 | **LF** | | |
| G13 | PHASE 2 - 1" WATER LINE FROM OPERATIONS BLDG TO EXISTING HW | 107 | **LF** | | |
| G14 | PHASE 2 - FIRE HYDRANT ASSEMBLIES ON EXISTING 6" WATER @ MAINTENANCE BUILDING | 1 | **EA** | | |
| G15 | PHASE 2 - FIRE HYDRANT ASSEMBLIES ON EXISTING 8" WATER | 1 | **EA** | | |
| G16 | PHASE 1 - 8" WATER AND METER VAULT PIPING AT EXISTING DIGESTERS | 80 | **LF** | | |
| G17 | PHASE 2 - 4", 2", 1" PW FROM INFLUENT BUILDING TO EXISTING DIGESTERS #4 & #5 | 2,086 | **LF** | | |
| G18 | PHASE 1 - 2" & 1" PW FROM 4" TIE-IN TO SECONDARY CLARIFIERS | 270 | **LF** | | |

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|---|---|---|---|---|---|
| G19 | PHASE 1 - 4",3",2",1" NPW FROM RPZ @ INFLUENT STRUCTURE TO SEC CLAR DISTR BOX | 1,508 | **LF** | | |
| G20 | PHASE 1 - 2" & 1" NPW FROM RPZ @ OPS BLDG TO WAS/SCUM PS | 190 | **LF** | | |
| G21 | PHASE 1 - 6" NPW FROM FDC @ OPS BUILDING TO FDC@ INFLUENT STRUCTURE | 1,097 | **LF** | | |
| G22 | PHASE 1 - 4" DI FM FROM INFLUENT STR. TO LS NO.4 (PROFILE 4) | 173 | **LF** | | |
| G23 | PHASE 1 - 4" DI FM FROM FROM TIE-IN @ EXISTING 4" FM TO JB (PROFILE 41) | 39 | **LF** | | |
| G24 | PHASE 2 - 2" PVC FM FROM DIGESTER 4 TO MH STR 63 & BLOWER BDLG VLV VAULT TO STR. 63 | 181 | **LF** | | |
| G25 | PHASE 2 - 2" PVC FM FROM WET WEATHER METER VAULT TO WASTE METER VAULT TO MH33-3 (NO PROFILE) | 219 | **LF** | | |
| G25.5 | PHASE 2 - RAS PS FLOW METER VAULTS 1 & 2 SUMP PUMP PIPING | 1 | **LS** | | |
| G26 | PHASE 1 - 24" DI RS FROM INFLUENT BLDG TO MCKISSIC LS FM TIE-IN (PROFILE 2) | 228 | **LF** | | |
| G27 | PHASE 1 - 24" DI RS TEMP. REROUTE MCKISSIC LS FM (NO PROFILE) | 182 | **LF** | | |
| G28 | PHASE 1 - 12" DI RS FROM INFLUENT BLDG TO NORTH LS FM TIE-IN (PROFILE 3) | 557 | **LF** | | |
| G29 | PHASE 1 - 42" DI RS FROM MH 1-9 TO INFLUENT BLDG (PROFILE 1) | 1,005 | **LF** | | |
| G30 | PHASE 1 - 36" DI RS FROM INFLUENT STRUCTURE TO TIE-IN @ EXISTING 36" (PROFILE 5) | 93 | **LF** | | |
| G31 | PHASE 1 - 12" DI RS FROM NEW 36" RS TO NORTH LS FM 30" TIE-IN EXISTING (PROFILE 6) | 467 | **LF** | | |
| G32 | PHASE 2 - 30" DI WW FROM PLANT INFL METER VLT TO FILTRATION STR. (PROFILE 7) | 588 | **LF** | | |
| G33 | PHASE 1 - 12" DI RAS FROM RAS PS NO.2 TO INFLUENT BLDG. (PROFILE 28) | 772 | **LF** | | |
| G34 | PHASE 1 - 12" DI RAS FROM RAS PS TO TIE-IN @ EXISTING RS LINE (PROFILE 31) | 36 | **LF** | | |
| G35 | PHASE 1 - 12" DI RAS FROM RAS PS TO TIE-IN @ EXISTING RAS LINE (PROFILE 32) | 69 | **LF** | | |
| G36 | PHASE 1 - 18" DI RAS FROM SECONDARY CLARIFIER NO.3 TO RAS PS NO.2 (PROFILE 27) | 63 | **LF** | | |
| G37 | PHASE 1 - REPLACE 18" DI RAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE) | 75 | **LF** | | |
| G38 | PHASE 1 - 8" DI WAS FROM SLUDGE THICKENER TO WAS SCUM PS (PROFILE 26) | 226 | **LF** | | |
| G39 | PHASE 1 - 6" DI WAS FROM SECONDARY CLARIFIER NO.3 TO WAS/SCUM PS (PROFILE 22) | 77 | **LF** | | |
| G40 | PHASE 1 - REPLACE 6" DI WAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE) | 54 | **LF** | | |

