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Darlene A. LoCascio
Director of Procurement and Materials Management

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December 1, 2025

Dear Bidder:

Enclosed herewith is "Notice of Revision and Addendum in Contract Documents," Addendum 5, consisting of eight (8) pages and other attachments as referenced in the addendum. This addendum is dated December 1, 2025, and pertains to Contract 21-092-3P "Battery E Activated Sludge Facility, O'Brien Water Reclamation Plant."

Proposers must download Addendum 5 and the attachments in their entirety from the District's Portal at www.mwrd.org. The path is as follows: **Doing Business→Procurement and Materials Management→Contract Announcements**. Scroll to Contract 21-092-3P and click "Addenda" to obtain this and all other addenda. If you are unable to download this addendum or any other contract documents, please email the Contract Desk at contractdesk@mwrd.org or call (312) 751-6629 for assistance.

The Notice must also be signed, dated, inserted in the Contract Documents, and submitted with the Proposal, OR the Bidder may identify the addendum number in the space provided on the Proposal signature page.

Very truly yours,



Darlene A. LoCascio
Director of Procurement and
Materials Management

Attachment

Acknowledgment of receipt of the above-cited Notice:

DATE _____

NAME _____

FIRM _____

SIGNED _____



NOTICE OF REVISION AND ADDENDUM IN CONTRACT DOCUMENTS

ADDENDUM 5

DECEMBER 1, 2025

**CONTRACT 21-092-3P
BATTERY E ACTIVATED SLUDGE FACILITY
O'BRIEN WATER RECLAMATION PLANT**

All bidders are hereby notified of the following revisions:

Volume 1 of 4 – Signature Book for Submission of Bid

1. INVITATION TO BID – PAGE I-1

Delete line nine in its entirety and replace it with “**PROPOSALS ARE DUE TUESDAY, JANUARY 27, 2026**”.

2. INVITATION TO BID – PAGE I-1

Refer to the paragraph beginning with “Sealed Proposals, endorsed...”

Delete the phrase “December 9, 2025” from the referenced paragraph and replace it with “January 27, 2026”.

3. AGREEMENT – PAGE A-5

Refer to the row for SECTION 01783 FACILITY START UP REQUIREMENTS.

Delete the page number “01783-1 TO 01783-8” and replace with “01783-1X TO 01783-11X”.

4. AGREEMENT – PAGE A-6

Refer to the row for SECTION 03300 CAST-IN-PLACE CONCRETE.

Delete the page number “03300-1 TO 0330-18” and replace with “03300-1X TO 03300-11X”.

Volumes 2 and 3 of 4 – Specifications

5. TABLE OF CONTENTS – PAGE TOC-1

Refer to the row for SECTION 01783 FACILITY START UP REQUIREMENTS.

Delete the page number “01783-1 TO 01783-8” and replace with “01783-1X TO 01783-11X”.

6. TABLE OF CONTENTS – PAGE TOC-2

Refer to the row for SECTION 03300 CAST-IN-PLACE CONCRETE.

Delete the page number “03300-1 TO 0330-18” and replace with “03300-1X TO 03300-11X”.

7. SECTION 01131 – PAGE 8

Refer to paragraph 1.13 B., which was added in Addendum 3.

Insert the following subsection after the referenced paragraph.

“1.14 SERVICE WATER

- A. Contractor shall use Service Water (plant effluent water) for Equipment Startup testing, Leakage Testing of Containment Structures, and Pressure testing of piping. The District can supply the Contractor a maximum flow of 200 gpm Service Water. Contractor may transfer Service Water from one tank to another to compensate for the limited Service Water supply.”

8. SECTION 01783 – FACILITY START UP REQUIREMENTS

Delete this section in its entirety and replace with the attached revised Section 01783 – Facility Start Up Requirements, pages 01783-1X TO 01783-11X.

9. SECTION 02750 – PAGE 3

Delete Paragraph 3.03 B. and renumber subsequent paragraphs.

10. SECTION 02850 – PAGE 4

Delete Paragraph 2.01 C.1.f. and replace it with the following:

- “f. Panels, columns, and caps shall be constructed from normal weight concrete meeting the requirements of Section 03410.”

11. SECTION 03100 – PAGE 5

Refer to Paragraph 3.04 A.

Delete the wording “Leave the forms in place for a minimum of 11 days to allow for seven days of moist curing and at least four days after the completion of the moist curing. Bottom forms for slabs and beams shall be left in place a minimum of 14 days” and replace it with “Otherwise leave forms in place for the minimum time noted in the Form Removal Time Requirements Table below”.

Add the following after 3.04 A.3.b.:

“4. Form Removal Time Requirements:

<u>Structural Element Supported</u>	<u>Minimum Time Prior to Form Stripping</u>
Elevated Slabs, Roofs, Walkways, Beam Soffits, and Other Flexural Members	14 days
Walls	12 hours
Columns	12 hours
Sides of Beams	12 hours”

12. SECTION 03300 CAST-IN-PLACE CONCRETE

Delete this section in its entirety and replace with the attached revised Section 03300 – Cast-In-Place Concrete, pages 03300-1X TO 03300-11X.

13. SECTION 03800 – PAGE 4

Refer to Paragraph 3.03 H.

Add the following after the referenced paragraph.

- “I. Contractor shall use Service Water (plant effluent water) for Leakage Testing. The District can supply the Contractor a maximum flow of 200 gpm Service Water. Contractor may transfer Service Water from one tank to another to compensate for the limited Service Water supply.”

14. SECTION 04200 – PAGE 8

Refer to Paragraph 2.03 E.

Delete the wording "Equipment Building" and replace it with "Battery D Operating Gallery Building".

15. SECTION 05500 – PAGE 11

Refer to Paragraph 2.11.

Add the following after the referenced paragraph and renumber subsequent paragraphs:

"2.12 EXTERIOR CORNER GUARDS

A. Exterior corner guards where shown on Drawings.

1. Manufacturers:

- a. Omega Industrial Inc. Saukville Wi.: Heavy Duty Corner Guards or approved equal.

2. Material type 316L stainless steel angle welded to base plate.

- a. Finish: brushed.
- b. Size: 4 inch x 4 inch x 42 inch high with 1 inch integral standoff flanges.
- c. Thickness: ¼ inch.
- d. Base Plate: Integral 3/8 inch thick with 3-3/4 inch diameter predrilled holes. Attach base plate with 5/8 inch diameter x 4 inch long expansion anchors into concrete.
- e. Coat concrete surface with bituminous coating where stainless steel base plate comes into contact with concrete."

16. SECTION 07140 – PAGE 6

Delete the last sentence in Paragraph 3.05 A. and replace it with the following:

"Water-bearing structures, manholes with open pipes, and the underside of slabs are excluded."

17. SECTION 11341 – PAGE 3

Refer to Paragraph 1.03 A.24.

Add the following wording at the end of the first sentence: "by indicating a relatively uniform flow pattern from the center column to the influent well with minimal turbulence and no dead zones to ensure that flow is evenly distributed into the settling tank."

18. SECTION 11341 – PAGE 8

Refer to Paragraph 2.01 D.

Delete the wording "sweep in" and replace it with "screed".

19. SECTION 11341 – PAGE 24

Refer the Equipment Schedule.

Delete the row for Feedwell Retention Time at Average Flow and the row for Retention Time at Peak Flow.

Add the following rows after the row for the Flow Range for the Sludge Flow Rate, per Tank:

“Typical Sludge Characteristics	
Design MLSS	1,700 mg/l at 17° C
Historical Long-Term Average SVI	84 mL/g”

20. SECTION 11377 – PAGE 12

Delete Paragraph 3.03 F.

21. SECTION 11400 – PAGE 7

Delete Paragraph 2.02 A.4. and replace it with the following:

“4. Or Approved Equal.”

22. SECTION 13103 – PAGE 2

Refer to Paragraph 1.14 A.1.a.1)a).

Add the wording “The sessions are to be on separate days.” at the end of the referenced paragraph.

Refer to Paragraph 1.14 A.1.a.2)a).

Add the wording “The sessions are to be on separate days.” at the end of the referenced paragraph.

Refer to Paragraph 1.14 A.1.a.2)b).

Add the wording “The fourth session is to be on a separate day.” at the end of the referenced paragraph.

23. SECTION 13200 – PAGE 23

Refer to the row for FE-411C in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 5 gpm” in the Range column.

Refer to the row for FE-412C in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 5 gpm” in the Range column.

Refer to the row for FE-413C in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 5 gpm” in the Range column.

Refer to the row for FE-421C in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 5 gpm” in the Range column.

Refer to the row for FE-422C in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 5 gpm” in the Range column.

24. SECTION 13200 – PAGE 24

Refer to the row for FE-600G in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 1 gpm” in the Range column.

Refer to the row for FE-600H in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 0.5 gpm” in the Range column.

Refer to the row for FE-601G in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 1 gpm” in the Range column.

Refer to the row for FE-601H in the Primary Sensor and Field Instrument Schedule.

Add the wording “0 – 0.5 gpm” in the Range column.

25. PLANS

The following revised plans are included in this Addendum. The revised plans replace previously issued plans having corresponding sheet numbers:

<u>PAGE</u> <u>NO.</u>	<u>SHEET</u> <u>NO.</u>	<u>REV#</u>	<u>TITLE OF SHEET</u>
16	LP-004	1	STARTUP TEMPORARY PUMPING AND PIPING

<u>PAGE</u> <u>NO.</u>	<u>SHEET</u> <u>NO.</u>	<u>REV#</u>	<u>TITLE OF SHEET</u>
43	C-027	2	SITE DEMOLITION PLAN – 4
62	C-046	1	SITE STORM SEWER PLAN – 4
71	C-056	1	SITE YARD PIPING – PROFILE
79	S-006	1	STANDARD DETAILS – 4
81	S-008	2	STANDARD DETAILS – 6
132	S-327	1	SECTIONS
133	S-328	1	SECTIONS
136	S-331	1	SECTION AND DETAILS
143	S-404	1	FLOOR ENLARGED PLANS
144	S-405	1	ROOF ENLARGED PLANS
148	S-409	2	SECTIONS
149	S-410	1	SECTIONS
150	S-411	1	SECTIONS
152	S-413	1	SECTIONS
154	S-415	1	SECTIONS
182	S-520	1	MIXED LIQUOR EFFLUENT CONDUITS PLAN – NORTH
183	S-521	1	EFFLUENT CONDUIT PLAN – SOUTH
184	S-522	1	EFFLUENT CONDUIT PLAN – NORTH
198	S-608	2	BASE PLAN
210	S-620	1	SECTIONS
215	S-702	1	AIR MAIN CONNECTIONS – SECTIONS AND DETAILS
219	S-706	1	AIR MAIN CONNECTIONS – SECTIONS AND DETAILS
258	P-019	2	PROCESS EQUIPMENT SCHEDULES
259	P-020	1	PROCESS EQUIPMENT SCHEDULES
260	P-101	2	METER BUILDING – DEMOLITION AND NEW WORK
298	P-404	1	OPERATING GALLERY – SECTIONS
301	P-407	1	SAMPLE EQUIPMENT – PLAN AND SECTION
302	P-408	1	SLUDGE BOX – 01 – PLAN AND SECTION
316	P-511	1	SECTIONS AND DETAILS
318	P-601	1	PLANS
324	P-607	1	EXISTING MAIN EFFLUENT CONDUIT REPAIR

<u>PAGE</u> <u>NO.</u>	<u>SHEET</u> <u>NO.</u>	<u>REV#</u>	<u>TITLE OF SHEET</u>
326	P-701	1	OVERALL PLAN
327	P-702	1	PLAN AND PROFILE
329	P-704	1	BATTERY D LOWER LEVEL – AIR MAIN CONNECTION – PLAN AND SECTION
347	PB-001	1	PLUMBING NOTES, SYMBOLS, AND ABBREVIATIONS
357	PB-205	1	ENLARGED PLAN
361	PB-404	1	LOWER OPERATING GALLERY ENLARGED PLANS
379	E-016	1	LIGHTING FIXTURE SCHEDULES & TELEPHONE SYSTEM RISER DIAGRAM
396	E-025C	2	CONDUIT AND CABLE SCHEDULE 17 OF 25
403	E-025J	2	CONDUIT AND CABLE SCHEDULE 24 OF 25
404	E-025K	2	CONDUIT AND CABLE SCHEDULE 25 OF 25
419	E-101	1	CONDUIT TO UTILITY TUNNEL – PLAN

This Notice must also be signed, dated, inserted in the Contract Documents, and submitted with the Proposal, OR the Bidder may identify the addendum number in the space provided on the Proposal signature page.



Catherine A. O'Connor
Director of Engineering



Darlene A. LoCascio
Director of Procurement and
Materials Management

The bidder acknowledges that he/she has read this Notice of Revision, dated December 1, 2025, to the Contract Documents and that he/she has taken the provisions thereof into consideration when preparing and submitting this Proposal.

SECTION 01783

FACILITY START UP REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide field services for the startup, testing, and commissioning of the various treatment processes of the Battery E Facility. Temporary pumping and piping requirements for facility startup can be found on drawing LP-004.
- B. This Section supplements but does not supersede specific testing requirements found elsewhere in the contract documents.

1.02 REFERENCES:

- A. MWRDGC General Conditions
- B. MWRDGC General Specifications
 - 1. Section 30 – Operation and Service Equipment Manuals
 - 2. Section 31 – Operating Personnel Training
 - 3. Section 32 – Operation Tests
 - 4. Section 33 – Acceptance
- C. Division 01 – GENERAL REQUIREMENTS
- D. Division 11 - EQUIPMENT
- E. Division 13 – SPECIAL CONSTRUCTION
- F. Division 15 – MECHANICAL
- G. Division 16 – ELECTRICAL

1.03 DEFINITIONS:

- A. Equipment: Pumps, diffusers, mixers, valves, slide gates, FST drives, FST collection mechanisms, instrumentation, and other electrically and/or manually operated process equipment, including the DCS system.
- B. Equipment Startup: Functional Testing and Field Performance Test as defined in the individual detailed specification section for each piece of Equipment.
- C. System: Defined as the concrete structures, Equipment, piping, controls, ancillary devices, electrical power, etc., which together perform a specific function at the facility. The Facility comprises multiple Systems, including but not limited to the following:
 - 1. Aeration Tanks

2. Final Settling Tanks (FSTs)
3. Fermenter Tank
4. Post Aeration Tank
5. RAS, WAS, and Fermented RAS Pumping and Distribution Systems.
6. The Influent Channel and Anoxic Pass and associated equipment can be considered part of the Aeration Tank 1 System.
7. The Mixed Liquor Channel and Distribution Chambers and associated equipment can be considered part of the Final Settling Tank 1 & 2 Systems.

D. System Startup: The period in which the Contractor will introduce process streams into the Systems and start up the various treatment processes of Battery E. This period will include the time required to pump and fill process tanks to the required levels, followed by a 7-day testing period. Approval must be achieved for all Equipment within a System prior to starting System Startup.

E. Approval: When Equipment Startup testing and System Startup testing has been successfully completed to the satisfaction of the District and it has been demonstrated that design performance criteria has been met.

F. 60 Day Operational Testing: This is the final operational test required for every piece of Equipment in the facility per Article 32 of the General Specifications. System Approval must be achieved before the Equipment of that System can start the 60 Day Operational Testing. 60 Day Operational Testing shall be administered on a per System basis.

G. Commissioning: Defined as the overall process of testing the Equipment and Systems of the Facility. The Commissioning period shall consist of the Equipment Startup, System Startup, and 60 Day Operational Testing.

H. Acceptance: Completion of the 60 Day Operational Testing to the satisfaction of the District per Article 33 of the General Specifications. Note that the One Year Guarantee and Equipment warranties shall start after Acceptance in accordance with Article 36 of the General Conditions and Section 01700 Part 3.11. Equipment warranty periods shall be as defined in the individual detailed specification section for each piece of Equipment.

1.04 COMMISSIONING TEAM:

A. Commissioning will be conducted by teams comprised of personnel from the Contractor, Manufacturer's Representatives, the District, and the Engineer.

B. The District shall have ultimate authority on the direction and approval of the commissioning work.

C. The District's staff shall include Engineering Staff and operating staff and/or maintenance staff.

D. The Contractor shall provide management staff necessary to prepare and manage the Commissioning Plan work. The Contractor shall provide a Commissioning Manager who has a minimum 10 years of experience in the commissioning of process equipment,

instrumentation, and controls systems at wastewater treatment plants or similar industrial facilities.

- E. The Contractor shall provide personnel representing the appropriate trades, including control and instrumentation personnel during the commissioning work. These personnel shall be skilled workers, able to expedite any minor repairs, adjustments, etc. as are required to complete commissioning with as few delays as possible.

1.05 COMMISSIONING PLAN:

- A. The Contractor shall submit a detailed methodology for the Commissioning of each System. This submittal, (the “Commissioning Plan”) shall detail all work activities required for the Equipment Startup, System Startup, and 60 Day Operational Testing. The Commissioning Plan submittal must be submitted to the District prior to the start of Equipment Startup. The Commissioning Plan submittal must be approved by the District prior to the start of System Startup. The Commissioning Plan will be written by qualified individuals with previous experience in commissioning and activation of comparable facilities. The Commissioning Plan shall include the following:
 - 1. Refer to Section 13309 for process control narratives and operating descriptions prior to development of Commissioning Plan.
 - 2. Detailed schedule of events, including, but not limited to, the schedule for completion of startup and field testing of all Equipment and component parts of the System in accordance with Section 01700 – Execution Requirements and other sections of the Detailed Specifications.
 - 3. Method for introducing flow, disposing of partially treated effluent, and disposing of any sludge or other residual solids generated during the commissioning process.
 - 4. Drawings and sketches as required to illustrate the planned sequence of events. Drawings should also include a detailed layout of temporary pumps, piping, power sources, supports, protective barriers, and other details with sizes and dimensions indicated.
 - 5. Details of temporary equipment required to facilitate commissioning work shall include, but not be limited to, shop drawings, performance data, product data, and cutsheets.
 - 6. Contractor shall have a Professional Engineer, licensed in the State of Illinois, design and stamp the pump and piping systems associated with this work. Associated calculations shall be submitted for approval.
 - 7. Requirements for detailed commissioning reports for each major electrical, process, and controls system, including witness sheet sign off by the Engineer of Record or designee for each component.
 - 8. Standard operating procedures for the overall process and for all electrical and process mechanical systems.
 - 9. Supporting documentation, including, as appropriate:
 - a. Operating manuals and instructions
 - b. Design calculations and/or assumptions
 - c. Effluent quality sampling and testing plan
 - d. Startup plan for biological and nutrient removal treatment process commissioning

- e. Testing plan for startup of biological and nutrient removal treatment processes
 - 10. Contingency plans in the event of a process malfunction, including establishment of an operational readiness planning team to ensure all operational issues are addressed and contingencies considered.
 - 11. Qualifications and resume of the Commissioning Manager and other Contractor staff who will be part of the Commissioning Team.
 - 12. A schedule illustrating the timing of all testing and commissioning.
- B. The Commissioning Plan shall be reviewed and approved by the District.

PART 2 - PRODUCTS

2.01 LABOR:

- A. The Contractor shall supply all staff required to test and operate the new Equipment during Commissioning. Contractor shall provide staff outside normal working hours as necessary to operate and maintain temporary pumps, piping, and associated equipment required to startup the various Battery E Systems. The Contractor shall be responsible for any damage to District property caused by Contractor's equipment.
- B. Contractor shall provide staff on a twenty-four (24) hour basis during the System Startup 7-day testing periods
- C. The Contractor shall supply competent staff capable of maintaining, repairing and adjusting the equipment and controls to achieve the intended design functions during the commissioning period.

2.02 DESIGN PARAMETERS:

- A. Design parameters for the System to be commissioned shall be as defined in the Specifications and/or the operating descriptions; as modified by the District. The District will identify to the Contractor which parameters shall be modified prior to commissioning. If the District determines it is necessary to modify design parameters during the commissioning period, the Contractor shall modify their operations and commissioning plan at no additional cost to the District.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Leakage testing shall be completed to the satisfaction of the District for all liquid containing structures in accordance with specification 03800.
- B. All process piping and plumbing piping shall be completed and have pressure testing performed in accordance with the detailed specifications.

- C. Ancillary process services such as seal water, process drains, process air, and instrumentation, etc. shall be completed prior to the Commissioning of any Systems which require these services.
- D. Electrical connections shall be completed and inspected to the satisfaction of the Engineer. Wiring and conduit systems shall be finished and tested.
- E. DCS system shall be completed and the related control software debugged.
- F. Architectural finishes, heating and ventilation, and lighting shall be substantially complete.
- G. Provisions shall be put in place to divert process streams from other areas of the plant to the Battery E Systems to be commissioned, including:
 - 1. Service Water (from plant service water hydrants)
 - 2. Primary Effluent (from Battery E flow control valve in the Meter Building)
 - 3. Battery D RAS
 - 4. Battery D Fermented Sludge
 - 5. Battery D Mixed Liquor

3.02 EQUIPMENT STARTUP:

- A. The Contractor shall:
 - 1. Perform Equipment Startup testing as defined in the individual detailed specification section for each piece of Equipment. Testing shall be done in the presence of the Engineer and Manufacturer's representative as required by the detailed specifications.
 - 2. Contractor shall submit the Commissioning Plan for District review prior to the start of any Equipment Startup Testing.
 - 3. Contractor shall use Service Water (plant effluent water) for Equipment Startup testing. The District can supply the Contractor a maximum flow of 200 gpm Service Water. Contractor may transfer Service Water from one tank to another to compensate for the limited Service Water supply.

3.03 SYSTEM STARTUP:

- A. Give the District at least 30 days prior written notice of the expected date of commencement of the System Startup.
- B. All Battery E Systems shall be operational and Battery E Effluent Conduit connection to the existing plant effluent conduit shall be completed prior to commencement of System Startup.
- C. Contractor must have a Commissioning Plan submittal approved by the District prior to commencement of System Startup.
- D. Contractor must have completed Equipment Startup for all Equipment within the System prior to commencement of System Startup.

- E. Prior to commencement of System Startup, the Contractor must have Equipment O&M manual submittals approved by the District and shall complete training of District personnel for all Equipment of the System. Equipment O&M manuals and training shall be completed in accordance with Articles 30 and 31 of the General Specifications,
- F. Systems shall have startup and testing performed in a logical manner. Upstream Systems shall be started up and tested first.
- G. System Startup shall follow the sequence outlined below:
 - 1. An approximate sequence of the System Startup steps for the various Systems is listed below. The sequence, flow rates, and durations are to be finalized during the development of the Commissioning Plan by the Contractor. Fermenter tank and aeration tanks will each take approximately 1 day to fill up to the required average water surface elevation (WSE) levels as shown on the hydraulic profile on drawing P-008. Each FST will take about a half day to fill to average WSE. The process air to the channels and aeration tanks should be introduced incrementally as the tanks are getting filled.
 - a. Mixing Chamber, Anoxic Pass, and Influent Channel
 - (1) Fill with Primary Effluent at a flow of 3.3 MGD and Battery D RAS at a flow of 0.5 MGD at the Mixing Chamber. The influent gates to the aeration tanks shall be closed while these channels are being filled.
 - (2) Once these channels reach their required average WSE, the first aeration tank can be filled.
 - b. Aeration Tanks
 - (1) Start introducing process flows to each aeration tank individually, starting with Aeration Tank 1.
 - (2) To start Aeration Tank 1, open the influent gate and continue adding RAS from Battery D and Primary Effluent to the Mixing Chamber at the flow rates specified above. In addition, introduce approximately 2.0 MG of Mixed Liquor from Battery D to the east end of the aeration tank at an approximate flow rate of 7 MGD. Contractor shall protect the aeration tank diffusers from the pumped Battery D Mixed Liquor flow. Contractor has the option to prefill the aeration tank with Service Water to a maximum level not to exceed 1/3 of the tank's depth in order to protect the diffusers.
 - (3) The System Startup 7-Day Test for the Mixing Chamber, Anoxic Pass, and Influent Channel can be performed along with the 7-Day Test for Aeration Tank 1.
 - (4) When starting up the next aeration tank, the Contractor shall repeat the steps listed in Part 3.03 G.1.b.(2) and increase the Primary Effluent flow as necessary to maintain 3.3 MGD flow for each aeration tank that has been started up. As more tanks are put into operation, the flow rates per tank may be increased based on the satisfactory operation of the system.
 - (5) The Contractor may pump Mixed Liquor from Battery E aeration tanks instead of from Battery D after at least two (2) tanks are in service.
 - (6) With all six (6) tanks in service, increase influent flow 25% per week until average flow of 80 MGD for the entire Battery E facility is reached.

- c. Final Settling Tanks
 - (1) Have FSTs 1 and 2 in operation when Aeration Tank 1 is operating.
 - (2) Have FSTs 1 and 2 in operation when Aeration Tanks 1 and 2 are operating.
 - (3) Have FSTs 1, 2, 3, and 4 in operation when Aeration Tanks 1, 2 and 3 are operating.
 - (4) Have FSTs 1, 2, 3, 4, 5, and 6 in operation when Aeration Tanks 1, 2, 3, and 4 are operating.
 - (5) Have FSTs 1, 2, 3, 4, 5, 6, 7, and 8 in operation when Aeration Tanks 1, 2, 3, 4, and 5 are operating.
 - (6) Have FSTs 1, 2, 3, 4, 5, 6, 7, and 8 in operation when Aeration Tanks 1, 2, 3, 4, 5, and 6 are operating.
 - (7) Return sludge (RAS) pumping flow rate to be determined by plant operations based on the concentration of the Mixed Liquor and the operation of the facility.
 - (8) Sludge waste (WAS) pumping flow rate to be determined by plant operations based on the concentration of the Mixed Liquor and the operation of the facility.
- d. Fermenter Tank
 - (1) Startup Fermenter Tank in such a manner as to be able to introduce fermentate flow into the process stream without causing the retention time to be too long or too short, and without exceeding pumping allowances from Battery D Fermenter Tank and RAS. Sufficient anaerobic conditions must be present, as measured by ORP, prior to discharging flow into the Mixing Chamber.
 - (2) Fill with fermented sludge from Battery D at a rate of approximately 0.5 MGD.
 - (3) When Battery E System Startup operations allow for the use of Battery E RAS instead of Battery D RAS, operate Battery E Fermenter RAS pumps at the percentage of the total RAS requested by the District.
- e. Mixed Liquor Channel & Distribution Chambers, Post Aeration Tank, RAS, WAS, and Fermented RAS Pumping and Distribution Systems.
 - (1) These systems shall be filled naturally during the startup sequences of the Systems described above.
- 2. Should the Battery E effluent not sufficiently meet treatment standards to the point the effluent would be detrimental to the District's NPDES permit, the Contractor shall be responsible for sending the effluent to drain at the FSTs, Post Aeration Tank, or any other location, in coordination with the District.
- 3. Equipment in the System shall not be turned on until there is sufficient liquid depth in the System to safely operate the Equipment. This depth shall be determined by the Equipment manufacturers.
- 4. The seven (7) day testing period of the System Startup shall start once the structures of the System have been filled to the average WSE and all Equipment in the System is running. The Contractor must have personnel onsite twenty-four (24) hours per day during this seven (7) day testing period. District personnel will work hand in hand with the Contractor to obtain further informal training and familiarity with the

new Systems, but all Equipment will remain under the Contractor's control. District personnel will not be fully operating Equipment until the 60 Day Operational Testing Period.

5. Begin operations in manual mode.
6. Turn separate items of Equipment to automatic in a planned and logical manner. Ensure that the control system is operating the equipment in a manner which precludes damage of the equipment, and which is consistent with the process control narrative in Section 13309.

H. Process streams will be introduced to the System in a manner which precludes the damage of any equipment or structures.

I. During the Commissioning period, plant component settings will be modified to ensure that the System is subjected to flows and loads as close to design conditions as possible. Where necessary to achieve this, flows to the area being Commissioned will be augmented to exaggerate the naturally occurring flows and loads. Where it is necessary to modify settings outside the limits of this Contract area within the plant, coordinate the changes with the Engineer.

J. Ensure all bypasses and backup provisions function satisfactorily.

K. All minor and major alarm conditions shall be induced to ensure that the process reacts as intended, and the applicable alarms are enunciated.

L. System Startup shall be considered Approved when the processes and Equipment of the System have operated in a stable manner, satisfying the design criteria for a period of seven (7) consecutive days.

3.04 SYSTEM ACCEPTANCE:

A. The 60 Day Operational Testing period for all Equipment of the System shall begin following the successful completion of the System Startup 7-Day Test and System Approval.

B. When all the Equipment of the System has passed 60 Day Operational Testing, Acceptance of the System shall be granted by the District.

C. The Contractor is advised that that the One Year Guarantee and Equipment warranties shall start after System Acceptance in accordance with Article 36 of the General Conditions and Section 01700 Part 3.11. Equipment warranty periods shall be as defined in the individual detailed specification section for each piece of Equipment.

D. A Certificate of System Performance will be granted when a System has been successfully Commissioned and Accepted.

3.05 FACILITY ACCEPTANCE

- A. Once Commissioning for all Systems has been Accepted, the Facility shall be formally Accepted for full operation and routine maintenance by plant operations staff.
- B. A Certificate of Facility Performance will be granted when the Facility has been successfully Commissioned and Accepted as meeting all the design performance criteria.

CERTIFICATE OF SYSTEM PERFORMANCE

We certify that all Equipment within the System listed below have been successfully operated and tested as per the Specifications for at least sixty consecutive (60) days and that the System meets all the design performance criteria, including fully automatic controls.

PROJECT: 21-092-3P – BATTERY E ACTIVATED SLUDGE FACILITY

SYSTEM DESCRIPTION: _____

REFERENCE SPECIFICATION: _____

(Authorized Signing Representative of the Contractor)

Date

(Authorized Signing Representative of the Engineer)

Date

(Authorized Signing Representative of the District)

Date

CERTIFICATE OF FACILITY PERFORMANCE

We certify that all Systems within the Battery E Facility described below have been operated and tested as per the Specifications for at least sixty (60) days and that the facility meets the design performance criteria.

**CONTRACT NUMBER &
TITLE:**

21-092-3P – BATTERY E ACTIVATED SLUDGE FACILITY

COMMENTS:

(Authorized Signing Representative of the Contractor)

Date

(Authorized Signing Representative of the Engineer)

Date

(Authorized Signing Representative of the District)

Date

END OF SECTION

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SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The work specified in this section includes, but is not limited to, providing cast-in-place concrete as specified herein and as shown and/or noted otherwise in the contract documents, including structural cast-in-place concrete elements, equipment pads, walls, floor slabs, slabs-on-grade, mat foundations, and footings.
 - 1. Setting of anchor bolts, base plates, floor grating and plate, frames, and other steel and aluminum members embedded in concrete as indicated.
 - 2. Furnishing and setting of sleeves, inserts and other embedded accessories for mechanical and electrical equipment.
 - 3. Patching and repairing defects in new concrete pours.
- B. Related Work specified in other sections includes, but is not limited to, the following:
 - 1. MWRDGC - General Specifications Concrete (2024 Edition) (GSC)
 - 2. Division 01 - General Requirements
 - 3. Section 02770 - Concrete Curb and Gutter
 - 4. Section 02775 - Concrete Sidewalks
 - 5. Section 03100 - Concrete Formwork
 - 6. Section 03200 - Concrete Reinforcement
 - 7. Section 03390 - Concrete Curing
 - 8. Section 03600 – Grout
 - 9. Section 03937 – Concrete Repair and Patching
 - 10. Section 05500 – Metal Fabrications

1.02 REFERENCES

- A. Codes and standards referred to in this Section are:
 - 1. References found in General Specifications Concrete, Section 1.2
 - 2. ACI 503.2 - Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive
 - 3. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 4. ASTM E1155 – Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers
 - 5. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

1.03 SUBMITTALS

- A. Note the submittal requirements in General Specifications Concrete. The submittals

required there shall be submitted under General Specifications Concrete. The Concrete Quality Control Plan should not be combined with the submittals required here or in 01400.

- B. Submit concrete mixes in accordance with General Specifications Concrete.
 - C. Provide all submittals for concurrent review, partial submittal packages will not be accepted. Submit the following:
 - 1. Contractor shall submit a work plan outlining the proposed construction methods and procedures for the District's approval prior to performing the work. The work plan shall include a description of the method(s) selected to cure the concrete, and all equipment the contractor will use to perform curing procedures and a description of the methods for placement of concrete in hot and cold weather.
 - 2. The Contractor shall submit the proposed joint layout and pour sequence for review and approval by the District.
 - 3. If construction joints which are not specifically identified or located on the drawings are proposed to be provided, submit the proposed joint layout and pour sequence for review.
 - 4. Detailed field report records of ready-mixed-concrete, refer to Paragraph 2.05.D.
 - 5. Manufacturers' Literature: Material description signed by material manufacturers and application or installation instructions for cementitious materials, floor hardener, admixtures, and polymer modified non-sag mortar.
 - 6. Provide written certification that water soluble chloride ion concentration of concrete mix does not exceed the maximum allowable per ACI 318.
 - 7. If water reducing and set retarding admixtures are used, submit test data in accordance with Paragraph 2.01.E.3.
- 1.04 SUBMITTAL REQUIREMENTS FOR COMPLIANCE WITH BUILD AMERICA, BUY AMERICA (BABA) FOR FEDERAL FINANCING
- A. For District projects receiving federal funding, either through federal grants or SRF loans, the Contractor shall provide a certification letter from the manufacturer for all submittals related to BABA products as specified in Section 11 of Appendix I.
 - B. All equipment or material delivered to the project site shall be clearly marked and/or stamped as "Made in the USA".
 - C. In order to demonstrate compliance with BABA requirements detailed in Section 11 of Appendix I, the Contractor shall maintain the document described in the Mobilization section of the Proposal. The Contractor shall use the document to contemporaneously track the status of the certifications for the BABA products. The document, along with all material certifications, shall be saved electronically by the Contractor in the specified project management system. The Contractor shall include an updated document with each monthly application for payment. If the Contractor is allowed to use de minimis waivers for any products required by the Contract, the Contractor shall likewise track the de minimis items in the document and maintain documentation of the waivers electronically in the specified project management system.

1.05 QUALITY ASSURANCE

- A. Note the Quality Control requirements in General Specifications Concrete are referenced and applicable.
- B. Codes: The following specific codes and standards apply in addition to those included in the General Specifications Concrete:
 - 1. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures and Commentary for environmental and liquid containing structures.
 - 2. ASTM - as referred to in the various subsections herein and in the General Specifications Concrete.
- C. For each Producer and Contractor, submit data on at least three projects completed within the last five years in which cast-in-place concrete of a similar type, scope and complexity has been successfully performed. The data shall include the following for each of the projects:
 - 1. Project name.
 - 2. Owner of Project.
 - 3. Owner's representative, address, and telephone number.
 - 4. A short description of work including size of project, materials used, equipment used, and description of structural elements built.
 - 5. Date of completion.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Reference General Specifications Concrete for material requirements. Additional requirements below.
- B. Cement Requirements: Use standard Portland cement meeting the requirements of ASTM C150 Type I or Type II. Portland cement Type 1L conforming to ASTM C595 will not be acceptable for use on this project.
- C. Cementitious Material Requirements - use either one of the following cementitious materials for concrete mix:
 - 1. Fly Ash Requirements: Provide fly ash with a uniform light color from a source approved by the District:
 - a. Sulfur trioxide - 4 percent maximum
 - b. Store fly ash at the concrete mixing plant separate from the cement and do not intermix cement and fly ash prior to being added to the concrete mix.
- D. Coarse Aggregate Requirements:
 - i. Grade coarse aggregate as follows for the various concrete mixes:
 - 1. Class R, P, S, F and G Mixes – See General Specifications Concrete.
 - 2. Class T Mix – ASTM C33, Size Number 8.

- E. Admixtures:
 - 1. Admixtures shall be submitted with the concrete mix designs for approval in the General Specifications Concrete submittal.
 - 2. See General Specifications Concrete for requirements for Admixtures. The following are in addition to those requirements.
 - 3. Limit the use of admixtures to the following:
 - a. Water-reducing admixture conforming to ASTM C494 Type A, D, F, and G.
 - b. Water-reducing and retarding conforming to ASTM C494 Type D
 - c. Use water-reducing, set-retarding, and accelerating admixtures only after obtaining written permission.
 - d. Do not use admixtures containing thiocyanates. Obtain written conformance to the above requirements and the chloride ion content of each admixture from the admixture manufacturer prior to mix design review.
- F. Water: In accordance with General Specifications Concrete.
- G. Non-sag Mortar: Polymer Modified Non-slag Mortar. Provide one of the following:
 - 1. SikaTop 123 Plus by Sika Corporation, Lyndhurst, NJ.
 - 2. SikaEmaco N 400 by Sika Corporation, Lyndhurst, NJ.
 - 3. SikaEmaco S440 by Sika Corporation, Lyndhurst, NJ.
- H. Provide Non-Shrink Grout
 - 1. Per Specification 03600, Grout.
- I. Chemical Floor Hardener
 - 1. Per Specification 03345, Concrete Floor Treatment.
- J. Ground Granulated Blast Furnace Slag (GGBF): In accordance with General Specifications Concrete.
- K. Fly Ash: The use of Class C fly ash will be allowed in Class R concrete when utilizing ASTM C150 Type I/II cements.

2.02 JOINT DEVICES AND FILLER MATERIALS

- A. Furnish and install water stops, inserts, joint fillers, joint sealants, and bond breaker as specified in Sections 03200, 03250, 03255, and 03256.

2.03 DESIGN MIX

- A. Concrete Mix Classifications:
 - 1. See General Specifications Concrete for descriptions of classes.
 - 2. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

- a. Proportion normal-weight concrete according to ACI 211.1, ACI 301, and ACI 318.
3. Reference General Specifications Concrete for lab accreditation requirements for preparing and reporting proposed mix designs for the laboratory trial mix basis.
4. Proposed concrete proportions and mixes must be submitted to the District for review. However, the contractor is solely responsible for producing concrete of the quality, durability, and strength so stated in the specifications and the drawings.
5. For each mix design, provide results from testing for aggregates and non-portland cementitious materials with regards to Alkali-Silica Reactivity (ASR) in accordance with ASTM C1260.
6. Use Class R concrete when the classes of concrete are not specified or otherwise indicated.
7. Use Class F concrete for mud mats.
8. Compressive Strength: Provide mix designs that meet, as a minimum, the compressive strength (f'_c) in General Specifications Concrete. The following are additional compressive strength requirements in pounds per square inch (psi) for Class R-modified concrete at the designated locations.

Class	1-Day (24 hours) Test	28-Day Test
R-modified (fillets at influent conduit tie- ins)	2,800	4,000

- B. Aggregate Size:
 1. Class R, P, S, F, and G Concrete – see General Specifications Concrete.
 2. Class T Concrete shall have a maximum aggregate size of 3/8 inch.
- C. Maximum water/cement ratio:
 1. See General Specifications Concrete.
- D. Minimum Cementitious content - see General Specifications Concrete.
- E. Air Entrainment:
 1. See General Specifications Concrete.
- F. Shrinkage:
 1. See General Specifications Concrete.
 2. Lower shrinkage concrete may be required as identified in the drawings or supplemental specifications.
- G. Measurement and Mixing: See General Specifications Concrete.

2.04 CONCRETE WORK MATS

- A. As a working base for all new, reinforced-concrete structural foundation elements supported on soil, rock, select fill, drainage stone and the like, provide a Class F concrete work mat or fill where shown on drawings or where required to place reinforcement.

2.05 READY MIX CONCRETE

- A. Ready Mix Requirements: For ready-mixed concrete meet the requirements of ASTM C94, except as modified in the following paragraphs, and subject the mix to all provisions herein relative to materials, strength, proportioning, consistency, and testing. In the event of low strengths, procedures outlined in Section 3.07 "Low Concrete Strength Test Results" of this specification apply.
- B. Delivery: Do not allow cold joints to occur in freshly placed concrete. Provide the rate of delivery of the mixed concrete such that the interval between placing of fresh concrete in contact with concrete already placed from previous batches does not exceed 45 minutes.
- C. Agitation: Do not deliver concrete in non-agitating equipment.

PART 3 – EXECUTION

3.01 CONCRETE MIXING

- A. Refer to MWRDGC – General Specifications Concrete for concrete mixing requirements.

3.02 PUMPING AND CONVEYING EQUIPMENT

- A. Refer to MWRDGC – General Specifications Concrete for requirements concerning pumping and conveying equipment.

3.03 FORMWORK AND REINFORCEMENT INSPECTIONS

- A. Refer to MWRDGC – General Specifications Concrete and Specification Section 03100.

3.04 PLACING CONCRETE

- A. General: Place concrete only in the presence of a 3rd party inspector holding ACI Special Concrete Inspector certification or ICC equivalent, subject to approval by the District. Where an alternate procedure is not specified, place in accordance with the General Specifications Concrete.
- B. Continuous Operation: In accordance with General Specifications Concrete. Make concreting operations continuous until the section, panel, or scheduled placement is completed.
- C. Minimum Handling: Convey and place concrete with minimum handling and deposit the

concrete in the forms as close as possible to its final position and in no case more than 5 feet in a horizontal direction there from.

- D. Horizontal Layers: Place concrete in horizontal layers shallow enough so that the previous layer is still soft when the next layer is added, and the two layers can be vibrated together. Do not exceed 18 inches in depth for each layer.
- E. Use of Chutes: Deposit wall and column concrete through heavy duck canvas or galvanized steel chutes equipped with suitable hopper heads. Provide chutes of variable lengths so that the free fall of concrete does not exceed 3 feet. Provide illumination where required, inside the forms so that the concrete is visible from the deck and runways at the point of deposit.
- F. Protection against Elements: Protect freshly placed exposed concrete against damage from the elements or other sources.
- G. Placing on Sloping Surface: In accordance with General Specifications Concrete.
- H. Water: In accordance with General Specifications Concrete.
- I. Transportation of concrete: In accordance with General Specifications Concrete.
- J. Cold Weather Placement: Cold weather placement shall be addressed in the Contractor Quality Plan if placement during cold weather can be expected. Monitoring of placed elements for minimum temperature may be required.
- K. Concrete Embedments:
 - 1. Comply with applicable portions of ACI 301/ACI 318 regarding embedments. Encase pipes, anchor bolts, sleeves, steps, castings, floor drains, manhole frames, waterstops, and other inserts in concrete as shown. Take special care to place and maintain them to the proper lines and grades and to compact concrete thoroughly around them to prevent the passage of water. Set them before placing concrete and thoroughly brace to prevent movement during the progress of the work.
 - 2. Coat aluminum surfaces that will be in contact with concrete with a bituminous paint or approved equal coating to isolate the aluminum surfaces from the concrete.

3.05 VIBRATING CONCRETE

- A. In accordance with General Specifications Concrete.

3.06 CONCRETE TESTS

- A. Compression Testing: Refer to General Specifications Concrete.
- B. Samples: In accordance with General Specifications Concrete.
- C. Laboratory Curing: In accordance with General Specifications Concrete.
- D. Slump, Slump Flow, Temperature and Air Content Tests: In accordance with General

Specifications Concrete.

- E. Test Requirements: In accordance with General Specifications Concrete.
- F. Successful Testing Requirements: As defined in General Specifications Concrete.

3.07 LOW CONCRETE STRENGTH TEST RESULTS

- A. Reference General Specifications Concrete for requirements.
- B. The cost of any additional testing and remedial action shall be borne by Contractor.

3.08 CURING

- A. In accordance with General Specifications Concrete and 03390 - Concrete Curing.

3.09 JOINTS AND BONDING

- A. Joints: Make construction joints where shown or permitted. Locate such joints to ensure stability, strength, and watertightness, and provide a waterstop where shown. Build all corners monolithically, and continuously concrete on either side to points shown.
- B. Horizontal Keyways: Build horizontal keyways to permit flushing water to escape from the keyways.
- C. Keyway Description: Provide continuous, straight, and regular keys or grooves in joints. Bring exposed concrete surfaces to a true level line at the top of every horizontal construction joint. Provide the exposed construction joints with a row of form ties located in the concrete from 4 to 6 inches from the joint to tighten the forms for subsequent sections. Set reinforcement to extend into subsequent sections of construction, as shown. If required, provide water stops having watertight splices and corner intersections and meet the requirements as specified. Remove all bulkheads or other joint forming material before placing adjacent concrete.
- D. Continuous Placement Procedure: Carry on continuous placing of concrete between the construction joints shown. If for any reason it becomes necessary to stop the placing of concrete at locations other than those indicated, such locations and the manner of making the joint are subject to approval.

3.10 CONCRETE FLOOR SURFACES

- A. Floor Surfaces: Floor surface finish tolerances shall meet the requirements of section 4.8.5 or 4.8.6 of ACI 117. Construct the concrete floor surfaces monolithically with the structural slab being finished as indicated in the following schedule, unless otherwise shown or as specified:
 - 1. Exterior sidewalks - screeded, wood floated, divided into panels, steel troweled, broomed.
 - 2. Floor slab (slabs on grade and elevated slabs) - screeded, wood floated, steel troweled,

chemically hardened U.N.O. on drawings.