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|---|---|---|---|---|---|
| G41 | PHASE 1 - 36" DI ML FROM SEC. CLAR. DISTRIBUTION BOX TO EXISTING 36" TIE-IN (2EA) (PROFILE 9 & 10) | 118 | **LF** | | |
| G42 | PHASE 2 - 6" & 8" DI FW FROM FILTERS TO EXIST SLUDGE THICKENER DIVERSION BOX (PROFILE 29 & 30) | 478 | **LF** | | |
| G43 | PHASE 1 - 30" & 36" DI SCE FROM FILTERS TO SEC. CLAR. #2 (PROFILES 17 & 19) | 61 | **LF** | | |
| G44 | PHASE 1 - 30" DI SCE FROM SEC. CLAR. #3 TO SEC. CLAR. #2 (PROFILE 18) | 20 | **LF** | | |
| G45 | PHASE 1 - 30" DI SCE FROM SEC. CLAR. NO1 TO FILTERS (PROFILE 16) | 28 | **LF** | | |
| G46 | PHASE 1 - 48" DI FE FROM FILTERS TO EFFLUENT PS (PROFILE 20) | 9 | **LF** | | |
| G47 | PHASE 1 - 36" DI FE FROM EFFLUENT PS TO OUTFALL STRUCTURE (PROFILE 21) | 203 | **LF** | | |
| G48 | PHASE 1 - 6" DI SWAS FROM SLUDGE THICKENER DISTR. BOX TO SURFACE WASTING PS (PROFILE 15) | 305 | **LF** | | |
| G49 | PHASE 1 - 12" DI SWAS FROM EXISTING AERATION BASIN TO SURFACE WASTING PS (PROFILE 14) | 151 | **LF** | | |
| G50 | PHASE 1 - 2.5" ST CA FROM INFLUENT ELEC BLDG TO ANOXIC BASINS | 347 | **LF** | | |
| G51 | PHASE 1 - 30" DI SCI FROM SEC. CLAR. DISTR. BOX TO SEC. CLAR. NO. 3 (PROFILE 13) | 273 | **LF** | | |
| G52 | PHASE 1 - 30" DI SCI FROM SEC. CLAR. DISTRIBUTION BOX TO SEC. CLAR. DISTRIBUTION BOX (2EA) (PROFILE 11 & 12) | 100 | **LF** | | |
| G53 | PHASE 1 - REPLACE 30" DI SCI @ SECONDARY CLARIFIER NO.1 (NO PROFILE) | 92 | **LF** | | |
| G54 | PHASE 1 - 6" DI SSC FROM SEC. CLAR. NO 2 TO SEC. CLAR. NO 3 (PROFILE 25) | 61 | **LF** | | |
| G55 | PHASE 1 - 4" PE OC FROM LIFT STATION NO.4 TO ODOR CONTROL UNIT | 103 | **LF** | | |
| G56 | PHASE 1 - 6" DI DS/TS @ BLOWER BLDG VLV VAULT | 76 | **LF** | | |
| G57 | PHASE 1 - 4" DI GLASS LINED @ INFLUENT STRUCTURE | 162 | **LF** | | |
| G58 | PHASE 1 - 2" GI NPW BETWEEN FLTR BLDG & SEC. CLAR. NO. 1 | 1 | **EA** | | |
| G59 | PHASE 1 - 2" W OPERATIONS AND LAB BUILDING | 2 | **EA** | | |
| G60 | PHASE 1 - 2" NPW BETWEEN AERATION BASIN 1&2 | 1 | **EA** | | |
| G61 | PHASE 1 - 2" PVC NPW @ RECYCLE PS NO. 1 | 3 | **EA** | | |
| G62 | PHASE 1 - 3" PVC PW @ NORTH SIDE OF OPS BLDG | 4 | **EA** | | |
| G63 | PHASE 1 - 4" DI DL @ EXISTING EFFLUENT PS | 2 | **EA** | | |

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| G64 | PHASE 1 - 4" DI FM @ EXISTING HEADWORKS (PROFILE 41 LOCATION) | 4 | **EA** | | |
| G65 | PHASE 1 - REPLACE 6" DI WAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE) | 2 | **EA** | | |
| G66 | PHASE 1 - 6" WATER LINE @ MAINTENANCE BUILDING | 1 | **EA** | | |
| G67 | PHASE 1 - 6" DL @ NORTH SIDE OF OPERATIONS BUILDING | 2 | **EA** | | |
| G68 | PHASE 1 - 6" DI DL @ RAS PS NO. 2 | 1 | **EA** | | |
| G69 | PHASE 1 - 6" DI DL @ EXISTING MH 33-1 (PROFILE 33 LOCATION) | 1 | **EA** | | |
| G70 | PHASE 1 - 8" DI DL @ EXISTING COMPOSTING FACILITY DRIVE (PROFILE 8 LOCATION) | 2 | **EA** | | |
| G71 | PHASE 1 - 8" DI WAS @ EXISTING SLUDGE THICKENER NO. 2 (PROFILE 26 LOCATION) | 4 | **EA** | | |
| G72 | PHASE 1 - 12" RAS @ RAS FM VAULT #2 (PROFILE 32 LOCATION) | 2 | **EA** | | |
| G73 | PHASE 1 - 12"  RS FUTURE CONNECTION @ INFLUENT BLDG. | 1 | **EA** | | |
| G74 | PHASE 1 - 12" DI RS @ NORTH LIFT STATION TIE-IN (PROFILE NO. 3 LOCATION) | 2 | **EA** | | |
| G75 | PHASE 1 - REPLACE 18" DI RAS @ SECONDARY CLARIFIER NO.1 | 1 | **EA** | | |
| G76 | PHASE 1 - 24" DI RS FUTURE CONNECTION @ INFLUENT BLDG. | 1 | **EA** | | |
| G77 | PHASE 1 - 24" DI RS @ MCKISSIC LS TIE-IN (PROFILE 3 LOCATION) | 4 | **EA** | | |
| G78 | PHASE 1 - 30" DI RS NORTH WEST OF SECONDARY CLAR. NO.1 | 1 | **EA** | | |
| G79 | PHASE 1 - REPLACE 30" DI SCI @ SECONDARY CLARIFIER NO.1 (NO PROFILE) | 1 | **EA** | | |
| G80 | PHASE 1 - REPLACE 30" DI SCE @ SECONDARY CLARIFIER NO.1 (PROFILE 16 LOCATION) | 1 | **EA** | | |
| G81 | PHASE 1 - 36" DI SCE SOUTH EAST OF CLAR. NO. 3 | 1 | **EA** | | |
| G82 | PHASE 1 - 36" DI ML @ SEC. CLAR. DISTR. BOX  **SHOWN AS 30"** | 8 | **EA** | | |
| G83 | PHASE 1 - 36" RS @ NW CORNER OF AERATION BASIN #1 | 2 | **EA** | | |
| G84 | PHASE 1 - 36" DI ML  LINE STOP @ AERATION BASIN NO.1 W/ CAP | 1 | **EA** | | |
| G85 | PHASE 1 - 36" DI ML  LINE STOP @ AERATION BASIN NO.2 W/ CAP | 1 | **EA** | | |
| G86 | PHASE 1 - 18" DI RAS LINE STOP @ SEC. CLAR. NO .1 W/CAP | 1 | **EA** | | |