- B. Floor Flatness: Overall value of flatness, F(F) 25; and levelness, F(L) 20; with minimum local values of flatness, F(F) 17, and levelness, F(L) 15; unless otherwise noted.
- C. Panel Construction: Construct panels, only where shown or required, approximately 10 feet square using an edger to form dummy joints 1/4-inch deep, unless otherwise noted.
- D. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, as otherwise indicated.
 - 1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if the area is small or inaccessible to power units. Gaps between a straight edge and the finished concrete shall not exceed 1/4" in any direction. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- E. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
 - 1. After floating, begin first trowel finish operation using a power-driven trowel. Check and level the surface plane to tolerances per Paragraph 3.10.B. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances specified. Grind smooth surface defects which would telegraph through applied floor covering system.
- F. Nonslip Broom Finish: Apply nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere, where indicated.
 - 1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with the District before application.
- G. Protection: Cover all finished floors, walkways, and slabs with boards, canvas, heavy paper or similar covering to protect them from damage.
- H. Floor surfaces required to have subsequent coatings placed on the concrete surface shall be finished in accordance with the requirements of the coating manufacturer.

3.11 CONCRETE SURFACES

- A. Beveling Edges: Finish top edges of walls and equipment pads with a 1/2-inch beveled edge, unless other details are shown, and rub off any burrs remaining upon removal of the forms.
- B. Form Removal Inspection: Immediately after stripping the forms, inspect all concrete

surfaces. Remove all fins, offsets, burrs, ridges, or other unsightly marks from the exposed concrete.

- C. Patching: Patch placement joints, voids, stone pockets, or other defective areas before the concrete is thoroughly dry. Chip away defective areas to a depth of not less than 1 inch with all edges perpendicular to the surface. Wet the area to be patched, including at least 5 inches of the adjoining surface, prior to placing the patching mortar. Then scrub onto the surface a grout of equal parts of cement and sand mixed to a brushing consistency followed immediately by the patching mortar. Make the patch of the same material and of approximately the same proportions as used for the concrete, except omit the coarse aggregate. For exposed concrete, substitute white cement for part of the gray cement so that the patch will match the color of the surrounding concrete. Determine the proportion of white and gray cement by making a trial patch. Use as little water as consistent with requirements of handling and placing. Mortar: Do not retemper mortar; thoroughly compact and screed the mortar to leave the patch slightly higher than the surrounding surface. Then leave it undisturbed for a period of 1 to 2 hours to permit initial shrinkage before being finally finished. Finish the patch to match the adjoining surface and cure as specified for the original concrete. Otherwise refer to MWRDGC General Specifications – Concrete for patching requirements.
- D. Tie Hole Patching: Patch tie holes before the concrete is thoroughly dry. Plug tie holes flush with the surface using non-shrink grout as specified in Section 03600. Pre-wet tie holes with clean water and apply a neat cement slurry bond coat. Densely pack grout of a dry-tamp consistency into the tie holes exercising care so as not to smear grout onto the finished concrete surface. Plugged holes to blend in with the adjacent surfaces. Make sample patches with different grout mixes to assure that this requirement is met.
- E. Final Cleaning and Repair Work: Before project completion, correct concrete surface imperfections such as spalls, honeycombing, exposed rebar, stains, broken corners and cracks larger than hairline to the satisfaction of the District.

3.12 EPOXY ADHESIVE FOR DOWELS

- A. Application: Place epoxy adhesive for dowels in accordance with the manufacturer's recommendations. Otherwise refer to Section 05500 for adhesive anchors.

3.13 POLYMER MODIFIED NON-SAG MORTAR

- A. General: Mix and apply material in accordance with the manufacturer's recommendations.
- B. Surface Preparation: Clean existing concrete that is to receive the material of all loose concrete, dirt, oil, grease and bond-inhibiting materials and mechanically roughen to obtain an aggregate-fractured surface with a minimum profile of 1/16-inch.
- C. Mortar Placement: At the time of application, saturate existing concrete such that it is surface dry with no standing water. Scrub mortar into the substrate filling all pores and voids. Force the material against the edges of repairs, working it toward the center. After applying material, consolidate and then screed. Do not place the material in lifts greater than

1-inch. Where multiple lifts are required to achieve the required thickness, score the top surface of each lift to produce a roughened surface for the next lift. Allow the preceding lift to reach final set, 30 minutes minimum before applying fresh material. Scrub fresh mortar into the preceding lift. Allow mortar to set to desired stiffness and then finish with wood or sponge float for a smooth surface.

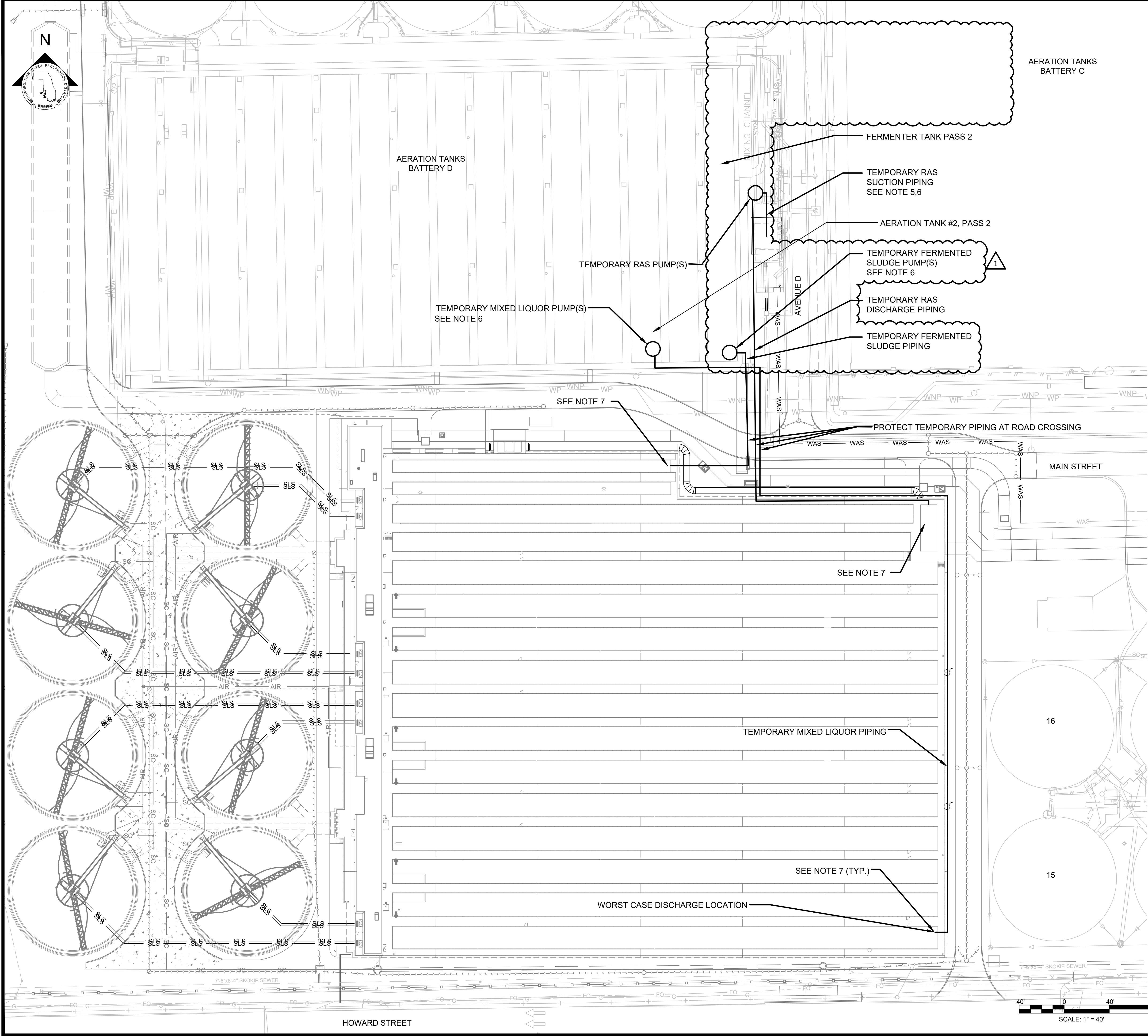
- D. Curing Requirements: Moist cure with a fine mist spray of water, wet burlap, or non-solvent-based curing compound. If necessary, protect newly applied material from rain. To prevent freezing, cover with insulating material.

3.14 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Contractor shall submit repair products and procedures to the District for approval. Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after the work of other trades is in place. Mix, place, and cure concrete as specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Curbs: Provide a monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Defective Concrete: Repair materials and methods to be submitted by Contractor subject to approval by the District. Refer to MWRDGC General Specifications – Concrete.

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NOTES:

1. LOCATIONS OF PUMPS AND PIPING IS APPROXIMATE. FINAL LOCATIONS TO BE DETERMINED DURING STARTUP.
2. PROVIDE THE FOLLOWING FIRM PUMPING CAPACITIES:
 - RAS 0.3-0.6 MGD
 - FERMENTED SLUDGE 0.3-0.6 MGD
 - MIXED LIQUOR 6.0-9.0 MGD
3. MAXIMUM PIPE VELOCITY: 5 FT/SEC.
4. REFER TO SECTION 01783 FOR STARTUP PROCEDURES.
5. TEMPORARY RAS SUCTION PIPING SHALL DRAW FROM THE RAS PUMP STATION WETWELL THROUGH PUMP FLOOR ACCESS HATCHES. TEMPORARY PUMPS SHALL BE LOCATED OUTSIDE THE RAS PUMP STATION.
6. TEMPORARY PIPING SHALL BE HDPE UNLESS OTHERWISE APPROVED.
7. TEMPORARY PIPING DISCHARGE LOCATIONS SHALL BE AS FOLLOWS:
 - RAS: MIXING CHAMBER NORTH HATCH
 - MIXED LIQUOR: EAST END OF AERATION TANK PASS 1 (TYP OF 6 TANKS)
 - FERMENTED SLUDGE: EAST END OF FERMENTER TANK PASS 1



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by:	Checked by:
RJK	BP
Drawn by:	Reviewed by:
LK	BP
Date:	Scale:
JULY 2025	AS SHOWN

CONTRACT 22-RFP-06
OBRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY

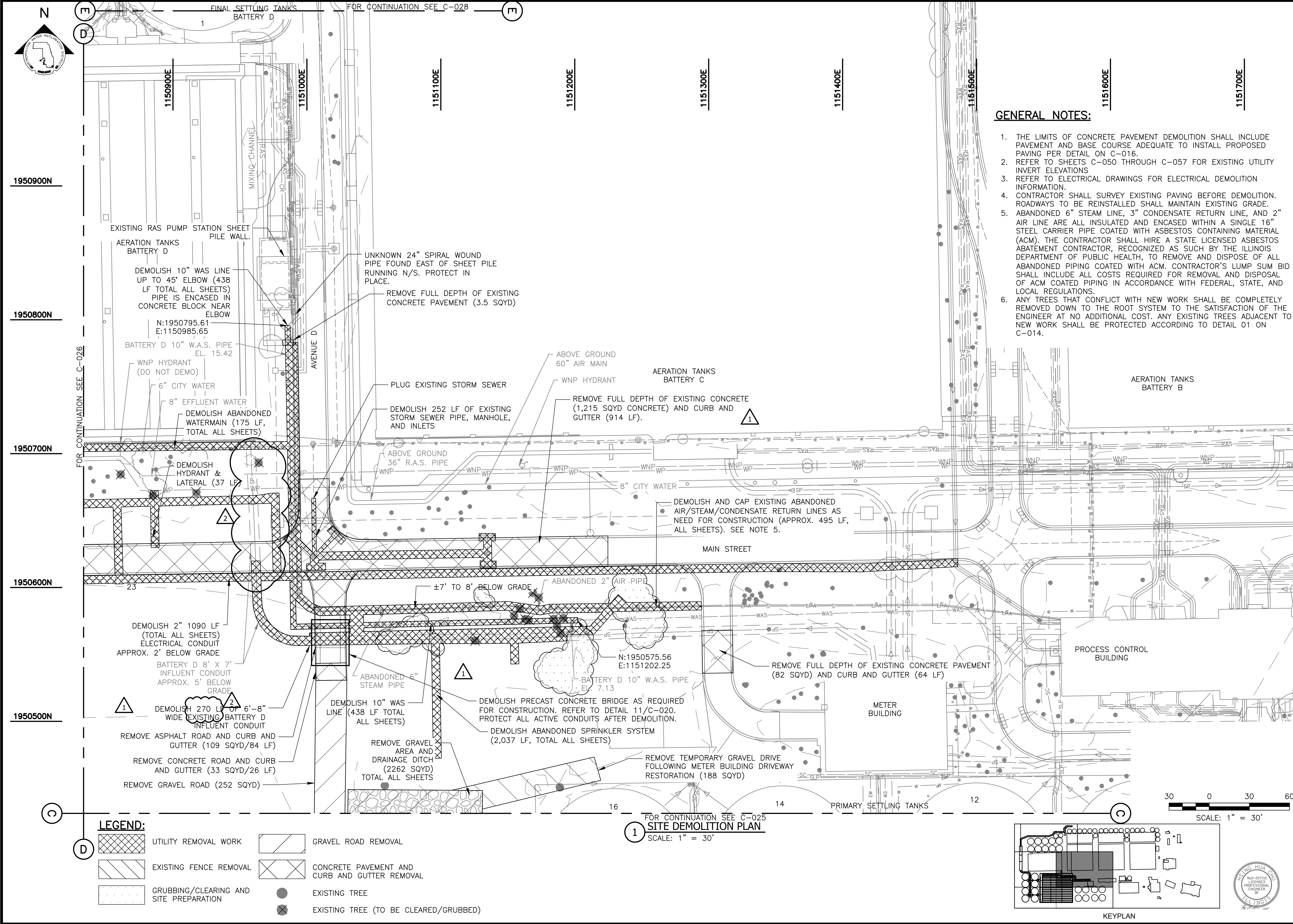
STARTUP TEMPORARY PUMPING AND PIPING

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LP-004

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GENERAL NOTES:

1. THE LIMITS OF CONCRETE PAVEMENT DEMOLITION SHALL INCLUDE PAVEMENT AND BASE COURSE ADEQUATE TO INSTALL PROPOSED PAVING PER DETAIL ON C-016.
2. REFER TO SHEETS C-050 THROUGH C-057 FOR EXISTING UTILITY INVERT ELEVATIONS
3. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL DEMOLITION INFORMATION.
4. CONTRACTOR SHALL SURVEY EXISTING PAVING BEFORE DEMOLITION. ROADWAYS TO BE REINSTALLED SHALL MAINTAIN EXISTING GRADE.
5. ABANDONED 6" STEAM LINE, 3" CONDENSATE RETURN LINE, AND 2" AIR LINE ARE ALL INSULATED AND ENCASED WITHIN A SINGLE 16" STEEL CARRIER PIPE COATED WITH ASBESTOS CONTAINING MATERIAL (ACM). THE CONTRACTOR SHALL HIRE A STATE LICENSED ASBESTOS ABATEMENT CONTRACTOR, RECOGNIZED AS SUCH BY THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH, TO REMOVE AND DISPOSE OF ALL ABANDONED PIPING COATED WITH ACM. CONTRACTOR'S LUMP SUM BID SHALL INCLUDE ALL COSTS REQUIRED FOR REMOVAL AND DISPOSAL OF ACM COATED PIPING IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
6. ANY TREES THAT CONFLICT WITH NEW WORK SHALL BE COMPLETELY REMOVED DOWN TO THE ROOT SYSTEM TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST. ANY EXISTING TREES ADJACENT TO NEW WORK SHALL BE PROTECTED ACCORDING TO DETAIL 01 ON C-014.

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:	Checked by:
HHC	BP
Drawn by:	Reviewed by:
LK	BP
Date:	Scale:
JULY 2025	AS SHOWN

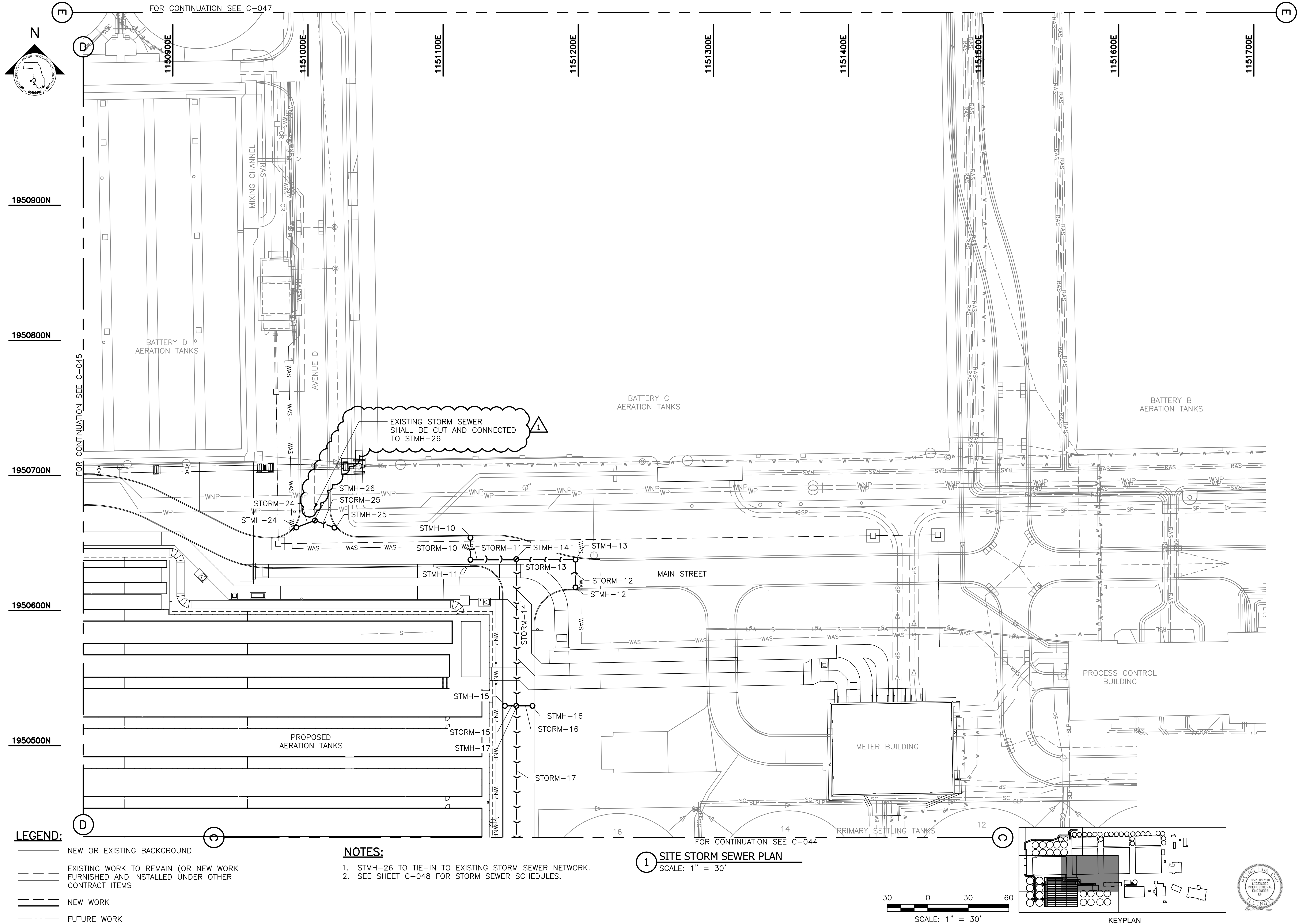
AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

ORION
ENGINEERS
ORION ENGINEERS
312 NORTH MAY STREET
SUITE 100
CHICAGO, IL 60607

CONTRACT 22-RFP-06
OBRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY

SITE DEMOLITION PLAN - 4

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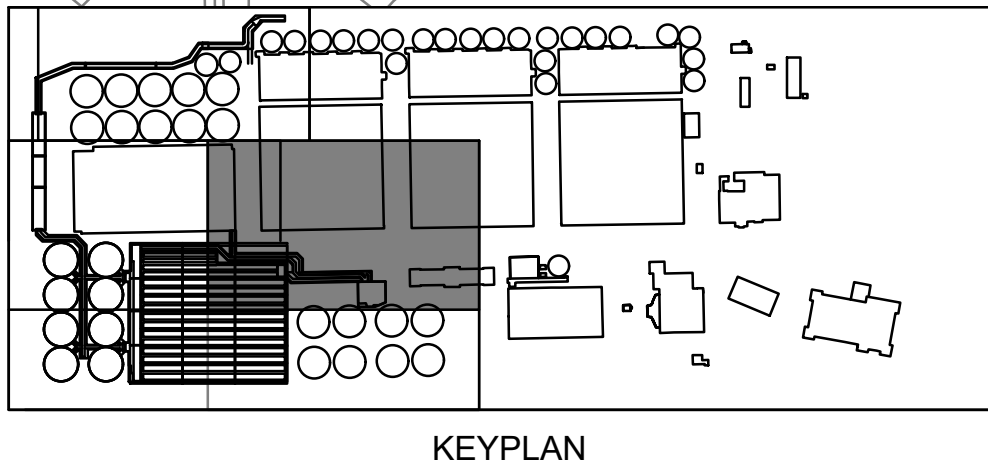
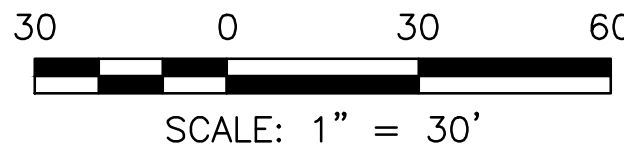


LEGEND:

- NEW OR EXISTING BACKGROUND
- - - EXISTING WORK TO REMAIN (OR NEW WORK FURNISHED AND INSTALLED UNDER OTHER CONTRACT ITEMS)
- NEW WORK
- - - FUTURE WORK

- NOTES:**
- STMH-26 TO TIE-IN TO EXISTING STORM SEWER NETWORK.
 - SEE SHEET C-048 FOR STORM SEWER SCHEDULES.

1 SITE STORM SEWER PLAN
SCALE: 1" = 30'



CONTRACT 22-RFP-06
OBRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY

SITE STORM SEWER PLAN - 4

Sheet Number:
C-046

Page Number: 62

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

ORION ENGINEERS
ORION ENGINEERS
312 NORTH MAY STREET
SUITE 100
CHICAGO, IL 60607

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

Designed by:
HHC

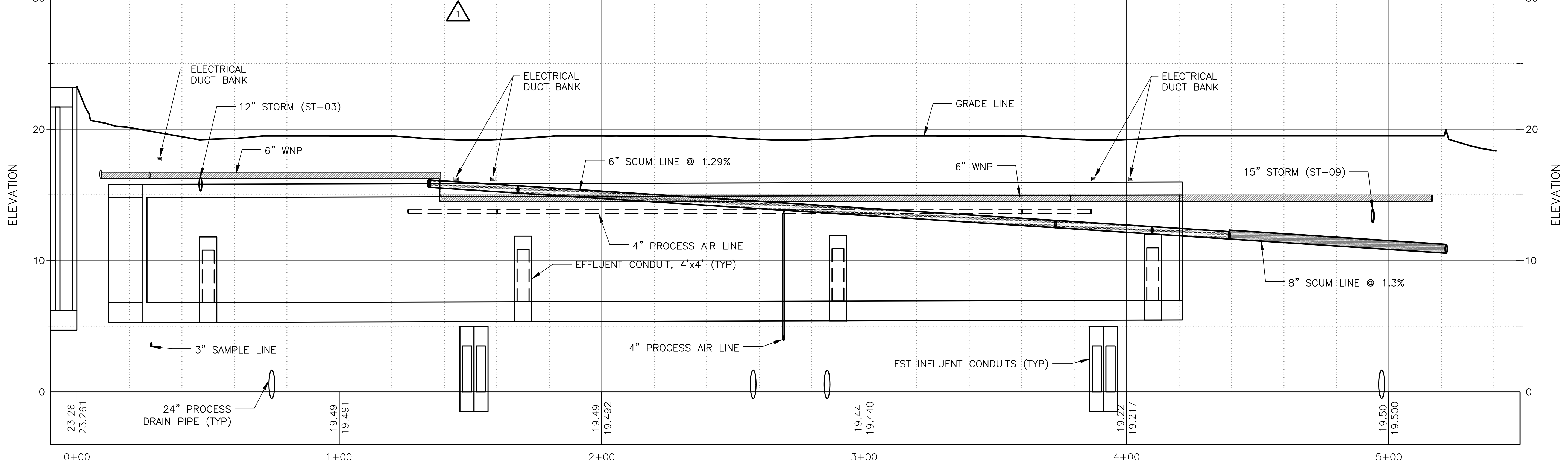
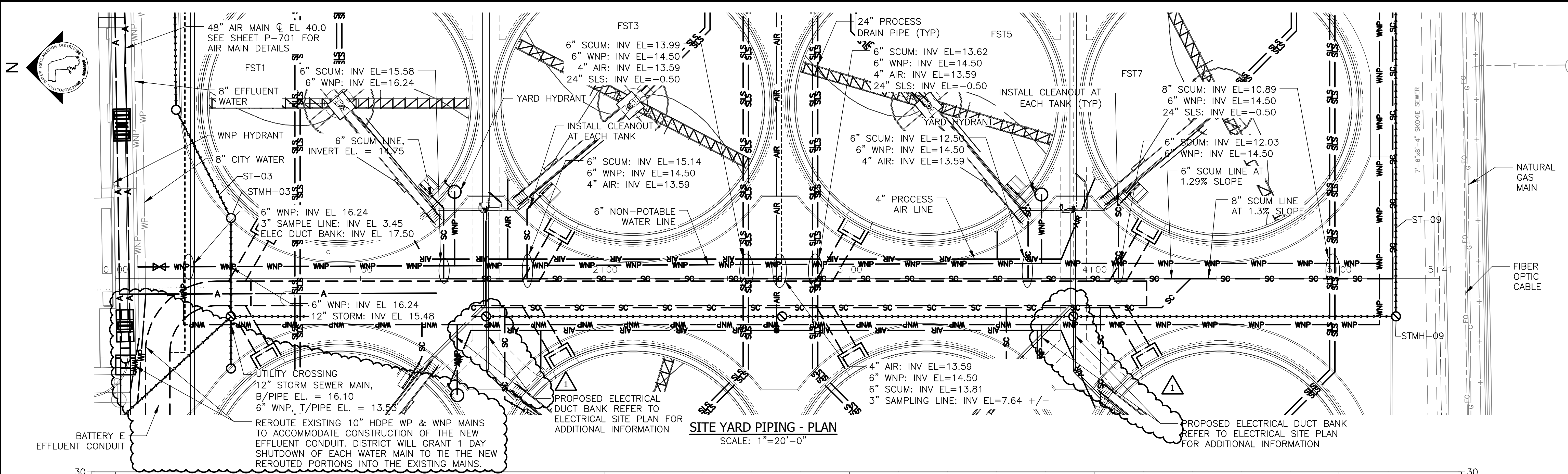
Drawn by:
LK

Date:
JULY 2025

Checked by:
BP

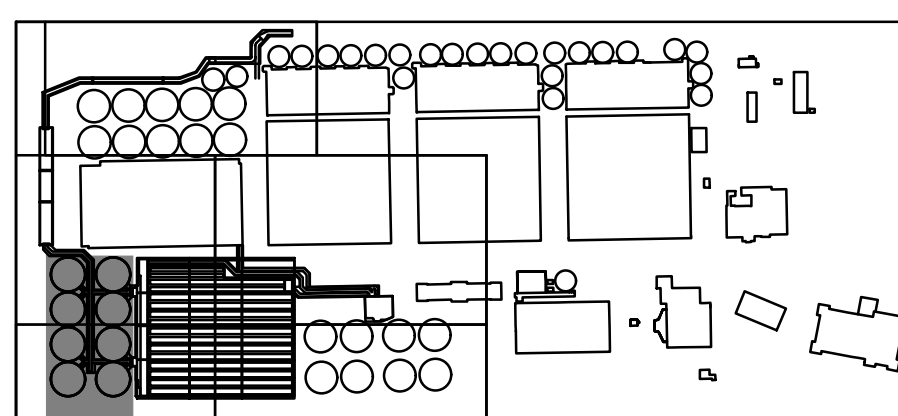
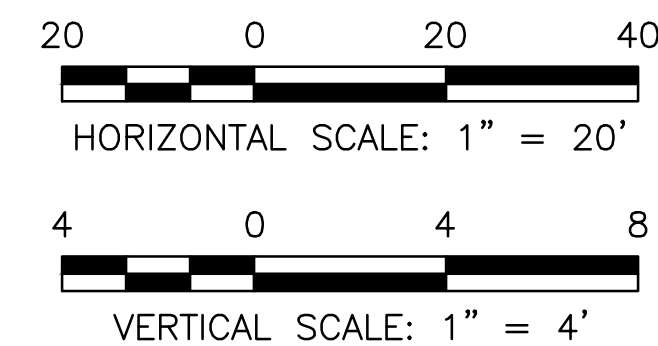
Reviewed by:
BP

Scale:
AS SHOWN



SITE YARD PIPING - PROFILE - LOOKING EAST
 HORIZONTAL SCALE: 1"=20'-0", VERTICAL SCALE: 1"=4'-0"

- LEGEND:**
- NEW OR EXISTING BACKGROUND
 - EXISTING WORK TO REMAIN (OR NEW WORK FURNISHED AND INSTALLED UNDER OTHER CONTRACT ITEMS)
 - NEW WORK
 - FUTURE WORK



METROPOLITAN WATER RECLAMATION DISTRICT
 OF GREATER CHICAGO

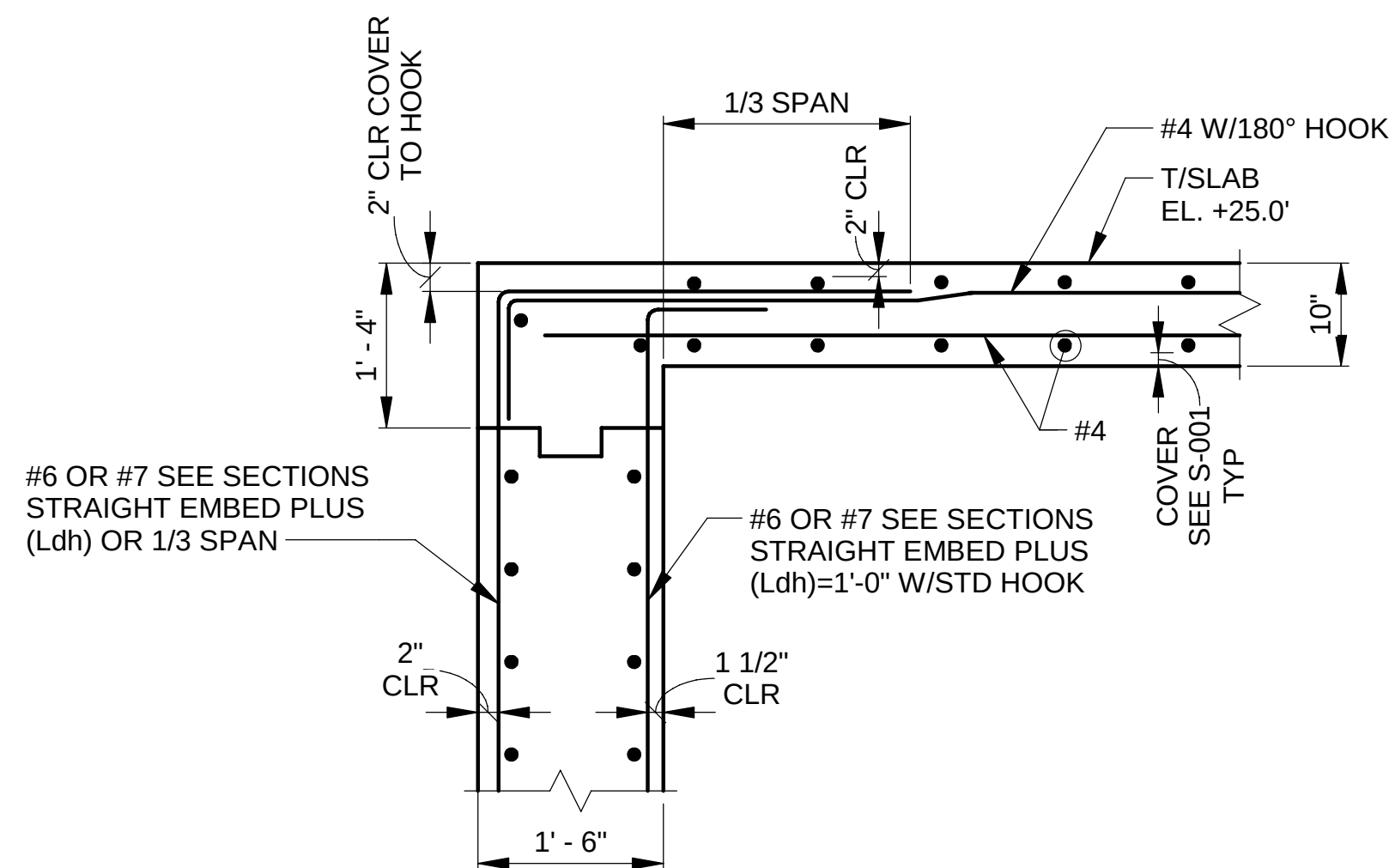
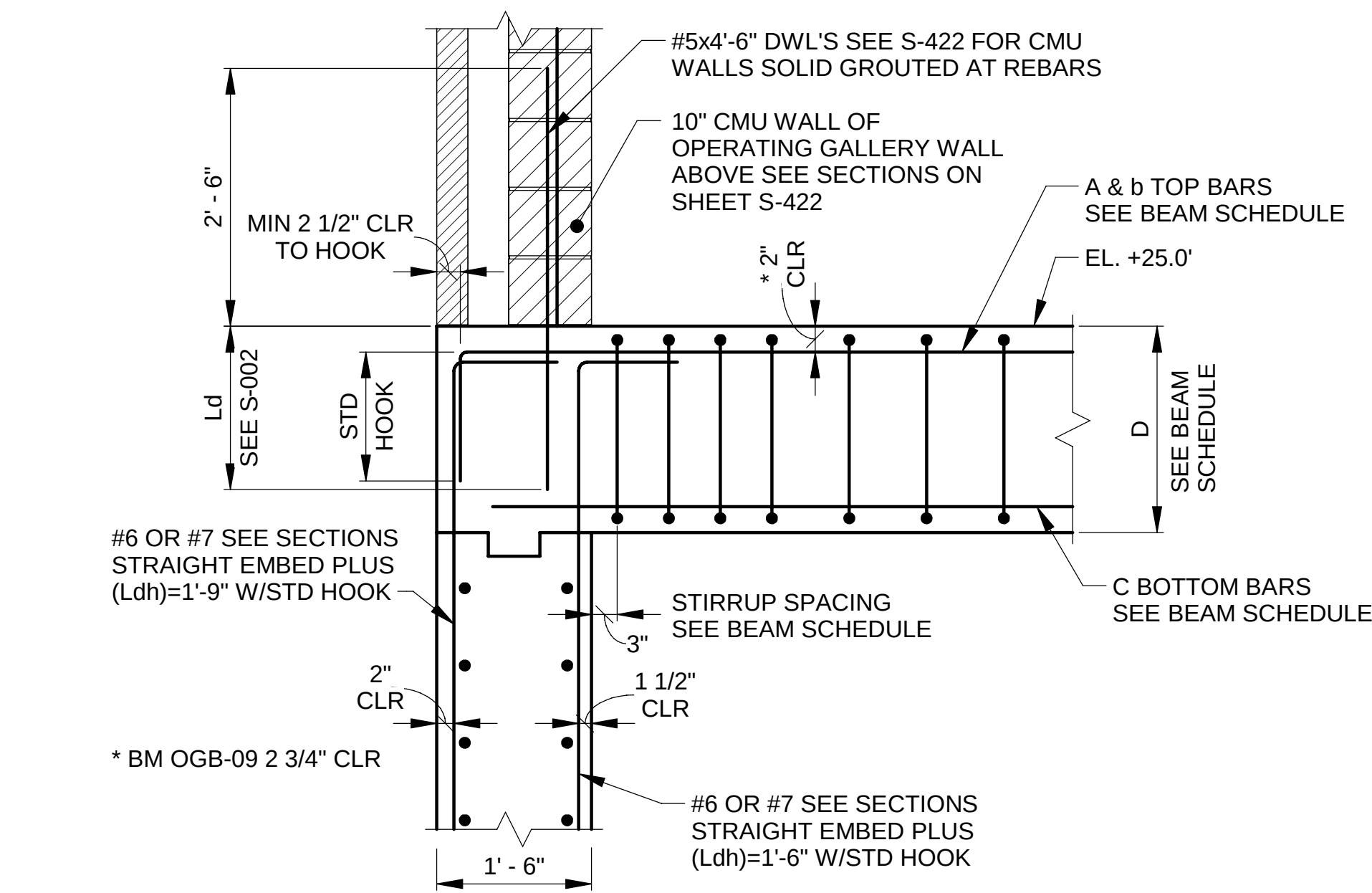
DBS DB STERLIN CONSULTANTS INC.
 DB STERLIN CONSULTANTS
 123 N UPPER WACKER DR.
 SUITE 20
 CHICAGO, IL 60601, USA

AECOM
 PRUDENTIAL PLAZA ONE
 130 E RANDOLPH STREET
 SUITE 2400
 CHICAGO, IL 60601, USA

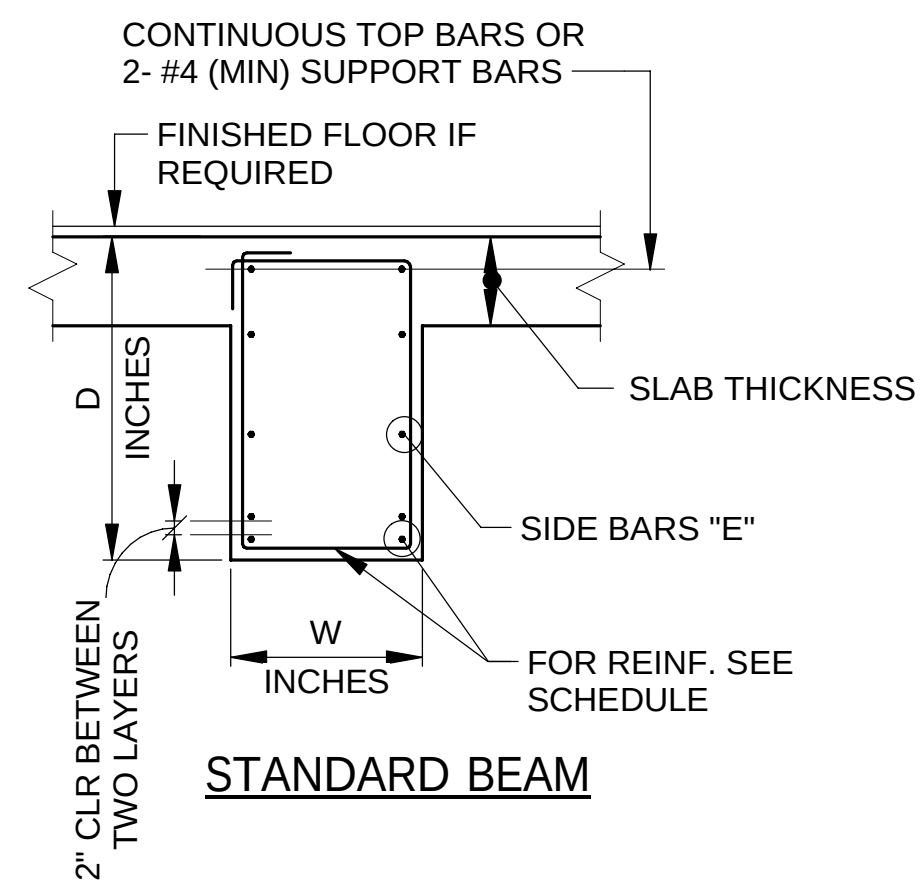
Checked by: BP
 Reviewed by: BP
 Drawn by: LK
 Date: JULY 2025
 Scale: AS SHOWN

CONTRACT 21-092-3P
 OBRIEN WATER RECLAMATION PLANT
 BATTERY E ACTIVATED SLUDGE FACILITY
 SITE YARD PIPING - PROFILE

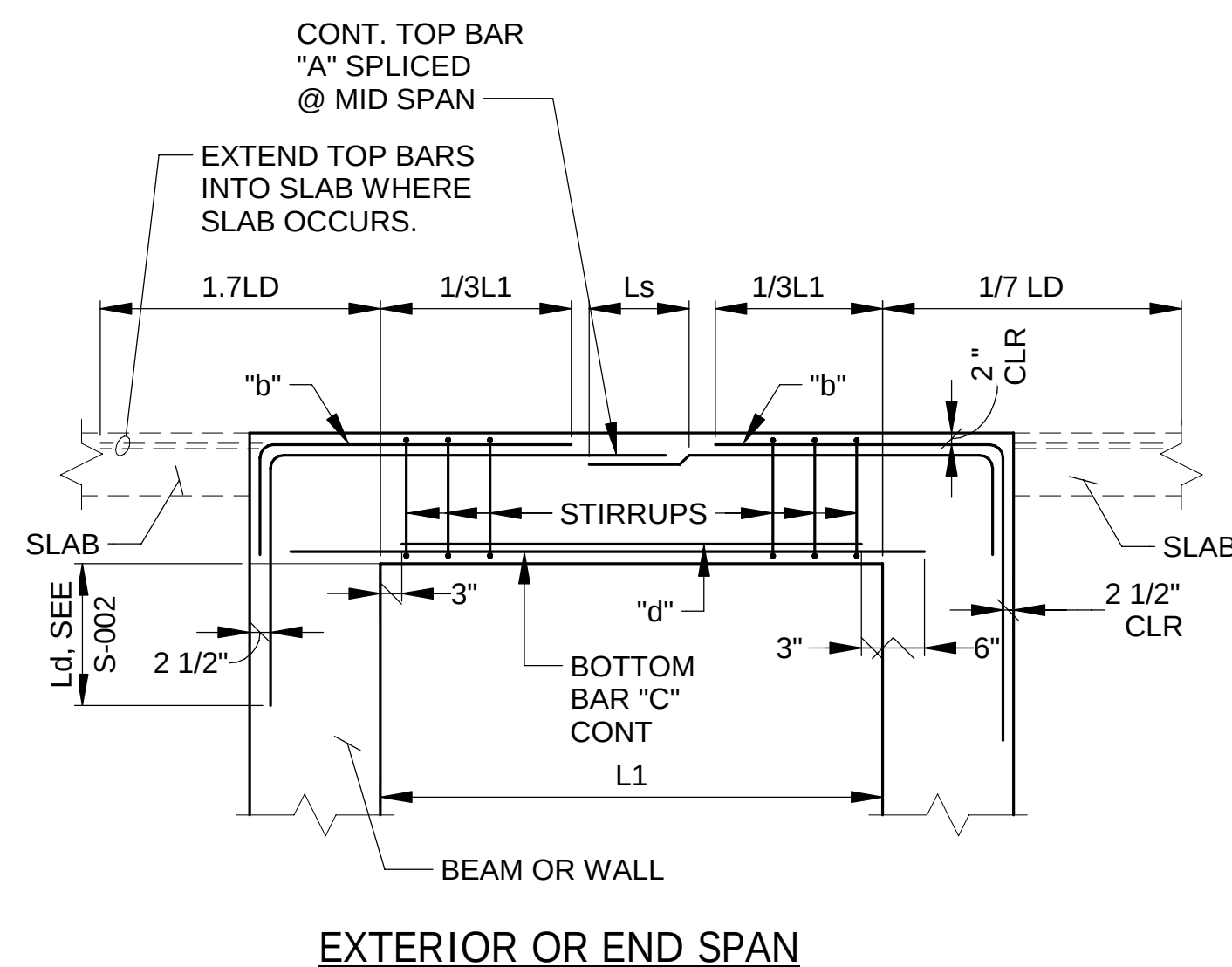
Sheet Number:
C-056
 Page Number: 71



2 DETAIL-BETWEEN FLOOR BEAMS
SCALE: 3/4" = 1'-0"



- NOTES:
- POUR BEAM AND SLAB MONOLITHICALLY. SEE SCHEDULES FOR DIMENSIONS "W", "D" AND SECTIONS FOR SLAB THICKNESS.
 - STIRRUPS TYPE T1 IS CLOSED STIRRUPS.
 - STIRRUPS TYPE T2 IS OPEN STIRRUPS WITH TOP CAP TIE.