| | | | | | |
|---|---|---|---|---|---|
| G87 | PHASE 1 - 15" & 18" DL REMOVAL | 156 | **LF** | | |
| G88 | PHASE 1 - 12" RAS LINES | 52 | **LF** | | |
| G89 | PHASE 1 - REMOVE YARD HYDRANT/FLUSHING HYDRANTS | 9 | **EA** | | |
| G90 | PHASE 1 - FIRE HYDRANT @ MAINTENANCE BUILDING | 1 | **EA** | | |
| G91 | PHASE 1 - 30" & 36" SCE REMOVAL | 294 | **LF** | | |
| G92 | PHASE 1 - 30" & 36" RS REMOVAL | 557 | **LF** | | |
| G93 | PHASE 1 - 30" OR 36" ML REMOVAL | 163 | **LF** | | |
| G94 | PHASE 1 - NORTH LIFT STATION TIE-IN | 1 | **LS** | | |
| G95 | PHASE 1 - 42" HEADWORKS TIE-IN | 1 | **LS** | | |
| G96 | PHASE 1 - SECONDARY CLARIFIER SPLITTER BOX | 1 | **LS** | | |
| G97 | PHASE 1 - 36" RS TIE-IN | 1 | **LS** | | |
| G98 | PHASE 1 - TEMPORARY 36" SCE | 1 | **LS** | | |
| H1 | PHASE 1 - 36" RCP | 188 | **LF** | | |
| H2 | PHASE 1 - 24" DOUBLE RCP W/RIPRAP @ WEST ENTRANCE | 70 | **LF** | | |
| H3 | PHASE 1 - 18" DOUBLE RCP @ WEST ENTRANCE | 120 | **LF** | | |
| H4 | PHASE 1 - 42" RCP | 66 | **LF** | | |
| H5 | PHASE 1 - 45"X29" RCPE PIPE | 110 | **LF** | | |
| H6 | PHASE 1 - TRIPLE BARREL 10'X6' RCB @ TOWN BRANCH CREEK CROSSING | 90 | **LF** | | |
| H7 | PHASE 1 - HEAD WALL/SINGLE PIPE | 2 | **EA** | | |
| H8 | PHASE 1 - HEAD WALL/DOUBLE PIPE | 4 | **EA** | | |
| H9 | PHASE 1 - 6'X6' AREA INLET | 2 | **EA** | | |
| H10 | PHASE 1 - 6'X6' JUNCTION BOX | 1 | **EA** | | |
| LL10 | TEMP NORTH ACCESS DR - TRIPLE BARREL BOX CULVERT SUPPLY & INSTALL | 1 | **LS** | | |

| | | | | | |
|---|---|---|---|---|---|
| ZZ21 | BP 10 - YARD PIPING MOBILIZATION | 1 | **LS** | | |
| ZZ22 | BP 10 - YARD PIPING BONDING | 1 | **LS** | | |
| | | | | **Bid Package Total:** | |

The Total Firm Lump Sum Price stated above includes the cost of all the Work which is required or implied by the RFP documents, or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work of its kind. Further, any and all alterations, modifications, and adjustments to the Work, which are reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the kind required by the resultant Subcontract, will be performed without additional compensation.

**Performance and Payment Bond**

Insert Cost for Separate Performance and Payment Bonds valued at 100% of the Bid Package Total Above: $ _____

# Methods of Measurement

## Bid Package 10 - Yard Piping

### G1 PHASE 1 - 4", 6", & 8" DRAINS W/MH'S PROFILES (34-36)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

### G2 PHASE 1 - 8" DRAIN PROFILE (8) W/MH'S

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G3 PHASE 1 - 6" DRAIN PROFILE W/MH'S PROFILES (33)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G4 PHASE 1 - 6" DRAIN PROFILES (23-24)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G5 PHASE 2 - 6" & 8" DRAINS W/ MH'S PROFILES (38)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G6 PHASE 2 - 8" DRAIN AT LS NO. 2 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G7 PHASE 2 - 4" DRAINS @ EXISTING DIGESTERS #4 & #5 (NO PROFILES)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G8 PHASE 2 - 4" & 6" DRAINS FROM PS NO.1 TO OPERATIONS BLDG (NO PROFILES)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G9 PHASE 2 - 4" & 6" DRAINS FROM PUMPED INFLUENT METER VAULT TO LS #4 & INFLUENT BUILDING TO LS #4 (NO PROFILES)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G10 PHASE 1 - 1" WATER LINE FROM INFLUENT STRUCTURE TO 4" TIE-IN

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G11 PHASE 1 - 2" & 3" WATER LINE FROM EXT. 6" WATER LINE TO MAINTENANCE BUILDING AND YARD HYDRANTS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G12 PHASE 2 - 2", 3", & 6" WATER LINE @ OPERATIONS BUILDING TO RPZ @ SEC CLAR #3 TO SLUDGE THICKENER PS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G13 PHASE 2 - 1" WATER LINE FROM OPERATIONS BLDG TO EXISTING HW

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G14 PHASE 2 - FIRE HYDRANT ASSEMBLIES ON EXISTING 6" WATER @ MAINTENANCE BUILDING