3 TYPICAL DETAILS FOR BEAM OR SLAB REINFORCEMENT
SCALE: 1/8" = 1'-0"

DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED, WHOLLY OR IN PART, WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.

CONCRETE BEAM SCHEDULE

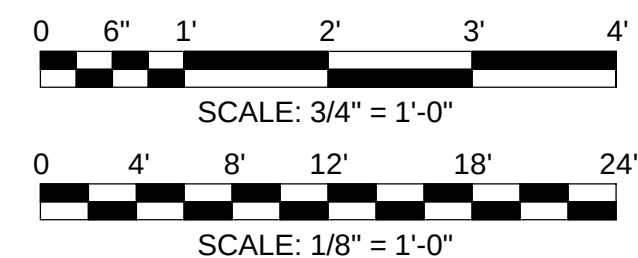
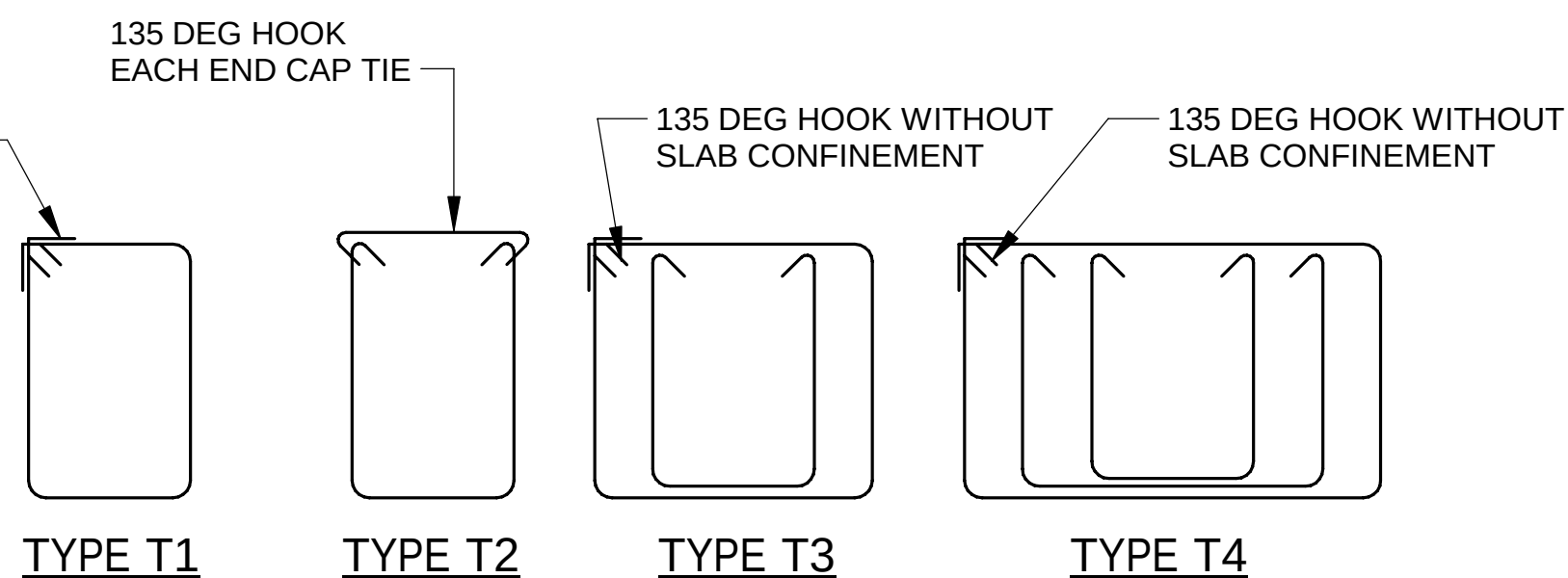
BEAM MARK	SIZE (IN)		BOTTOM BARS		TOP BARS			SIDE BARS	STIRRUPS			REMARKS
	W	D	CONTINUOUS C	d	A	b		"E" EACH FACE	SIZE	TYPE	SPACING, EACH END (IN)	
						LEFT	RIGHT					
OPERATING GALLERY (OG)												
OGB-01	24	24	3- #8	3- #8	2- #8	3- #8	3- #8	2- #6	#4	T1	1@3, R@10	
OGB-02	18	30	4- #9	4- #9	2- #9	6- #9	6- #9	2- #6	#4	T3	1@3, 4@6, 4@9, R@12	BENEATH WALL DIVIDE
OGB-01A	24	24	3- #8	3- #8	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, R@10	ROOF COLUMN LOAD
OGB-03	18	24	4- #6	————	2- #6	1- #6	1- #6	2- #6	#4	T1	1@3, 3@6, 2@9, R@12	SIDE OF HATCH OPNG
OGB-04	18	18	5- #8	————	2- #6	1- #6	2- #8	2- #6	#4	T1	1@3, 8@6, 2@9, R@12	
OGB-05	18	18	3- #8	————	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, 10@6, 4@9, R@12	
OGB-06	12	16	3- #8	————	2- #6	1- #6	1- #6	1- #5	#4	T1	1@3, 4@6, 2@9, R@12	
OGB-07	18	18	4- #8	————	2- #6	1- #6	2- #8	2- #6	#4	T1	1@3, 8@6, 2@9, R@12	TOP BARS 2" DOWN
OGB-08	18	30	3- #8	1- #8	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, 4@6, 2@9, R@12	TOP BARS 2" DOWN
*OGB-09	18	21	2- #9	2- #9	2- #8	2- #6	————	2- #6	#4	T1	1@3, 8@6, 2@9, R@12	EXTEND 'A' PLUS LHS TOP BARS 3'-6" INTO SLAB
OGB-10	18	30	3- #6	1- #6	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, 2@6, 2@9, R@12	
OGB-11	18	30	3- #9	1- #9	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, 4@6, 2@9, R@12	
LOADING DOCK ROOF												
OG LDB-01	16	16	5- #6	————	2- #6	3- #6	3- #6	1- #6	#4	T1	1@3, 2@6, 2@9, R@12	
OG LDB-02	16	16	5- #6	————	2- #6	1- #6	1- #6	1- #6	#4	T1	1@3, 2@6, 2@9, R@12	ALONG LINE 1
OG LDB-03	16	18	4- #8	————	2- #6	1- #6	1- #6	2- #6	#4	T1	1@3, 2@6, 2@9, R@12	ALONG LINE C
BEAM AT EXPANSION JOINT												
OGB-12	18	30	5- #9	————	2- #6	2- #6	2- #6	2- #6	#4	T1	1@3, R@10	
OGB-13	18	30	2- #6	2- #6	2- #6	2- #6	2- #6	2- #6			1@3, 8@6, 4@9, R@12	
OGB-14	12	16	3- #6	————	2- #8	————	————	1- #6	#4	T1	1@3, 4@6, 2@9, R@12	
-	-	-	-	-				-	-	-	-	
FERMENTER AND AERATION TANKS (AT)												
ATB-01	42	18	5- #7	————	5- #7	————	————	1- #6	#4	T3	@8	SEE DETAIL 8/S-329
ATB-02	42	18	5- #7	————	5- #7	————	————	1- #6	#4	T3	@8	SEE DETAIL 8/S-329
ATB-03	42	18	5- #8	————	5- #8	————	————	1- #6	#4	T3	@8	SEE DETAIL 8/S-329
ATB-04	24	24	4- #8	————	4- #8	————	————	1- #6	#4	T3	@9	SEE DETAIL 8/S-329
ATB-05	42	18	5- #7	————	5- #7	————	————	1- #6	#4	T3	@8	
ATB-06	18	33	5- #8	————	5- #8	————	————	1- #6	#4	T3	@8	
ATB-07	24	48	4- #8	————	4- #8	————	————	3- #6	#4	T3	4@9, R@12	
ATB-08	24	36	4- #8	————	4- #8	————	————	2- #6	#4	T3	@12	

* OGB-09 TOP BARS TO BE SET 2 3/4" DOWN (CLEAR)

NOTES:

- SEE TYPICAL DETAILS FOR BEAM REINFORCEMENT LAYOUT AND PLACEMENT.
- ALL BEAMS ARE VIEWED LEFT TO RIGHT OR BOTTOM TO TOP ON PLAN SHEET.

90 DEG HOOK WITH SLAB CONFINEMENT
135 DEG HOOK WITHOUT SLAB CONFINEMENT



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Checked by: AS

Reviewed by: MF

Scale: AS SHOWN

AECOM
RUBINOS & MESA
Engineers, Inc.
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

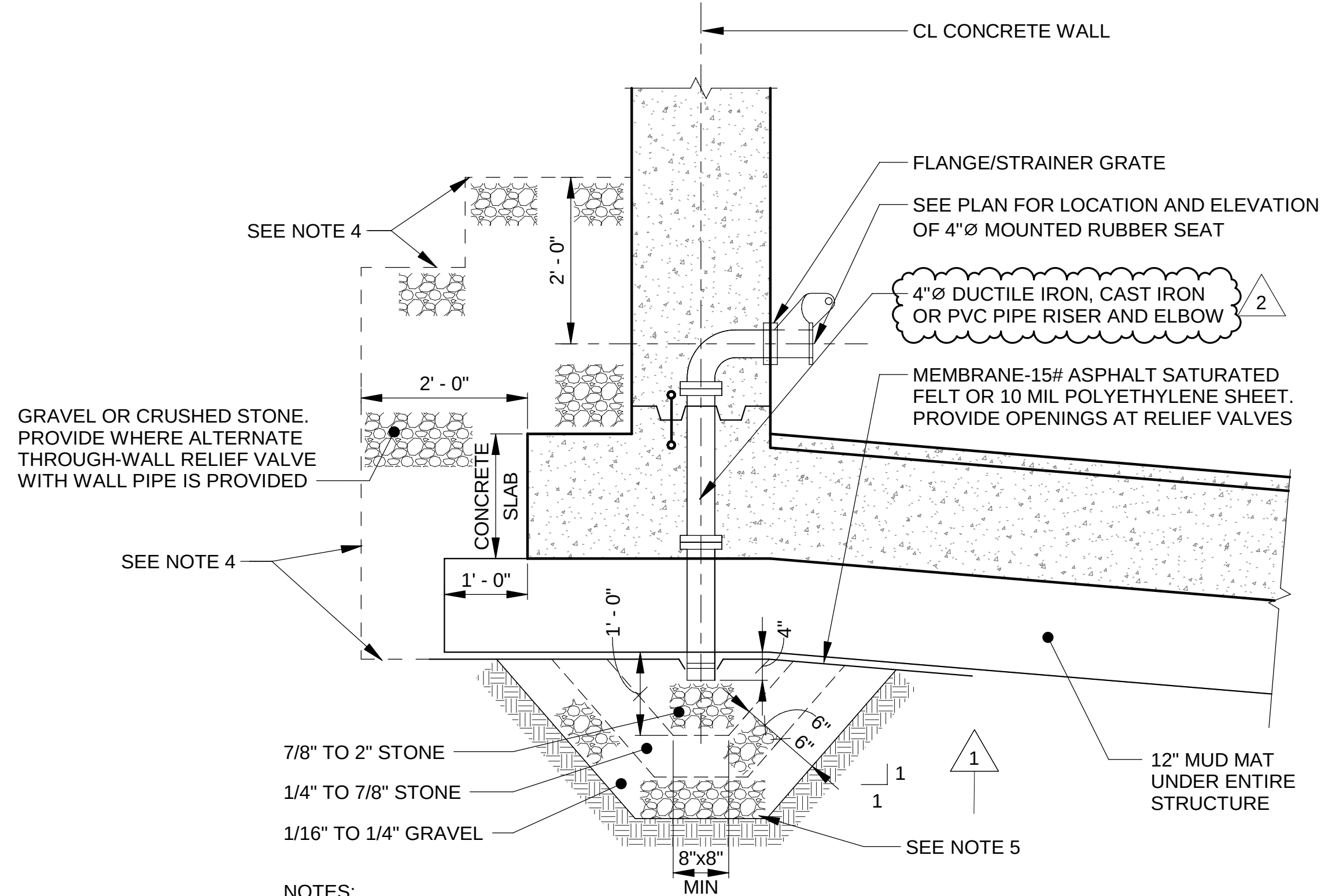
STANDARD DETAILS - 4

Sheet Number:

S-006

Page Number:

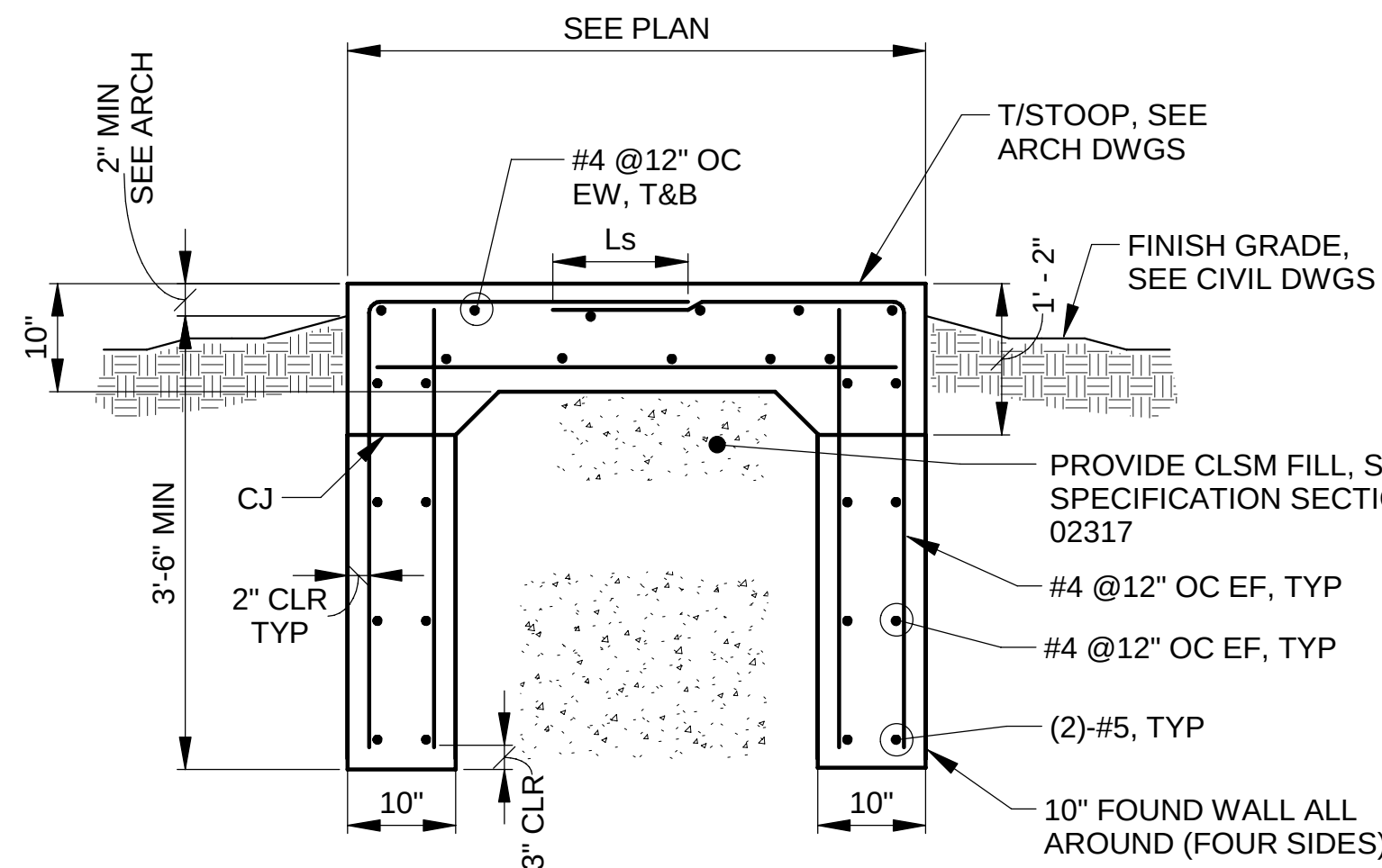
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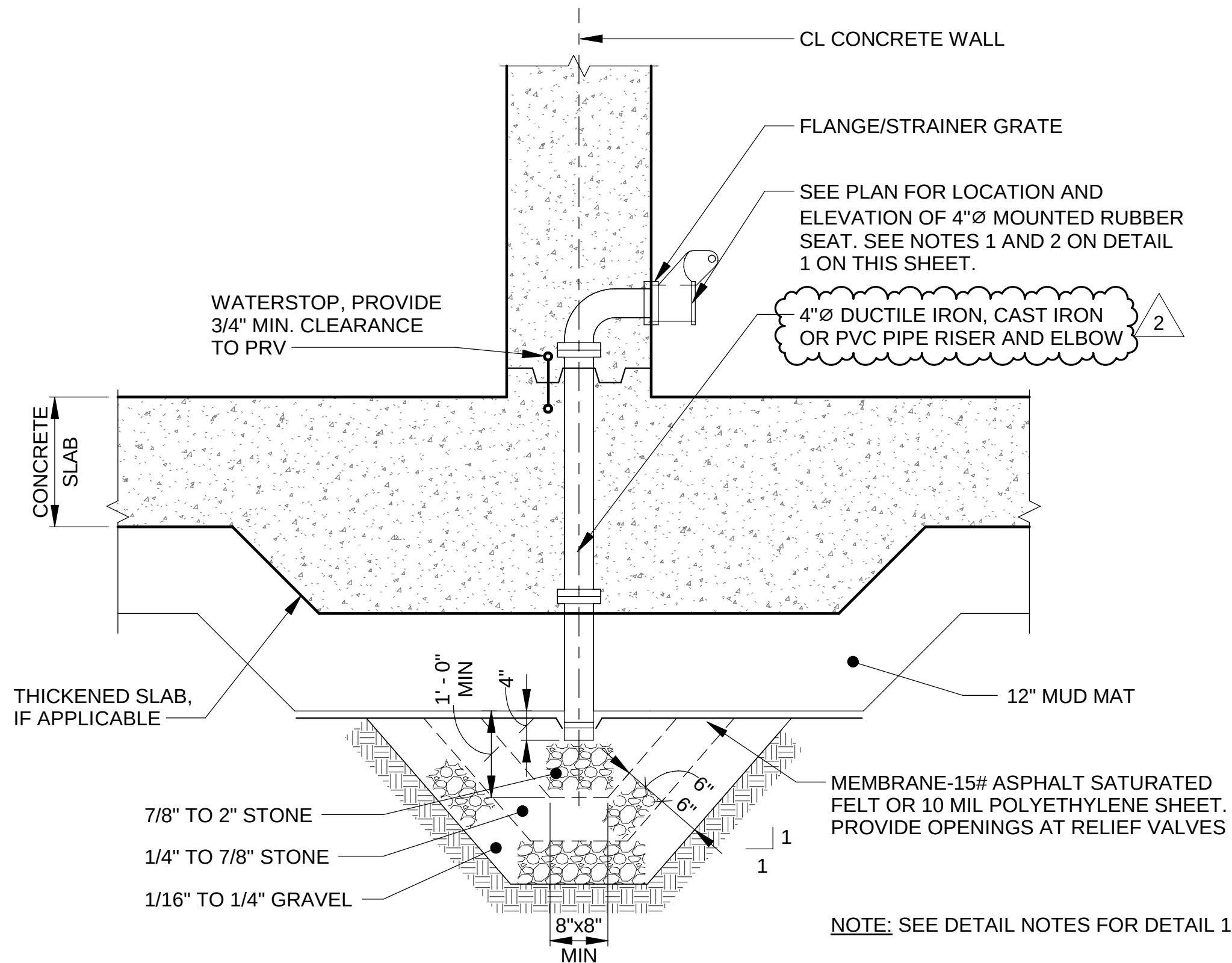
NOTES:

1. INVERT ELEVATIONS OF PRESSURE RELIEF VALVES TO BE VERIFIED WITH EQUIPMENT MFR AND ADJUSTMENTS MADE TO ELIMINATE CONFLICTS. EQUIPMENT AND/OR ELEVATION ADJUSTMENTS SHALL BE COORDINATED BY CONTRACTOR.
2. INSTALL PLUMB AND LEVEL.
3. GRANULAR FILL AND MEMBRANE TO BE PROVIDED ONLY AS SHOWN ON CONTRACT DRAWINGS.
4. CONTINUOUS FILTER FABRIC OR GEO-MEMBRANE AS RECOMMENDED BY FABRIC MFR.
5. PROVIDE STONE FILL OF 2'-0" X 2'-0" AT MINIMUM THE BASE OF EACH RELIEF VALVE LOCATION.
6. REFER TO SPECIFICATION SECTION 05500 FOR PRESSURE RELIEF VALVE REQUIREMENTS.