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material,

**Compensation Type 1**

## G15 PHASE 2 - FIRE HYDRANT ASSEMBLIES ON EXISTING 8" WATER

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G16 PHASE 1 - 8" WATER AND METER VAULT PIPING AT EXISTING DIGESTERS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G17 PHASE 2 - 4", 2", 1" PW FROM INFLUENT BUILDING TO EXISTING DIGESTERS #4 & #5

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G18 PHASE 1 - 2" & 1" PW FROM 4" TIE-IN TO SECONDARY CLARIFIERS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G19 PHASE 1 - 4",3",2",1" NPW FROM RPZ @ INFLUENT STRUCTURE TO SEC CLAR DISTR BOX

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G20 PHASE 1 - 2" & 1" NPW FROM RPZ @ OPS BLDG TO WAS/SCUM PS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G21 PHASE 1 - 6" NPW FROM FDC @ OPS BUILDING TO FDC@ INFLUENT STRUCTURE

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G22 PHASE 1 - 4" FM FROM INFLUENT STR. TO LS NO.4 (PROFILE 4)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G23 PHASE 1 - 4"FM FROM FROM TIE-IN @ EXISTING 4" FM TO JB (PROFILE 41)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G24 PHASE 2 - 2" FM FROM DIGESTER 4 TO MH STR 63 & BLOWER BDLG VLV VAULT TO STR. 63

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G25 PHASE 2 - 2" FM FROM WET WEATHER METER VAULT TO WASTE METER VAULT TO MH33-3 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G25.5 PHASE 2 - RAS PS FLOW METER VAULTS 1 & 2 SUMP PUMP PIPING

The price bid shall include full compensation for the labor, equipment, and material to install sump pump piping (see specification 11315 for pipe routing) as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G26 PHASE 1 - 24" RS FROM INFLUENT BLDG TO MCKISSIC LS FM TIE-IN (PROFILE 2)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G27 PHASE 1 - 24" RS TEMP. REROUTE MCKISSIC LS FM (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G28 PHASE 1 - 12" RS FROM INFLUENT BLDG TO NORTH LS FM TIE-IN (PROFILE 3)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G29 PHASE 1 - 42" RS FROM MH 1-9 TO INFLUENT BLDG (PROFILE 1)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G30 PHASE 1 - 36" RS FROM INFLUENT STRUCTURE TO TIE-IN @ EXISTING 36" (PROFILE 5)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G31 PHASE 1 - 12" RS FROM NEW 36" RS TO NORTH LS FM 30" TIE-IN EXISTING (PROFILE 6)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G32 PHASE 2 - 30" WW FROM PLANT INFL METER VLT TO FILTRATION STR. (PROFILE 7)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G33 PHASE 1 - 12" RAS FROM RAS PS NO.2 TO INFLUENT BLDG. (PROFILE 28)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G34 PHASE 1 - 12" RAS FROM RAS PS TO TIE-IN @ EXISTING RS LINE (PROFILE 31)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G35 PHASE 1 - 12" RAS FROM RAS PS TO TIE-IN @ EXISTING RAS LINE (PROFILE 32)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G36 PHASE 1 - 18" RAS FROM SECONDARY CLARIFIER NO.3 TO RAS PS NO.2 (PROFILE 27)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G37 PHASE 1 - REPLACE 18" RAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G38 PHASE 1 - 8" WAS FROM SLUDGE THICKENER TO WAS SCUM PS (PROFILE 26)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G39 PHASE 1 - 6" WAS FROM SECONDARY CLARIFIER NO.3 TO WAS/SCUM PS (PROFILE 22)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G40 PHASE 1 - REPLACE 6" WAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G41 PHASE 1 - 36" ML FROM SEC. CLAR. DISTRIBUTION BOX TO EXISTING 36" TIE-IN (2EA) (PROFILE 9 & 10)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G42 PHASE 2 - 6" & 8" FW FROM FILTERS TO EXIST SLUDGE THICKENER DIVERSION BOX (PROFILE 29 & 30)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G43 PHASE 1 - 30" & 36" SCE FROM FILTERS TO SEC. CLAR. #2 (PROFILES 17 & 19)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G44 PHASE 1 - 30" SCE FROM SEC. CLAR. #3 TO SEC. CLAR. #2 (PROFILE 18)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G45 PHASE 1 - 30" SCE FROM SEC. CLAR. NO1 TO FILTERS (PROFILE 16)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G46 PHASE 1 - 48" FE FROM FILTERS TO EFFLUENT PS (PROFILE 20)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G47 PHASE 1 - 36" FE FROM EFFLUENT PS TO OUTFALL STRUCTURE (PROFILE 21)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G48 PHASE 1 - 6" SWAS FROM SLUDGE THICKENER DISTR. BOX TO SURFACE WASTING PS (PROFILE 15)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G49 PHASE 1 - 12" SWAS FROM EXISTING AERATION BASIN TO SURFACE WASTING PS (PROFILE 14)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G50 PHASE 1 - 2.5" CA FROM INFLUENT ELEC BLDG TO ANOXIC BASINS

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G51 PHASE 1 - 30" SCI FROM SEC. CLAR. DISTR. BOX TO SEC. CLAR. NO. 3 (PROFILE 13)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G52 PHASE 1 - 30" SCI FROM SEC. CLAR. DISTRIBUTION BOX TO SEC. CLAR. DISTRIBUTION BOX (2EA) (PROFILE 11 & 12)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G53 PHASE 1 - REPLACE 30" SCI @ SECONDARY CLARIFIER NO.1 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G54 PHASE 1 - 6" SSC FROM SEC. CLAR. NO 2 TO SEC. CLAR. NO 3 (PROFILE 25)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G55 PHASE 1 - 4" OC FROM LIFT STATION NO.4 TO ODOR CONTROL UNIT