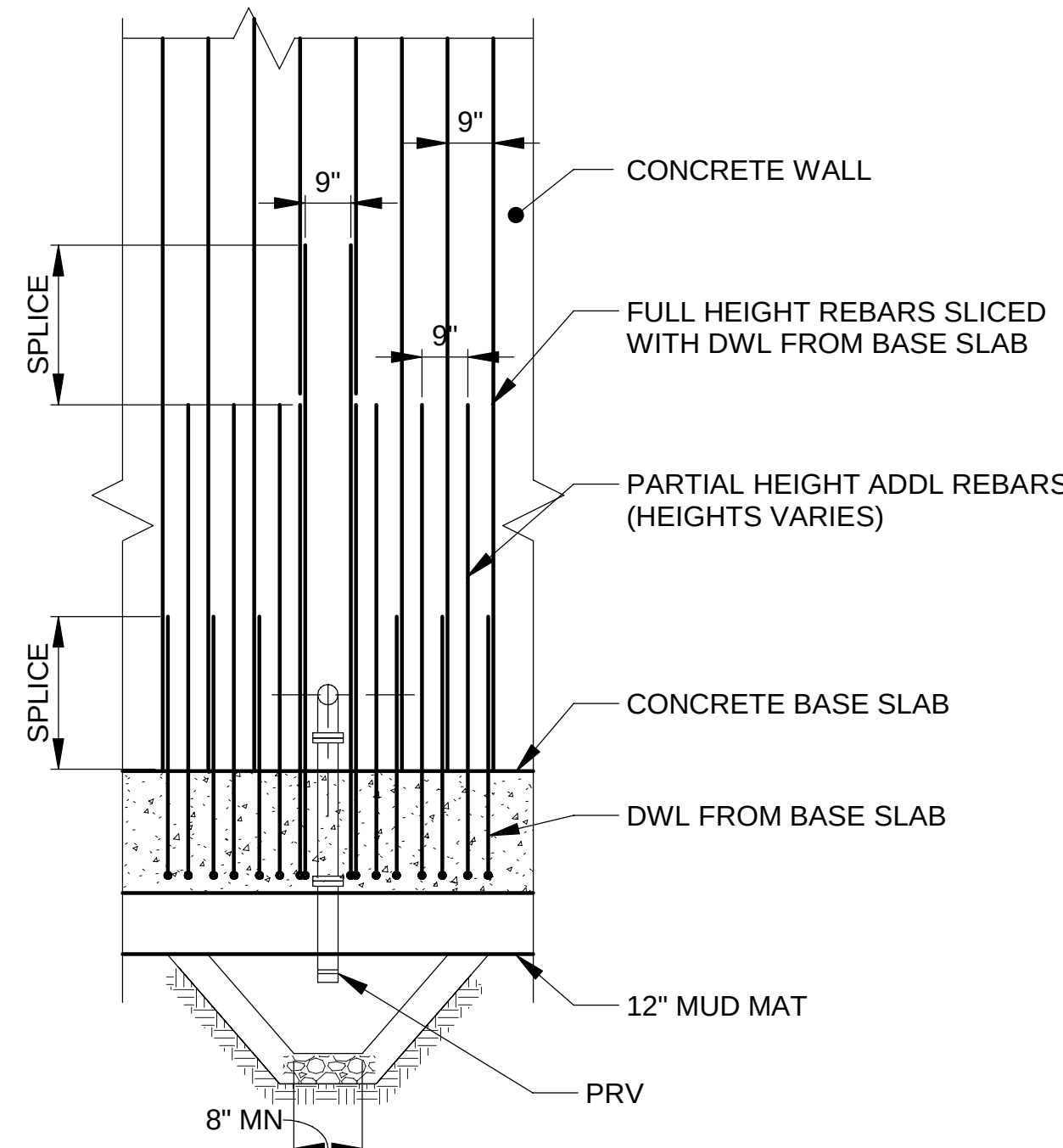
1 TYPICAL RELIEF VALVE DETAILS AT EXTERIOR WALLS
SCALE: 3/4" = 1'-0"



3 TYPICAL STAIRS STOOP DETAIL
SCALE: 3/4" = 1'-0"

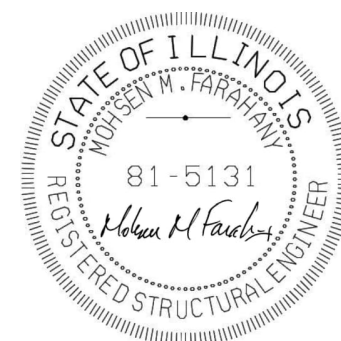
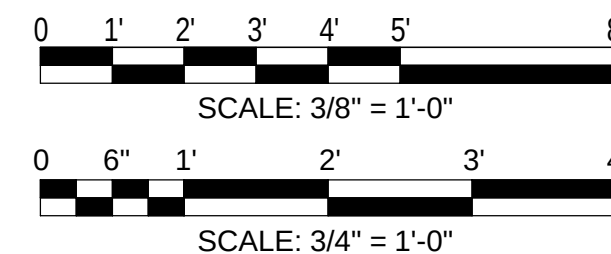


2 TYPICAL RELIEF VALVE DETAILS AT INTERIOR WALLS
SCALE: 3/4" = 1'-0"



4 ELEVATION OF WALL AT RELIEF VALVE
SCALE: 3/8" = 1'-0"

DETAILS SHOWN ON THIS DRAWING ARE TYPICAL DETAILS AND SHALL BE USED, WHOLLY OR IN PART, WHERE THEY APPLY EXCEPT WHERE MODIFIED BY DETAILED DRAWINGS & SPECIFICATIONS.



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:	Checked by:
JA	AS
Drawn by:	Reviewed by:
CC	AG
Date:	Scale:
7/1/2025	AS SHOWN

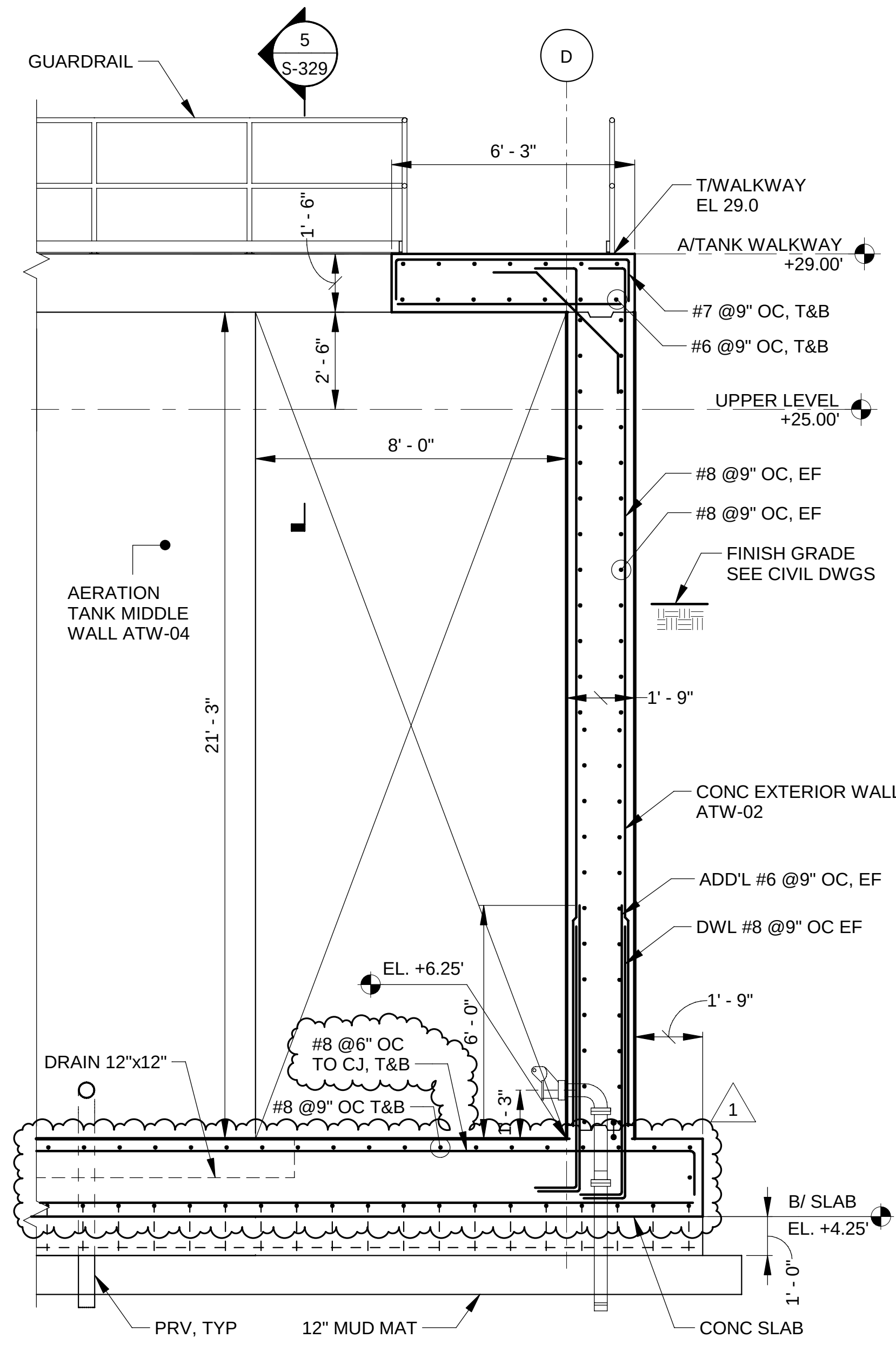
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

STANDARD DETAILS - 6

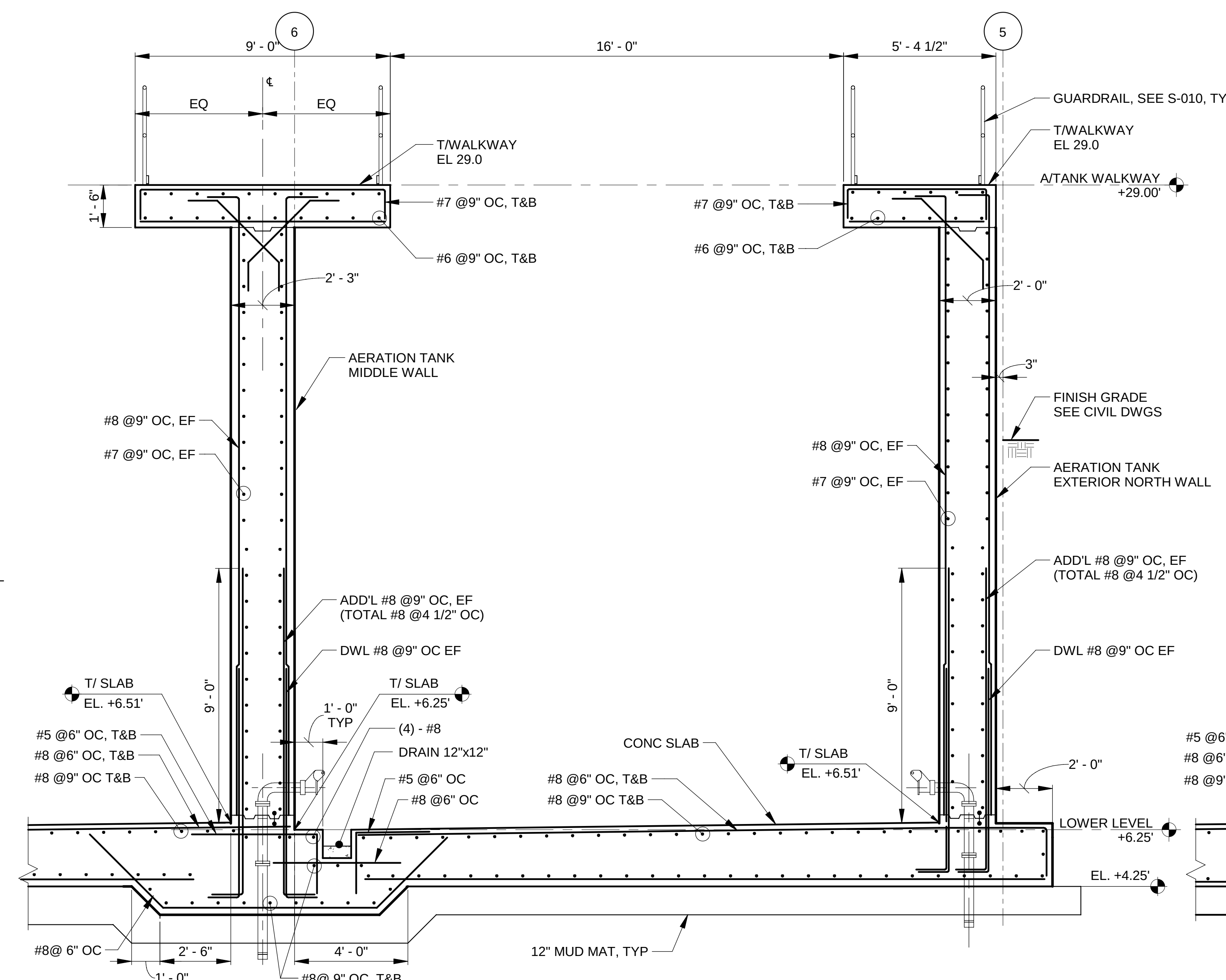
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S-008

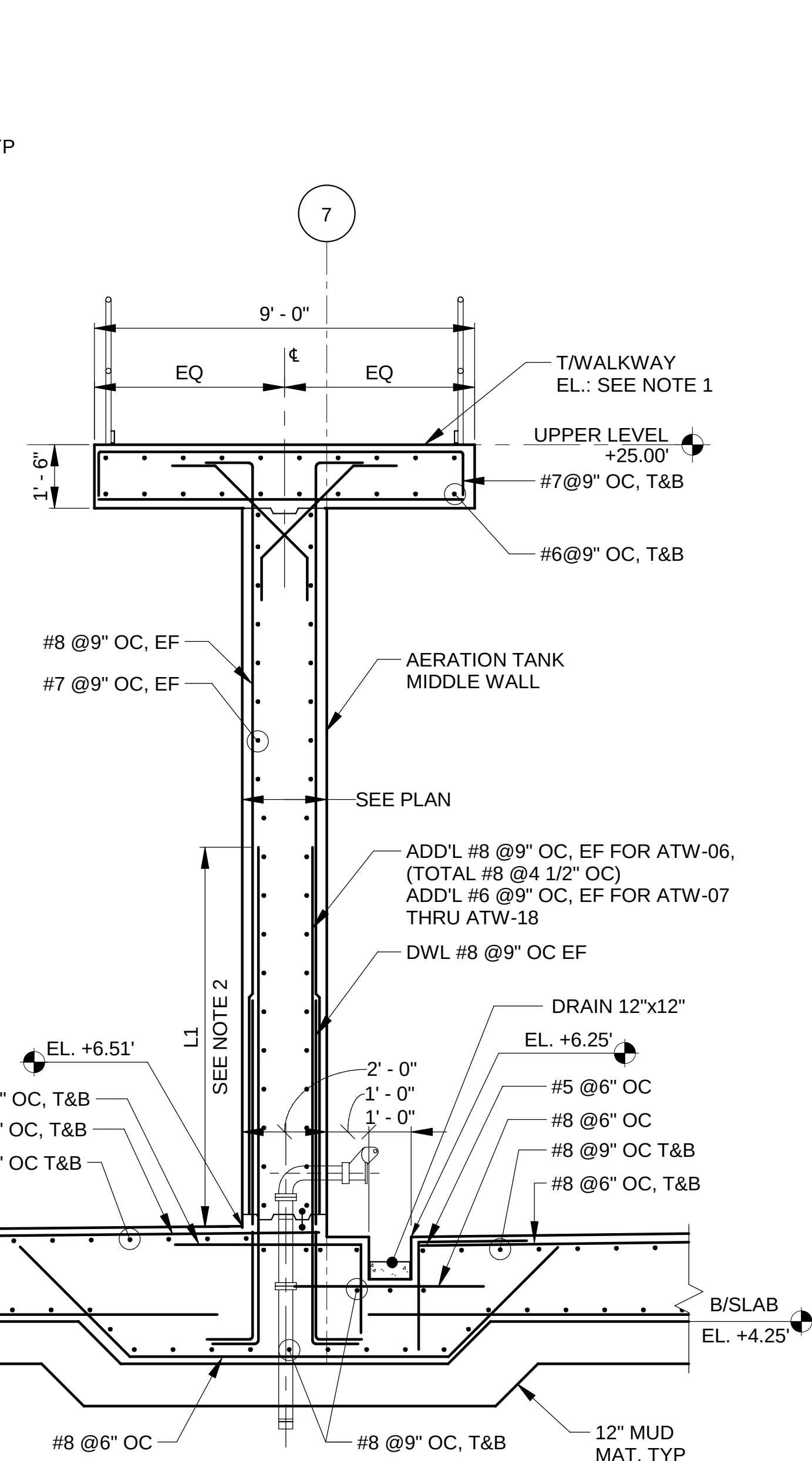
Page Number: 81



1 FERMENTER TANK EAST WALL LINE D
S-312 SCALE: 3/8" = 1'-0"
S-324

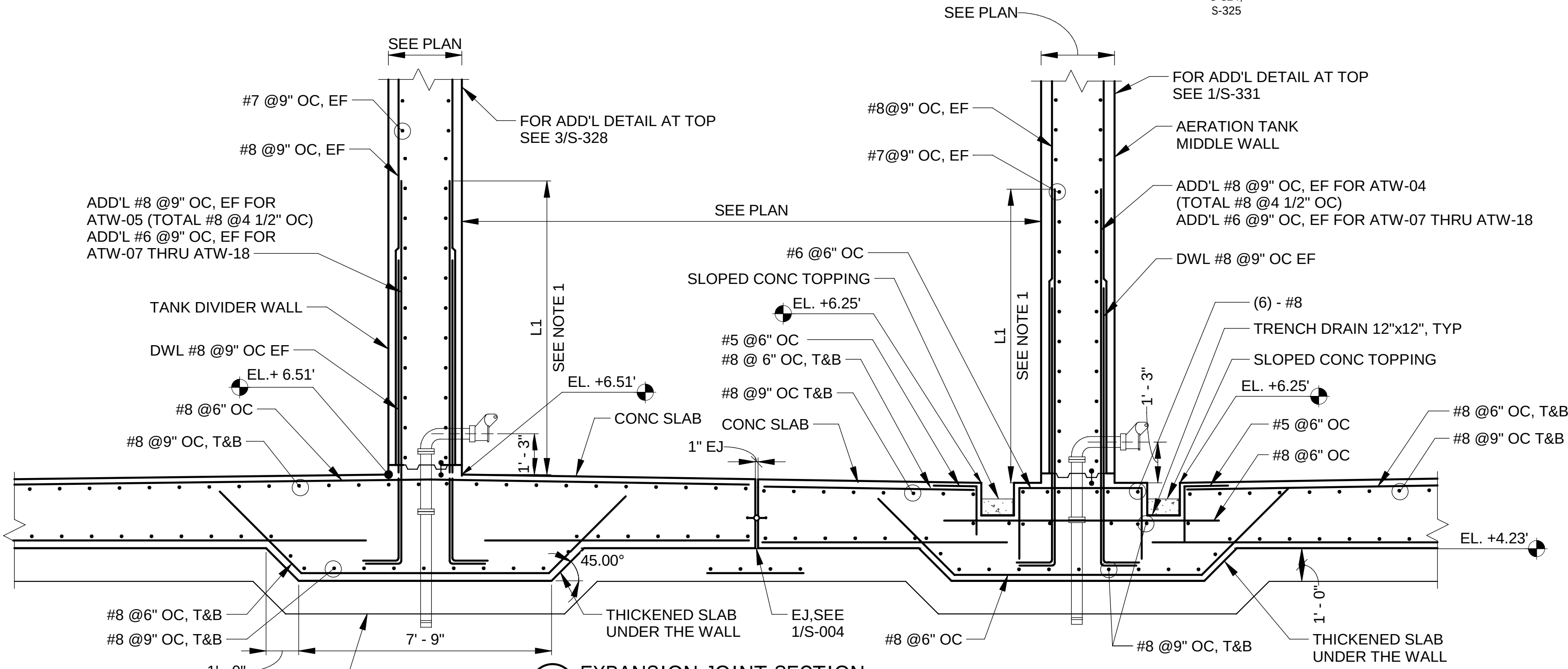


2 FERMENTER TANK NORTH WALL LINE 5
S-312 / SCALE: 3/8" = 1'-0"
S-313,
S-324,
S-325



NOTE:

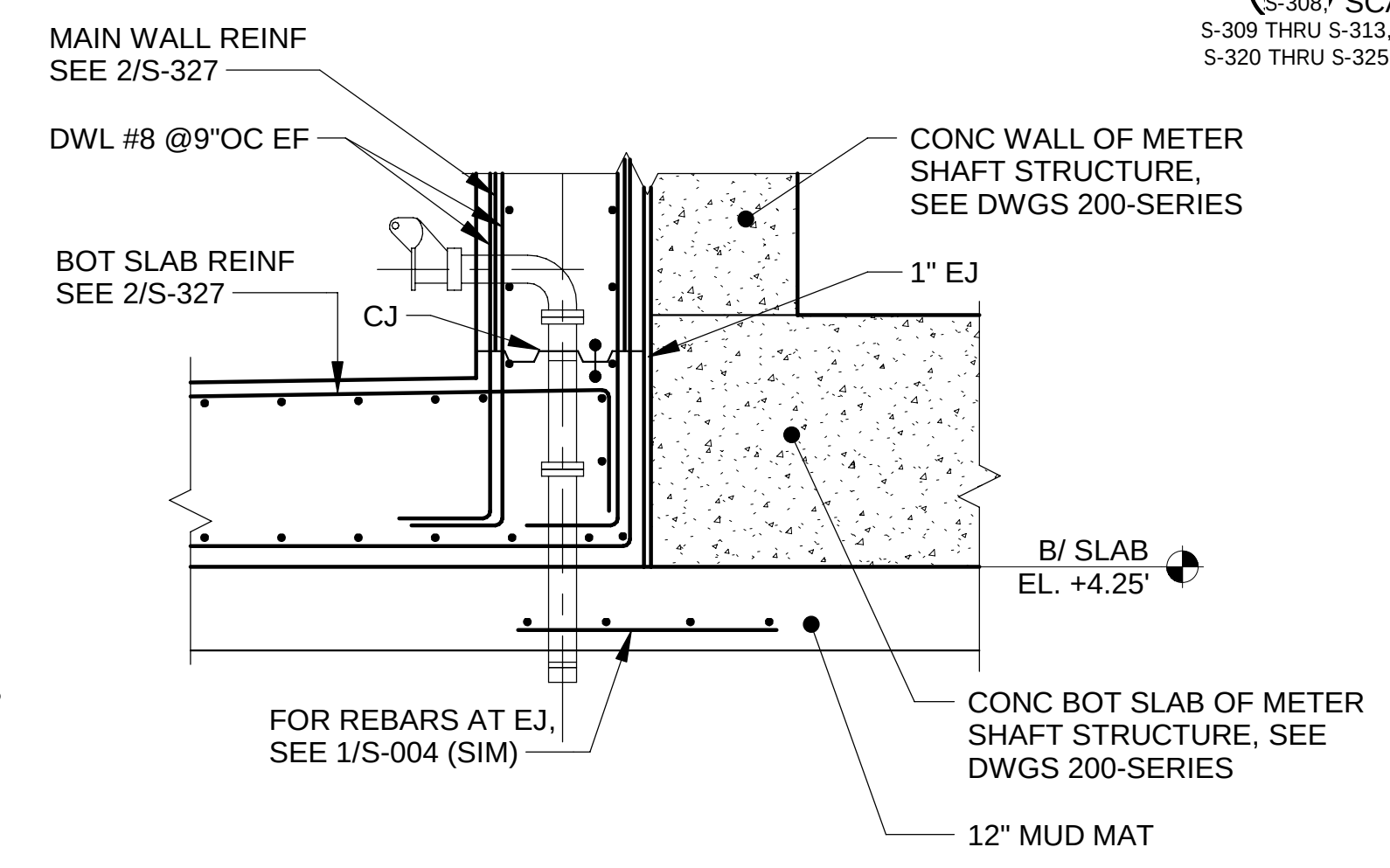
1. T/WALKWAY ELEVATION IS 29'-0" FROM GRID 3 THRU 6, AND 25'-0" FROM GRID 7 THRU 19.
2. L1 IS 9'-0" FOR ATW-03 THRU ATW-06, AND 6'-0" FOR ATW-07 THRU ATW-18.