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G56 PHASE 1 - 6" DS/TS @ BLOWER BLDG VLV VAULT

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G57 PHASE 1 - 4" GLASS LINED @ INFLUENT STRUCTURE

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G58 PHASE 1 - 2" NPW BETWEEN FLTR BLDG & SEC. CLAR. NO. 1

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G59 PHASE 1 - 2" W OPERATIONS AND LAB BUILDING

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G60 PHASE 1 - 2" NPW BETWEEN AERATION BASIN 1&2

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G61 PHASE 1 - 2" NPW @ RECYCLE PS NO. 1

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G62 PHASE 1 - 3" PW @ NORTH SIDE OF OPS BLDG

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G63 PHASE 1 - 4" DL @ EXISTING EFFLUENT PS

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G64 PHASE 1 - 4" FM @ EXISTING HEADWORKS (PROFILE 41 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G65 PHASE 1 - REPLACE 6" WAS @ SECONDARY CLARIFIER NO.1 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G66 PHASE 1 - 6" WATER LINE @ MAINTENANCE BUILDING

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G67 PHASE 1 - 6" DL @ NORTH SIDE OF OPERATIONS BUILDING

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G68 PHASE 1 - 6" DL @ RAS PS NO. 2

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G69 PHASE 1 - 6" DL @ EXISTING MH 33-1 (PROFILE 33 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G70 PHASE 1 - 8" DL @ EXISTING COMPOSTING FACILITY DRIVE (PROFILE 8 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G71 PHASE 1 - 8" WAS @ EXISTING SLUDGE THICKENER NO. 2 (PROFILE 26 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G72 PHASE 1 - 12" RAS @ RAS FM VAULT #2 (PROFILE 32 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G73 PHASE 1 - 12" RS FUTURE CONNECTION @ INFLUENT BLDG.

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G74 PHASE 1 - 12" RS @ NORTH LIFT STATION TIE-IN (PROFILE NO. 3 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, pipe anchors, trench cutoffs, manholes, casing, full depth backfill, blocking, encasement under structures/slabs/footings/etc., haul off, and testing/chlorination of the proposed piping as defined in the contract documents. This bid item shall also include costs associated with connections to existing piping as defined in the contract documents. Results of testing/disinfection shall be documented as directed by the construction manager. Bid item includes coordination with trades which include, but is not limited to, pipe penetration location/orientation, temporary pipe supporting, piping layout, etc. Bid item includes all trenching & excavation safety. Remedy due to failed testing shall be at the expense of the bidding contractor. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G75 PHASE 1 - REPLACE 18" RAS @ SECONDARY CLARIFIER NO.1

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G76 PHASE 1 - 24" RS FUTURE CONNECTION @ INFLUENT BLDG.

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G77 PHASE 1 - 24" RS @ MCKISSIC LS TIE-IN (PROFILE 3 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G78 PHASE 1 - 30" RS NORTH WEST OF SECONDARY CLAR. NO.1

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G79 PHASE 1 - REPLACE 30" SCI @ SECONDARY CLARIFIER NO.1 (NO PROFILE)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G80 PHASE 1 - REPLACE 30" SCE @ SECONDARY CLARIFIER NO.1 (PROFILE 16 LOCATION)

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G81 PHASE 1 - 36" SCE SOUTH EAST OF CLAR. NO. 3

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G82 PHASE 1 - 36" ML @ SEC. CLAR. DISTR. BOX **SHOWN AS 30"**

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G83 PHASE 1 - 36" RS @ NW CORNER OF AERATION BASIN #1

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G84 PHASE 1 - 36" ML LINE STOP @ AERATION BASIN NO.1 W/ CAP

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G85 PHASE 1 - 36" ML LINE STOP @ AERATION BASIN NO.2 W/ CAP

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G86 PHASE 1 - 18" RAS LINE STOP @ SEC. CLAR. NO .1 W/CAP

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G87 PHASE 1 - 15" & 18" DL REMOVAL

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G88 PHASE 1 - 12" RAS LINES

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G89 PHASE 1 - REMOVE YARD HYDRANT/FLUSHING HYDRANTS

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G90 PHASE 1 - FIRE HYDRANT @ MAINTENANCE BUILDING

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G91 PHASE 1 - 30" & 36" SCE REMOVAL

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G92 PHASE 1 - 30" & 36" RS REMOVAL

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G93 PHASE 1 - 36" ML REMOVAL

The price bid shall include full compensation for the labor, equipment, and material to remove and dispose of existing below grade piping. All demolished/removed items shall be hauled off site unless otherwise indicated. This includes but is not limited to potholing of existing utilities, protection of existing structures, utilities, equipment, personnel, coordination with plant staff. Haul off, traffic control, and cleanup as defined in the contract documents is to be included in this bid item. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## G94 PHASE 1 - NORTH LIFT STATION TIE-IN

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and operation of necessary bypass pumping as needed for installation of the Site Pipe/Utilities scope. Bypass pumping shall be sized and engineered per the site requirements. Cost shall include the contractor's labor, materials, equipment, and overhead & profit as defined to complete the work.

**Compensation Type 1**

## G95 PHASE 1 - 42" HEADWORKS TIE-IN

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and operation of necessary bypass pumping as needed for installation of the Site Pipe/Utilities scope. Bypass pumping shall be sized and engineered per the site requirements. Cost shall include the contractor's labor, materials, equipment, and overhead & profit as defined to complete the work.

**Compensation Type 1**

## G96 PHASE 1 - SECONDARY CLARIFIER SPLITTER BOX

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and operation of necessary bypass pumping as needed for installation of the Site Pipe/Utilities scope. Bypass pumping shall be sized and engineered per the site requirements. Cost shall include the contractor's labor, materials, equipment, and overhead & profit as defined to complete the work.