4 EXPANSION JOINT SECTION
S-302 SCALE: 3/8" = 1'-0"
THRU
S-312

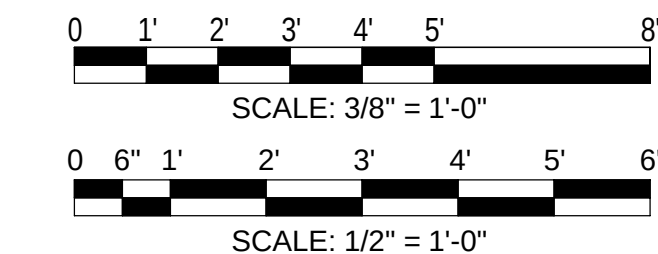
NOTE:

1. L1 IS 9'-0" FOR ATW-03 THRU ATW-06, AND 6'-0" FOR ATW-07 THRU ATW-18.
2. FOR GEOMETRY NOT SHOWN SEE DETAIL A/S-326.



5 SECTION AT METER SHAFT STRUCTURE
S-311 SCALE: 1/2" = 1'-0"

- NOTES:**
1. GENERAL NOTE SEE SHEETS S-001 AND S-002.
 2. PROVIDE MINIMAL SLOPE (1/16" PER FOOT) OF TOP OF WALKWAY CONCRETE SLAB FOR DRAIN FROM CENTER TO EACH EDGE.
 3. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8-INCH LIFTS TO 90%MODIFIED PROCTOR.

[illegible]

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

Designed by: AS	Checked by: JB	 R M E Rubinos & Mesia Engineers, Inc. 200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
Drawn by: AS	Reviewed by: MF	
Date: 7/1/2025	Scale: As indicated	
PRUDENTIAL PLAZA ONE 130 E RANDOLPH STREET SUITE 2400 CHICAGO, IL 60601, USA		

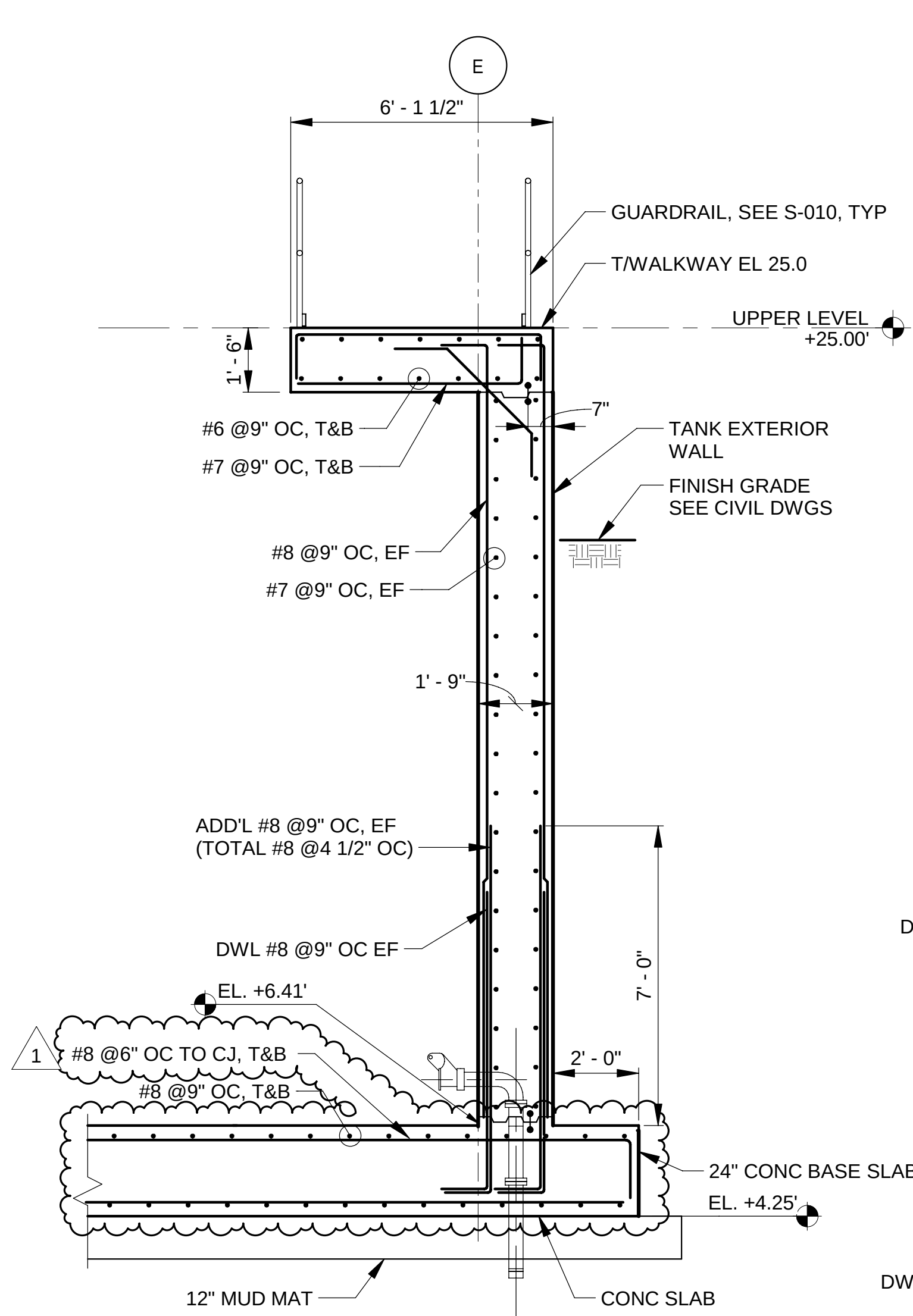
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FERMENTER & AERATION TANKS

SECTIONS

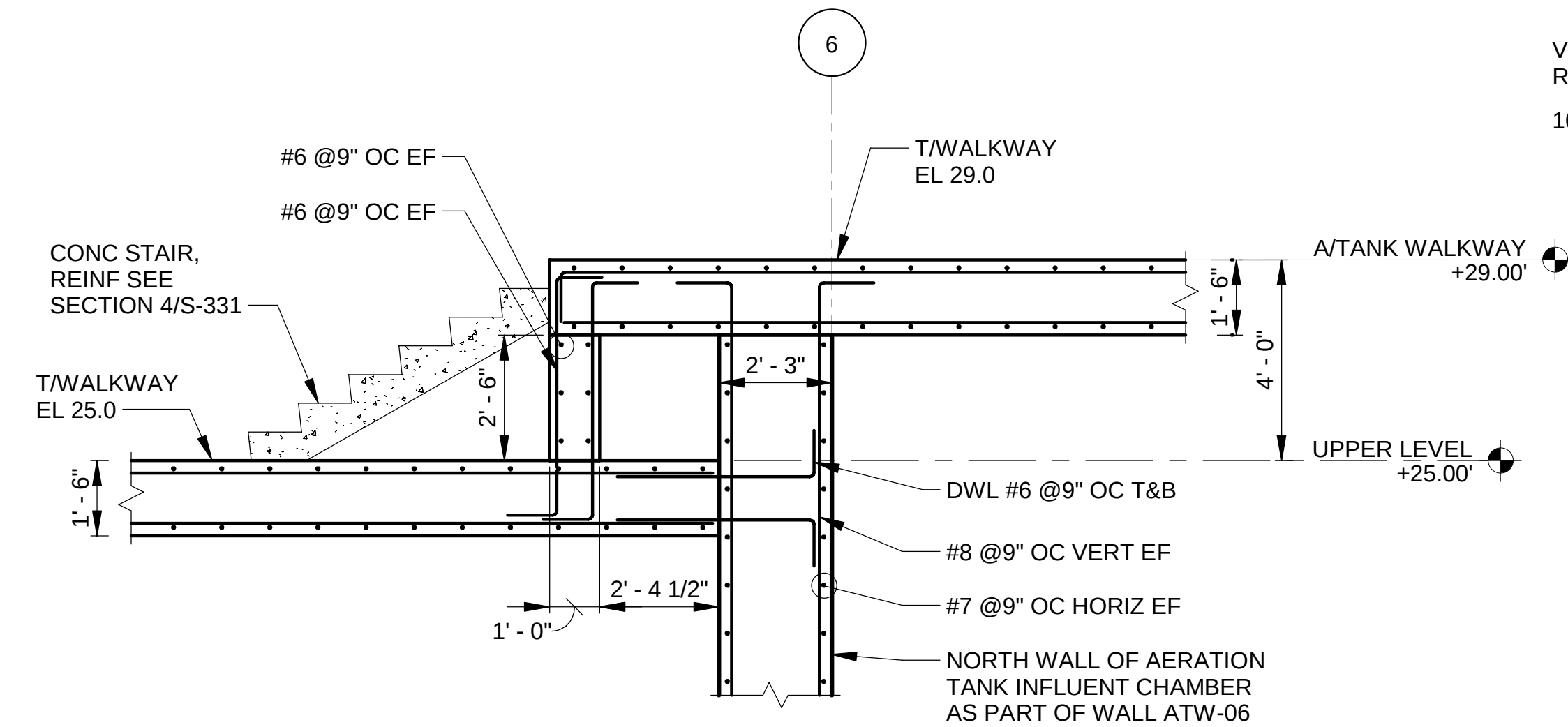
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S-327

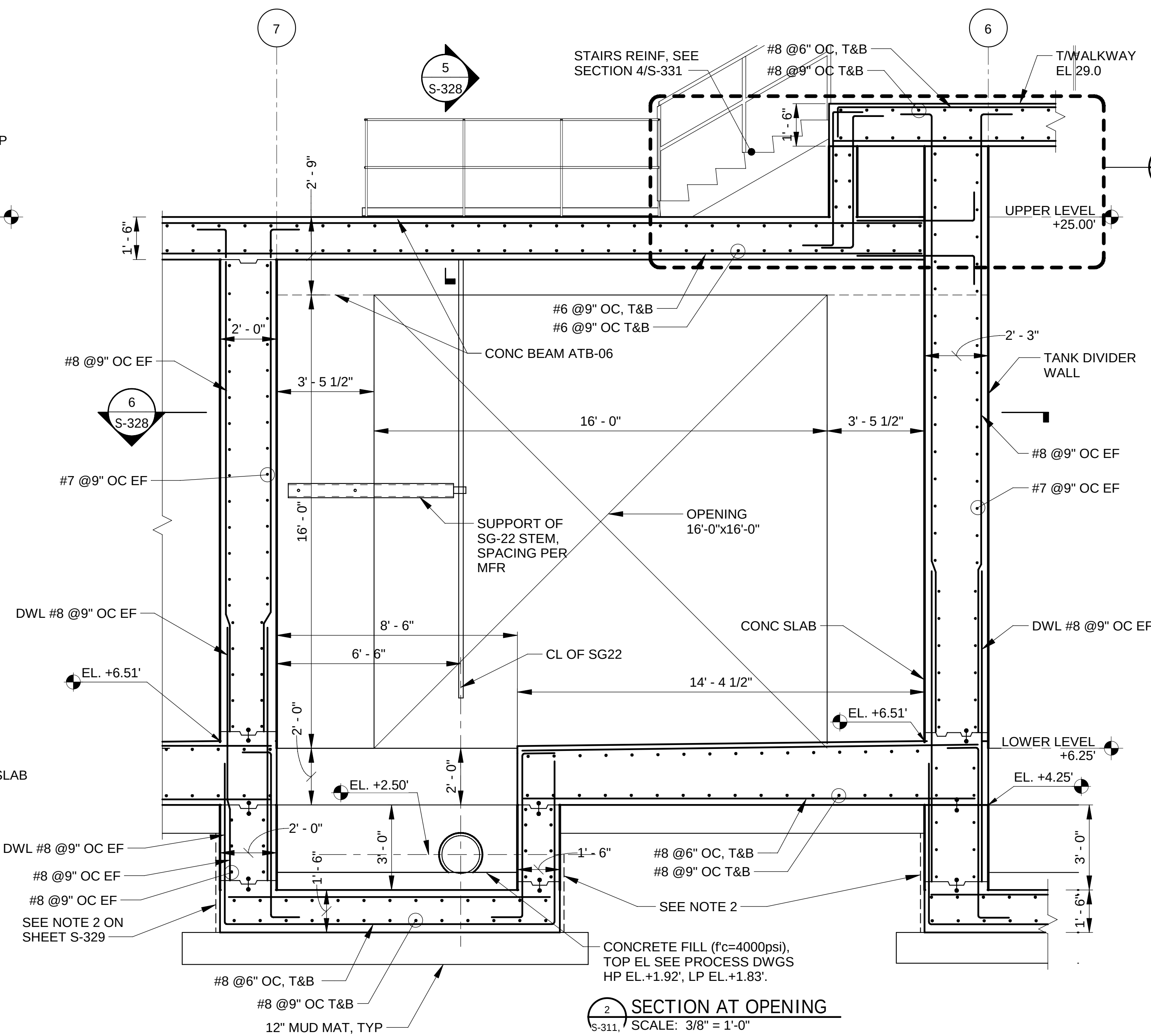
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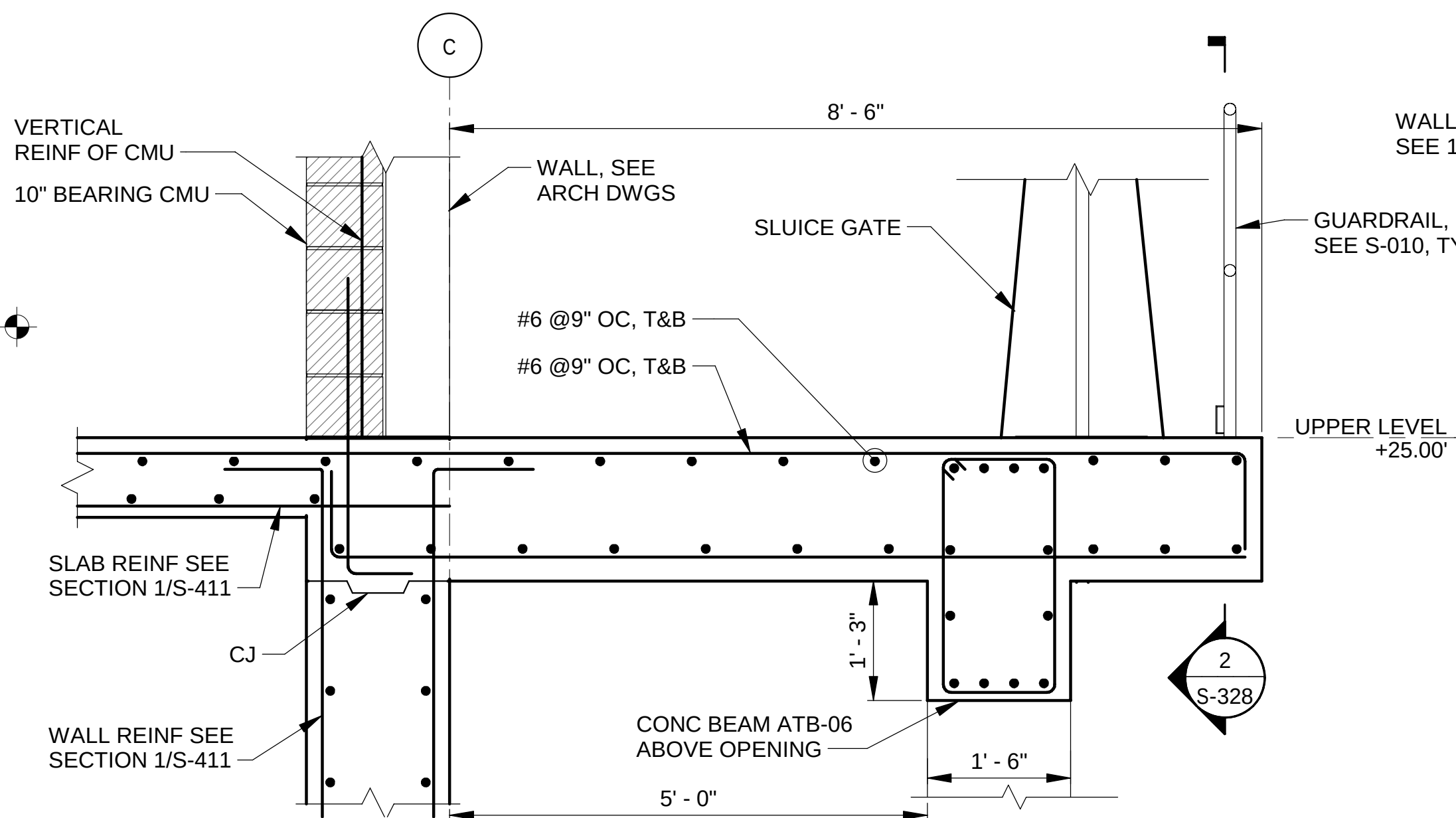
1 TYPICAL SECTION - AERATION TANK EAST WALL
S-304, S-307, S-310, S-316, S-319, S-322
SCALE: 3/8" = 1'-0"



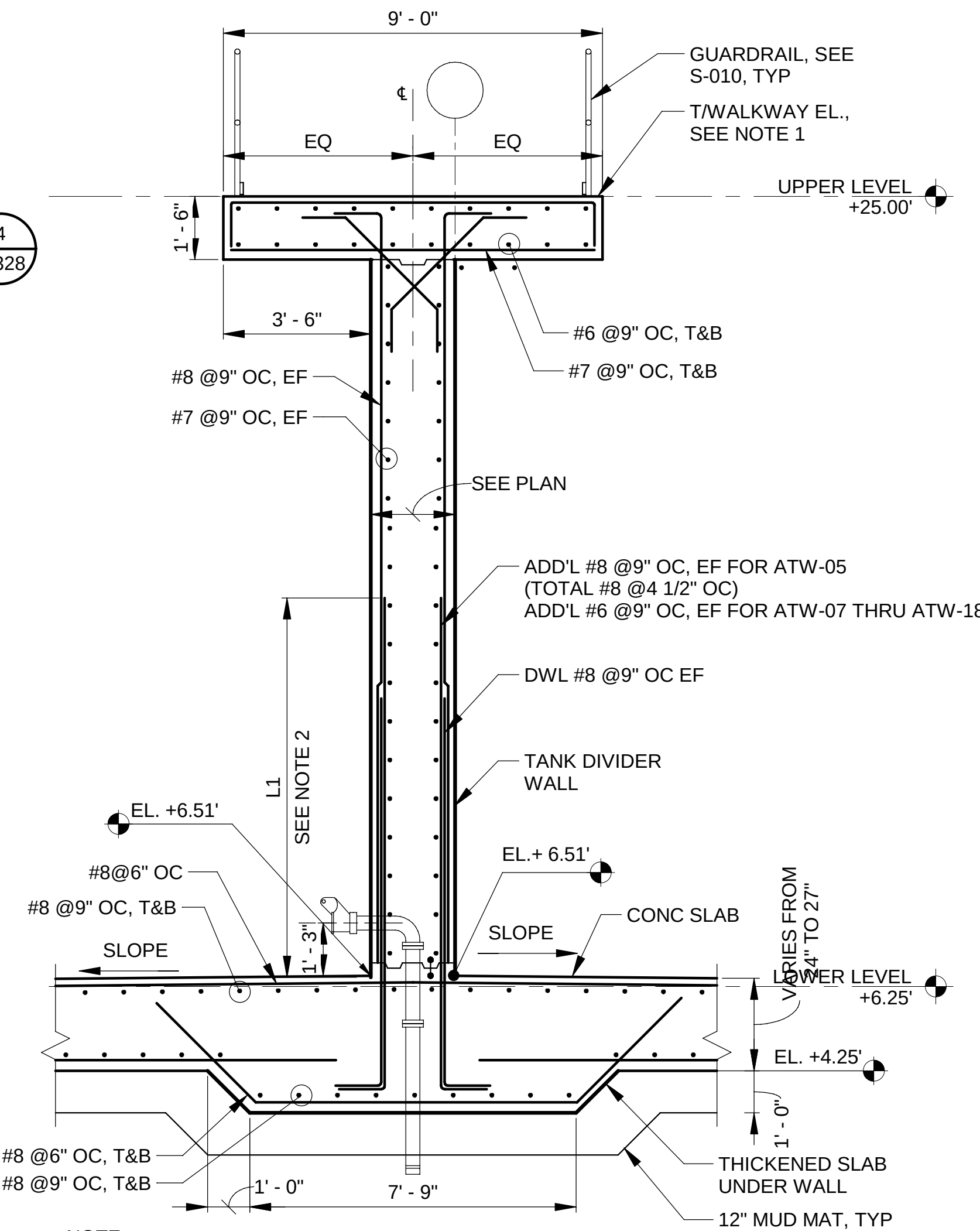
4 STAIRS SECTION
S-323
SCALE: 3/8" = 1'-0"



2 SECTION AT OPENING
S-311, S-323
SCALE: 3/8" = 1'-0"

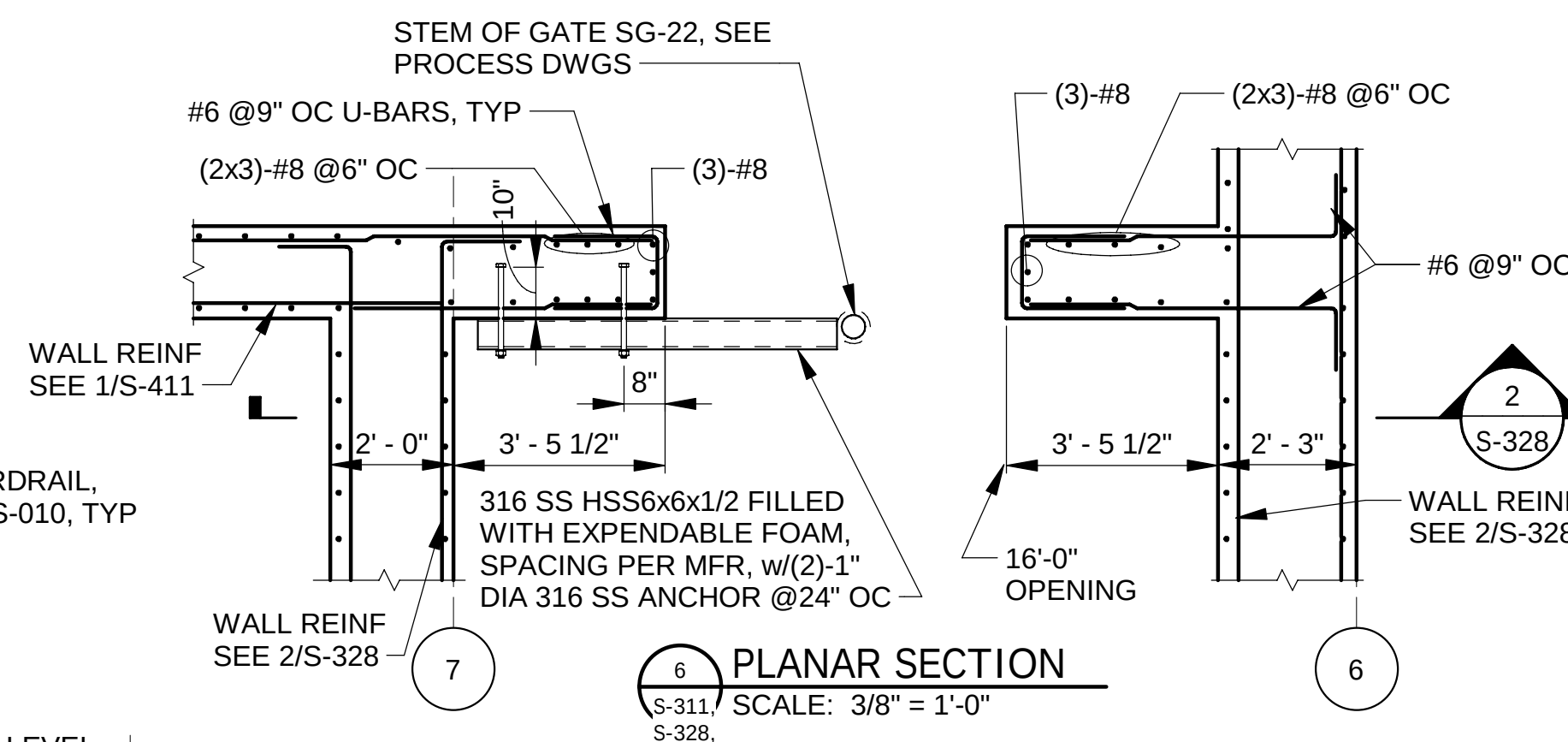


5 SECTION
SCALE: 3/4" = 1'-0"



- NOTE:
1. T/WALKWAY ELEVATION IS 29'-0" FROM GRID 3 THRU 6, AND 25'-0" FROM GRID 7 THRU 19.
 2. L1 IS 9'-0" FOR ATW-03 THRU ATW-06, AND 6'-0" FOR ATW-07 THRU ATW-18.