**Compensation Type 1**

## G97 PHASE 1 - 36" RS TIE-IN

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and operation of necessary bypass pumping as needed for installation of the Site Pipe/Utilities scope. Bypass pumping shall be sized and engineered per the site requirements. Cost shall include the contractor's labor, materials, equipment, and overhead & profit as defined to complete the work.

**Compensation Type 1**

## G98 PHASE 1 - TEMPORARY 36" SCE

The price bid shall include full compensation for the labor, equipment, and material to install proposed temporary piping as defined in the contract documents. This includes but is not limited to potholing of existing utilities, manholes, casing, full depth backfill, concrete encasement under structures/slabs/footings/etc., blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H1 PHASE 1 - 36" RCP

The price bid shall include full compensation for the labor, equipment, and material to install proposed RCP as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H2 PHASE 1 - 24" DOUBLE RCP W/RIPRAP @ WEST ENTRANCE

The price bid shall include full compensation for the labor, equipment, and material to install proposed piping, rip rap, toe walls, and end sections as defined in the contract documents. This includes but is not limited to potholing of existing utilities, manholes/boxes, casing, full depth backfill, blocking, haul off, traffic control and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H3 PHASE 1 - 18" DOUBLE RCP @ WEST ENTRANCE

The price bid shall include full compensation for the labor, equipment, and material to install proposed double RCP as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H4 PHASE 1 - 42" RCP

The price bid shall include full compensation for the labor, equipment, and material to install proposed RCP as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H5 PHASE 1 - 45"X29" RCPE PIPE

The price bid shall include full compensation for the labor, equipment, and material to install proposed RCP as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H6 PHASE 1 - TRIPLE BARREL 10'X6' RCB @ TOWN BRANCH CREEK CROSSING

The price bid shall include full compensation for the labor, equipment, and material to install proposed reinforced concrete box culvert as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H7 PHASE 1 - HEAD WALL/SINGLE PIPE

The price bid shall include full compensation for the labor, equipment, and material to install proposed headwall as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing/disinfection of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H8 PHASE 1 - HEAD WALL/DOUBLE PIPE

The price bid shall include full compensation for the labor, equipment, and material to install proposed headwall as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing/disinfection of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H9 PHASE 1 - 6'X6' AREA INLET

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and installation of area inlets as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## H10 PHASE 1 - 6'X6' JUNCTION BOX

The price bid shall include full compensation for the labor, equipment, and material for the furnishing and installation of junction boxes as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## LL10 TEMP NORTH ACCESS DR - TRIPLE BARREL BOX CULVERT SUPPLY & INSTALL

The price bid shall include full compensation for the labor, equipment, and material to install proposed reinforced concrete box culvert as defined in the contract documents. This includes but is not limited to potholing of existing utilities, full depth backfill, blocking, haul off, and testing of the proposed piping as defined in the contract documents. Cost shall include the contractor's labor, material, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## ZZ21 BP 10 - YARD PIPING MOBILIZATION

Mobilization shall be included within the bid items as seen fit by the bidding subcontractor. Additional mobilizations shall be included as seen fit to perform the work unless specifically stated within the individual bid package's methods of measurement. The price bid shall include full compensation for mobilization as part of the overall scope of the bid package. Mobilization shall not exceed 5% of the total bid package. No more than 75% of the total mobilization cost shall be billed with the first pay application. The remaining 25% of the total mobilization cost shall be billed at 90% completion of the work to compensate for the demobilization of equipment.

**Compensation Type 1**

## ZZ22 BP 10 - YARD PIPING BONDING

The price shall cover the cost for separate Performance and Payment Bonds valued at 100% of the Bid Package Total.

**Compensation Type 1**

**Exhibit A.1 Detailed Price Bid Form(s):**

# 23 Process Equipment Installation

** Provided quantities are for reference only. Unit Price and Extended Price shall reflect bidder's generated quantities.**

| Bid Item No. | Bid Package Description | Quantity | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|
| I30 | PHASE 1 - INFLUENT STR. - GRIT REMOVAL EQUIPMENT 11322 | 1 | LS | | |
| I31 | PHASE 1 - INFLUENT STR. - COURSE SCREENING SYSTEM 11331/11333 | 1 | LS | | |
| I32 | PHASE 1 - INFLUENT STR. - WEIR/SLIDE GATES INSTALL 11280/11282 | 11 | EA | | |
| I33 | PHASE 1 - INFLUENT STR. - BIOTRICKLING FLTR EQUIP. 11350/11355/11356/11357 | 1 | LS | | |
| I34 | PHASE 1 - INFLUENT STR. - CHEMICAL FEED INSTALL 11727 | 1 | LS | | |
| I35 | PHASE 1 - INFLUENT STR. - CHEMICAL FEED TOTE & DRUM INSTALL 11727 | 1 | LS | | |
| J29 | PHASE 1 - INFLUENT ELEC. BLDG - COMPRESSED AIR MIXING SYSTEM INSTALL 11631 | 1 | LS | | |
| L15 | PHASE 1 - LIFT STATION NO.4 VLV VAULT & WETWELL - SUBMERSIBLE PUMPS INSTALL 11310 | 1 | LS | | |
| M12 | PHASE 2 - WET WEATHER METER VAULT - SUMP PUMP INSTALL | 1 | LS | | |
| N10 | PHASE 1 - ANOXIC BASINS - COMPRESSED AIR MIXING SYSTEM INSTALL 11631 | 1 | LS | | |
| N11 | PHASE 1 - ANOXIC BASINS - MIXED LIQUOR FERMENTER DEWATERING PUMPS INSTALL (BASE AND RAILS ONLY) 11310.4.06 | 1 | LS | | |
| N12 | PHASE 1 - ANOXIC BASINS - FERMENTER FEED PUMP INSTALL 11310 | 1 | LS | | |
| N13 | PHASE 1 - RECYCLE PS - RECYCLE PUMP INSTALL 11154 | 1 | LS | | |
| N14 | PHASE 1 - RECYCLE PS - PORTABLE DAVIT CRANE INSTALL | 1 | LS | | |
| N15 | PHASE 1 - ANOXIC BASINS - WEIR/SLIDE GATE INSTALL 11280/11282 | 4 | EA | | |
| O9 | PHASE 1 - AERATION BASINS - SCUM BAFFLE INSTALL 11366 | 1 | LS | | |
| O11 | PHASE 1 - AERATION BASINS - WEIR/SLIDE GATE INSTALL 11280/11282 | 2 | EA | | |

| | | | | | |
|---|---|---|---|---|---|
| O12 | PHASE 1 - AERATION BASINS - REMOVE EXISTING WEIR PLATE | 4 | EA | | |
| P15 | PHASE 1 - SURFACE WASTING PS - SUBMERSIBLE PUMPS INSTALL 11310 | 1 | LS | | |
| P18 | PHASE 1 - SURFACE WASTING PS - SUMP PUMP INSTALL | 1 | LS | | |
| Q13 | PHASE 1 - SEC CLAR DIST & RAS PS - WEIR/SLIDE GATE INSTALL 11280/11282 | 3 | EA | | |
| R17 | PHASE 2 - SEC CLAR NO.1- CLARIFIER EQUIPMENT REMOVAL & STORAGE | 1 | LS | | |
| R18 | PHASE 2 - SEC CLAR NO.1- CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226 | 1 | LS | | |
| S4 | PHASE 1 - SEC CLAR NO.2 - CLARIFIER EQUIPMENT REMOVAL & STORAGE | 1 | LS | | |
| S5 | PHASE 1 - SEC CLAR NO.2 - CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226 | 1 | LS | | |
| T17 | PHASE 1 - SEC CLAR NO.3- CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226 | 1 | LS | | |
| U12 | PHASE 1 - RAS PS NO.2 - SUBMERSIBLE PUMPS INSTALL 11310 | 2 | EA | | |
| V12 | PHASE 1 - RAS PS FLOW METER VAULT NO.2 - SUMP PUMP INSTALL | 1 | LS | | |
| W12 | PHASE 1 - WASTING METER VAULT - SUMP PUMP INSTALL | 1 | LS | | |
| Y4 | PHASE 1 - EX WAS PS - SET & STORE SPARE WAS PUMP | 1 | LS | | |
| Z15 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - CLOTH MEDIA FILTER EQUIPMENT INSTALL 11243 | 4 | EA | | |
| Z16 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - UV & WEIR GATE EQUIPMENT INSTALL 11260/11280/11282 | 1 | LS | | |
| Z17 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - PARSHALL FLUME EQUIPMENT INSTALL 11207 | 1 | LS | | |
| Z18 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - BLOWER EQUIPMENT INSTALL 11370 | 3 | EA | | |
| Z19 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - COARSE BUBBLE DIFFUSED AERATION INSTALL 11377 | 1 | LS | | |
| Z20 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - WEIR/SLIDE GATES INSTALL 11280/11282 | 12 | EA | | |
| Z21 | PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - SAMPLING EQUIPMENT INSTALL 13121 | 1 | LS | | |
| AA27 | PHASE 2 - EFF PS & ELEC BLDG. - VERTICAL TURBINE PUMPS EQUIPMENT INSTALL 11215 | 1 | LS | | |
| BB12 | PHASE 2 - BLOWER BUILDING VALVE VAULT - SUMP PUMP INSTALL | 1 | LS | | |

| | | | | | |
|---|---|---|---|---|---|
| DD12 | PHASE 2 - DIGESTER NO. 4 VALVE VAULT - SUMP PUMP INSTALL | 1 | LS | | |
| OO12 | PHASE 2 - EFF PS & ELEC BLDG. - VERTICAL TURBINE PUMPS EQUIPMENT INSTALL 11216 | 1 | LS | | |
| ZZ47 | BP 23 - PROCESS EQUIPMENT SUB MOBILIZATION | 1 | LS | | |
| ZZ48 | BP 23 - PROCESS EQUIPMENT SUB BONDING | 1 | LS | | |
| | | | | **Bid Package Total:** | |

The Total Firm Lump Sum Price stated above includes the cost of all the Work which is required or implied by the RFP documents, or which may be inferred therefrom, and which is customarily provided in furnishing a complete and finished work of its kind. Further, any and all alterations, modifications, and adjustments to the Work, which are reasonably foreseeable or customarily encountered in providing and installing equipment, material, and services of the kind required by the resultant Subcontract, will be performed without additional compensation.

**Performance and Payment Bond**
Insert Cost for Separate Performance and Payment Bonds valued at 100% of the Bid Package Total Above: $ _____

# Methods of Measurement

## Bid Package 23 - Process Equipment Installation

### I30 PHASE 1 - INFLUENT STR. - GRIT REMOVAL EQUIPMENT 11322

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## I31 PHASE 1 - INFLUENT STR. - COURSE SCREENING SYSTEM 11331/11333

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## I32 PHASE 1 - INFLUENT STR. - WEIR/SLIDE GATES INSTALL 11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## I33 PHASE 1 - INFLUENT STR. - BIOTRICKLING FLTR EQUIP. 11350/11355/11356/11357

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## I34 PHASE 1 - INFLUENT STR. - CHEMICAL FEED INSTALL 11727

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## I35 PHASE 1 - INFLUENT STR. - CHEMICAL FEED TOTE & DRUM INSTALL 11727

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## J29 PHASE 1 - INFLUENT ELEC. BLDG - COMPRESSED AIR MIXING SYSTEM INSTALL 11631

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## L15 PHASE 1 - LIFT STATION NO.4 VLV VAULT & WETWELL - SUBMERSIBLE PUMPS INSTALL 11310

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## M12 PHASE 2 - WET WEATHER METER VAULT - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N10 PHASE 1 - ANOXIC BASINS - COMPRESSED AIR MIXING SYSTEM INSTALL 11631

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N11 PHASE 1 - ANOXIC BASINS - MIXED LIQUOR FERMENTER DEWATERING PUMPS INSTALL (BASE AND RAILS ONLY) 11310

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N12 PHASE 1 - ANOXIC BASINS - FERMENTER FEED PUMP INSTALL 11310

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N13 PHASE 1 - RECYCLE PS - RECYCLE PUMP INSTALL 11154

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N14 PHASE 1 - RECYCLE PS - PORTABLE DAVIT CRANE INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## N15 PHASE 1 - ANOXIC BASINS - WEIR/SLIDE GATE INSTALL 11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## O9 PHASE 1 - AERATION BASINS - SCUM BAFFLE INSTALL 11366

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## O11 PHASE 1 - AERATION BASINS - WEIR/SLIDE GATE INSTALL 11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## O12 PHASE 1 - AERATION BASINS - REMOVE EXISTING WEIR PLATE

The price bid shall include full compensation for the labor, equipment, and small tools/supplies for the demolition of the specified items as defined in the contract documents. Bidder shall assume all costs associated with removal from site unless otherwise noted in the construction documents. Cost shall include the contractor's labor, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## P15 PHASE 1 - SURFACE WASTING PS - SUBMERSIBLE PUMPS INSTALL 11310

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## P18 PHASE 1 - SURFACE WASTING PS - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Q13 PHASE 1 - SEC CLAR DIST & RAS PS - WEIR/SLIDE GATE INSTALL 11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## R17 PHASE 2 - SEC CLAR NO.1- CLARIFIER EQUIPMENT REMOVAL & STORAGE

The price bid shall include full compensation for the labor, equipment, and small tools/supplies for the removal and storage of the specified items as defined in the contract documents. Bidder shall remove the specified items and store on site at a location to be determined during construction. Bidders shall provide sufficient blocking to keep items level and elevated during storage to prevent damage and contact with the ground. Cost shall include the contractor's labor, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## R18 PHASE 2 - SEC CLAR NO.1- CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## S4 PHASE 1 - SEC CLAR NO.2 - CLARIFIER EQUIPMENT REMOVAL & STORAGE

The price bid shall include full compensation for the labor, equipment, and small tools/supplies for the removal and storage of the specified items as defined in the contract documents. Bidder shall remove the specified items and store on site at a location to be determined during construction. Bidders shall provide sufficient blocking to keep items level and elevated during storage to prevent damage and contact with the ground. Cost shall include the contractor's labor, equipment, and overhead and profit as defined to complete the work.

**Compensation Type 1**

## S5 PHASE 1 - SEC CLAR NO.2 - CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## T17 PHASE 1 - SEC CLAR NO.3- CLARIFIER EQUIPMENT COMPONENTS INSTALL 11225/11226

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## U12 PHASE 1 - RAS PS NO.2 - SUBMERSIBLE PUMPS INSTALL 11310

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## V12 PHASE 1 - RAS PS FLOW METER VAULT NO.2 - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## W12 PHASE 1 - WASTING METER VAULT - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Y4 PHASE 1 - EX WAS PS - SET & STORE SPARE WAS PUMP

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z15 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - CLOTH MEDIA FILTER EQUIPMENT INSTALL 11243

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z16 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - UV & WEIR GATE EQUIPMENT INSTALL 11260/11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z17 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - PARSHALL FLUME EQUIPMENT INSTALL 11207

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z18 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - BLOWER EQUIPMENT INSTALL 11370

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z19 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - COARSE BUBBLE DIFFUSED AERATION INSTALL 11377

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z20 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - WEIR/SLIDE GATES INSTALL 11280/11282

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## Z21 PHASE 2 - TER. TRTMNT, UV, POST AERATION, P FLUME - SAMPLING EQUIPMENT INSTALL 13121

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## AA27 PHASE 2 - EFF PS & ELEC BLDG. - VERTICAL TURBINE PUMPS EQUIPMENT INSTALL 11215

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## BB12 PHASE 2 - BLOWER BUILDING VALVE VAULT - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## DD12 PHASE 2 - DIGESTER NO. 4 VALVE VAULT - SUMP PUMP INSTALL

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## OO12 PHASE 2 - EFF PS & ELEC BLDG. - VERTICAL TURBINE PUMPS EQUIPMENT INSTALL 11216

The price bid shall include full compensation for installation of the equipment as specified in the contract documents. This shall include but is not limited to assembly, hoisting, supporting/anchoring, grouting, alignment, leveling, lubrication, surface preparation, coordination with other trades, coatings/paint touch up, and startup of equipment. Contractor shall submit to the Construction Manager the expected assembly & installation duration for each equipment installation (in working days) prior to mobilization. Cost shall include the contractor's labor, material, equipment, overhead and profit as defined to complete the work.

**Compensation Type 1**

## ZZ47 BP 23 - PROCESS EQUIPMENT SUB MOBILIZATION

Mobilization shall be included within the bid items as seen fit by the bidding subcontractor. Additional mobilizations shall be included as seen fit to perform the work unless specifically stated within the individual bid package's methods of measurement. The price bid shall include full compensation for mobilization as part of the overall scope of the bid package. Mobilization shall not exceed 5% of the total bid package. No more than 75% of the total mobilization cost shall be billed with the first pay application. The remaining 25% of the total mobilization cost shall be billed at 90% completion of the work to compensate for the demobilization of equipment.

**Compensation Type 1**

## ZZ48 BP 23 - PROCESS EQUIPMENT SUB BONDING

The price shall cover the cost for separate Performance and Payment Bonds valued at 100% of the Bid Package Total.

**Compensation Type 1**