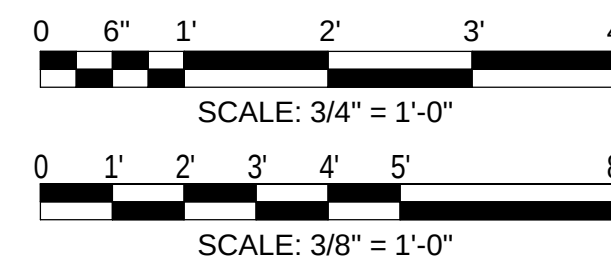
3 MIDDLE WALL WITHOUT DRAINS
S-302, S-305, S-306 THRU S-310, S-314 THRU S-324
SCALE: 3/8" = 1'-0"



6 PLANAR SECTION
S-311, S-328
SCALE: 3/8" = 1'-0"

NOTES:

1. GENERAL NOTE SEE SHEETS S-001 AND S-002.
2. SOIL STRENGTH IS MINIMUM. THE CONTRACTOR TO DESIGN THE RIGID BRACING SYSTEM (RBS) TO SUPPORT THE SOIL DURING CONSTRUCTION.
3. PROVIDE MINIMAL SLOPE (1/16" PER FOOT) OF TOP OF WALKWAY CONCRETE SLAB FOR DRAIN FROM CENTER TO EACH EDGE.
4. ANY DISTURBED AREAS OF IN-SITU SOIL SHALL BE REPLACED WITH STRUCTURAL BACKFILL. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8-INCH LIFTS TO 90% MODIFIED PROCTOR.



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:	Checked by:	Reviewed by:	Date:
AS	JB	MF	7/1/2025
Drawn by:			
MS			

Rubinos & Mesa Engineers, Inc.
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

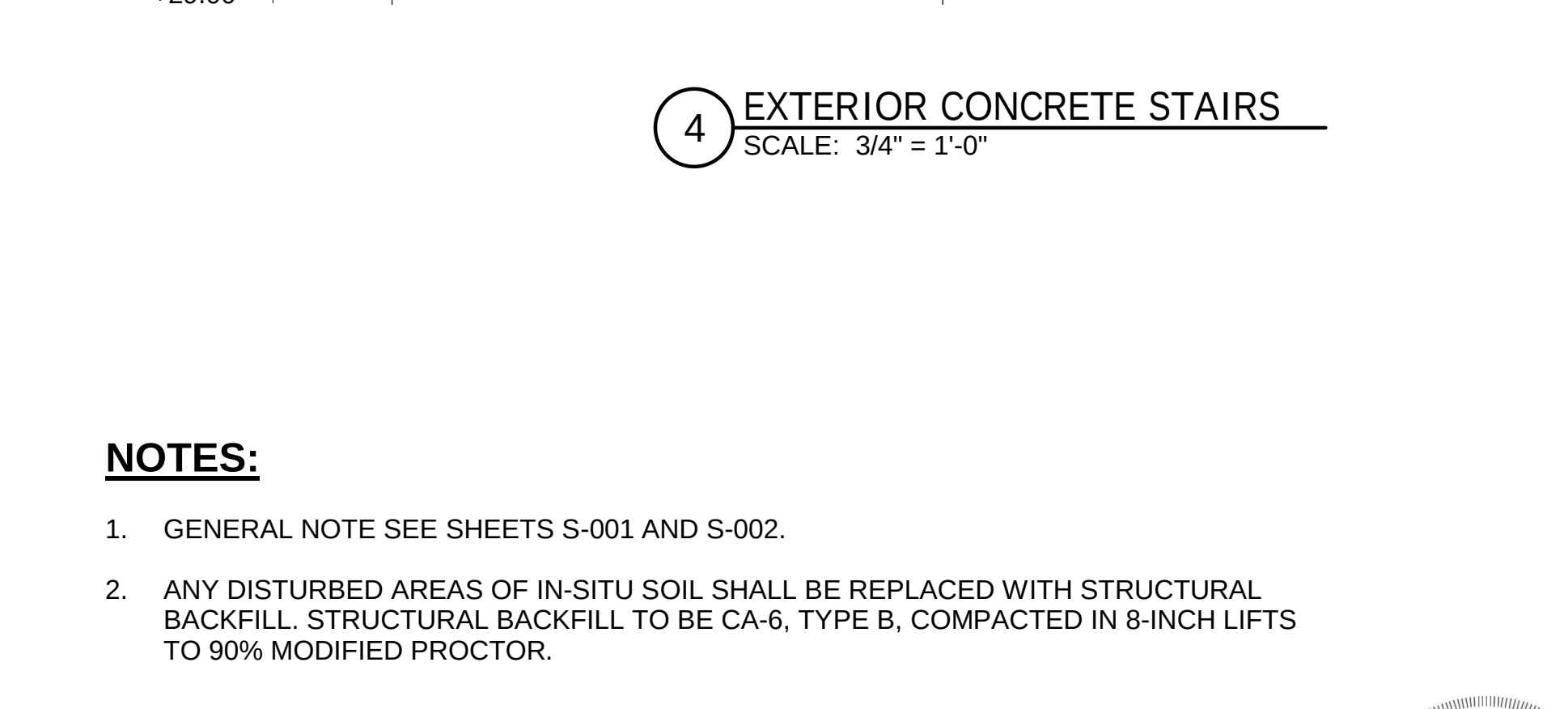
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FERMENTER & AERATION TANKS

SECTIONS

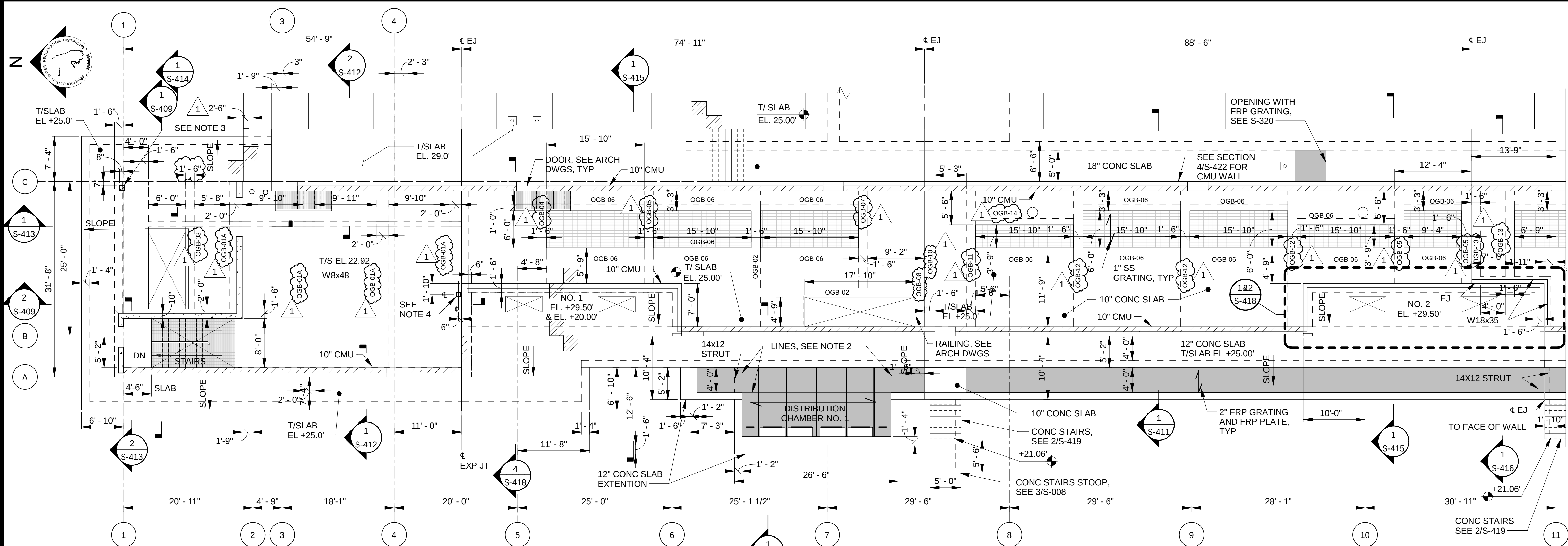
Sheet Number:

S-328

Page Number: 133

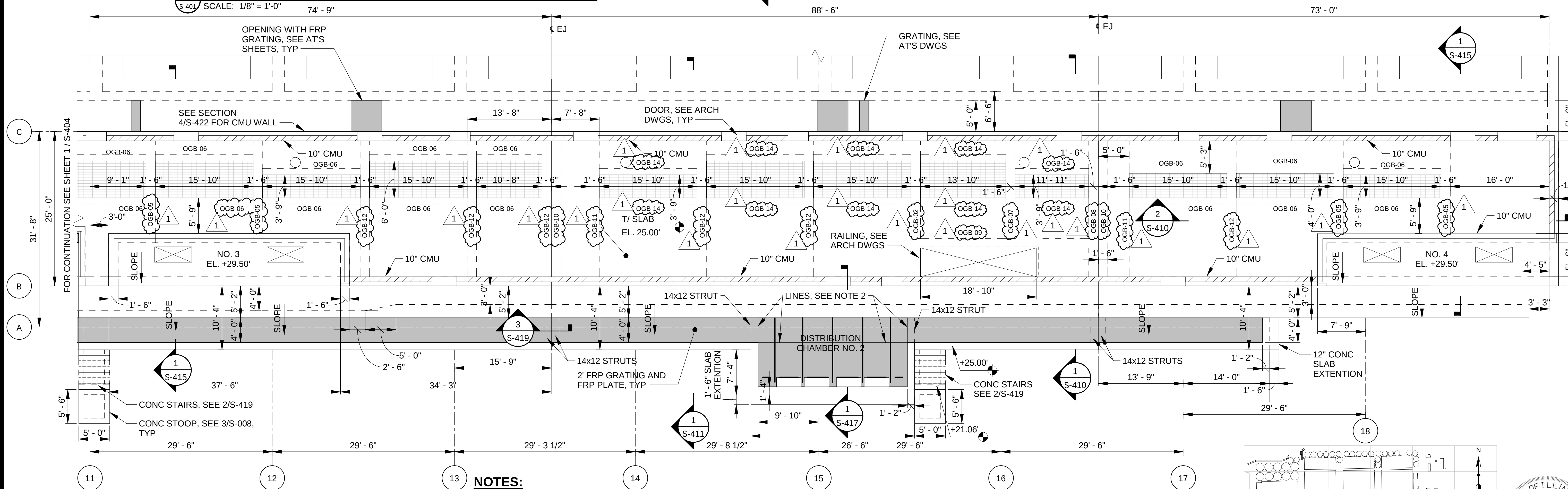


Sheet Number:
S-331
Page Number: **136**



1 UPPER OPERATING GALLERY PLAN NORTH (T/CONC EL. AS SHOWN)

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

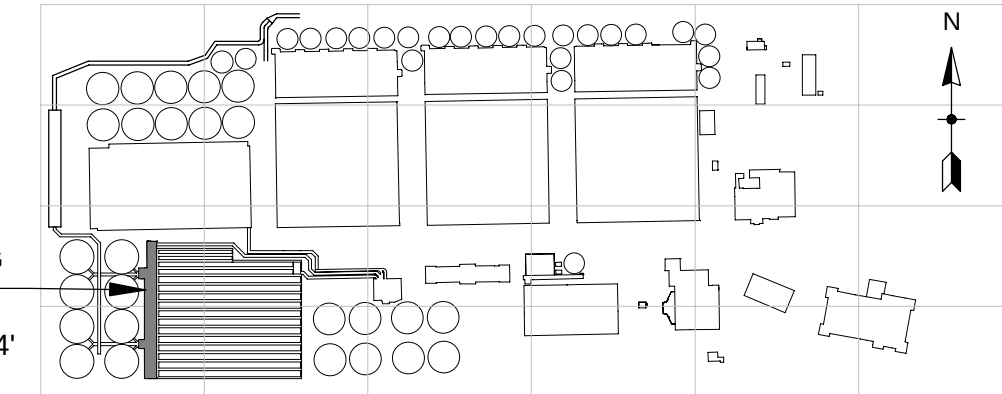


2 UPPER OPERATING GALLERY PLAN SOUTH (T/CONC EL. AS SHOWN)

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

NOTES:

- FOR STRUCTURAL GENERAL NOTES, SEE SHEETS S-001 AND S-002.
- LINES INDICATE AREA SEPARATION. FRP GRATING AND PLATE PANEL LAYOUTS MUST BE INDEPENDENTLY CONFIGURED WITHIN EACH DESIGNATED AREA.
- COLUMN 10x10 WITH 4-#6 VERTICAL BARS AND #4 @10" OC CLOSED TIES. SEE DETAIL 10/S-004 PROVIDE DOWELS TO MATCH VERTICAL REBARS.
- HSS8x8x5/16 COL WITH BPL3/4x14x1'-2 ON 1/4 SETTING PL ON 3/4" NON-SHRINK GROUT & (4)-3/4 DIA ANCHOR BOLTS. SEE 8/S-009.



FOR CONTINUATION SEE SHEET 2 / S-404

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:	Checked by:	Rubinos & Mesta Engineers, Inc.
JB	AS	
Drawn by:	Reviewed by:	
DA	MF	
Date:	Scale:	
7/1/2025	1/8" = 1'-0"	

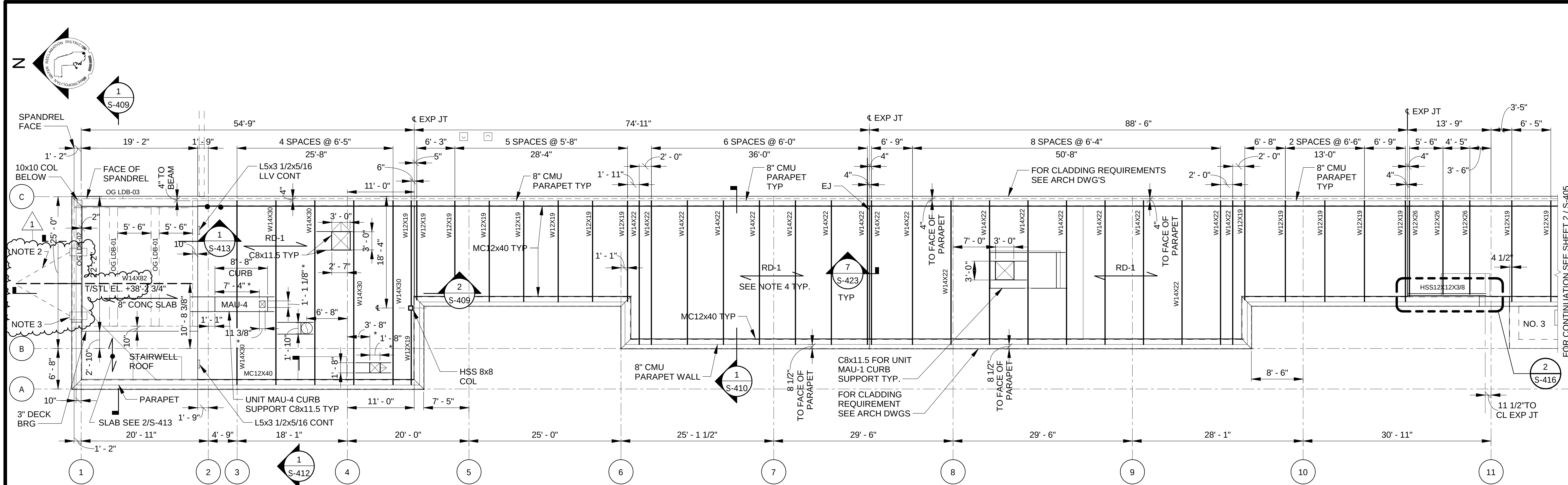
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY

FLOOR ENLARGED PLANS

Sheet Number:

S-404

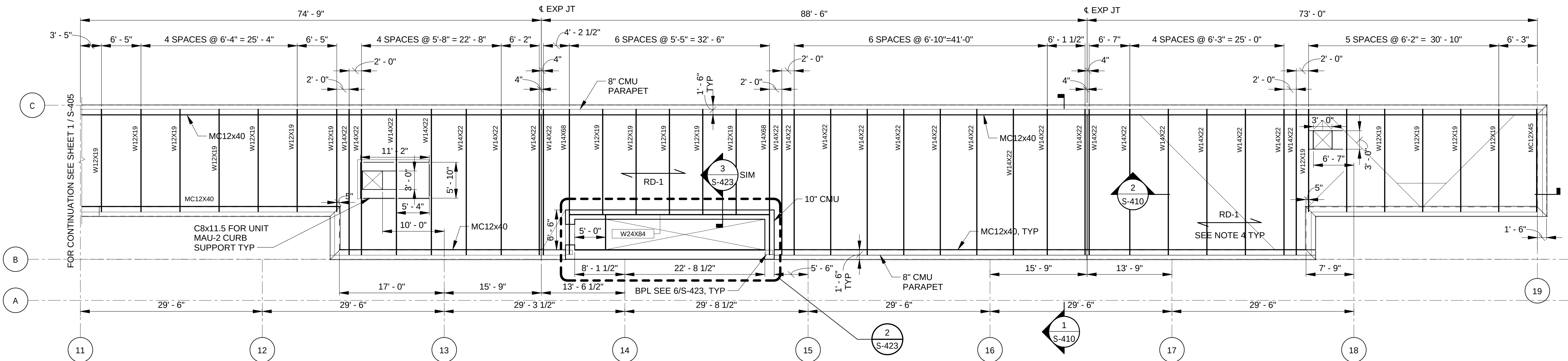
Page Number: 143



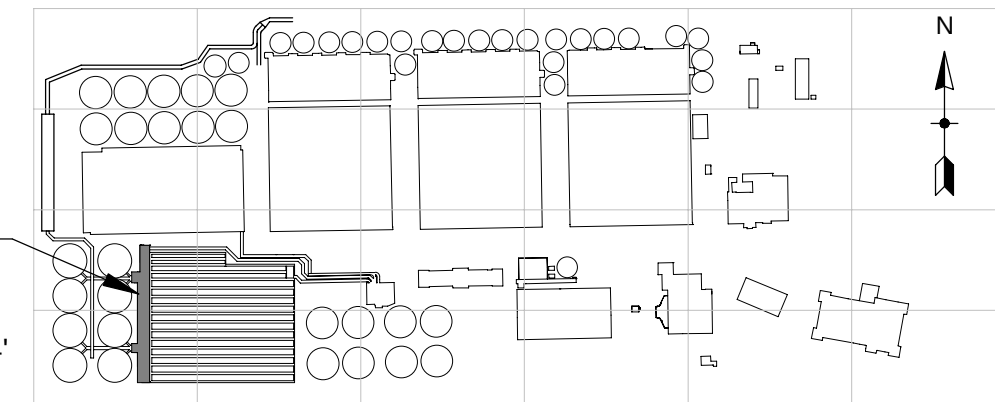
NOTES:

1. GENERAL STRUCTURAL NOTES SEE SHEETS S-001 AND S-002.
2. RD-1 DENOTES GALVANIZED 1 1/2" WIDE RIB ROOF METAL DECK 18 GAUGE, 3 SPANS.
3. HANGING LOADS FROM ROOF DECK SHALL NOT BE PERMITTED UNLESS SUPPLEMENTAL FRAMING, DESIGNED BY CONTRACTOR'S S.E. (LICENSED IN THE STATE OF ILLINOIS) IS PROVIDED TO SUPPORT HANGING LOAD.
4. WELD ROOF DECK TO STRUCTURAL STEEL FRAMING WITH 5/8 PUDDLE WELD 36/5 WELD PATTERN AND 4-#10 TEK SIDE LAP FASTENERS. SEE SPECIFICATION SECTION 05310.
5. CONTRACTOR SHALL COORDINATE ROOF OPNG LOCATIONS WITH MECHANICAL DWG'S.
6. CONTRACTOR SHALL COORDINATE ROOF TOP UNITS MAU-1, MAU-2 AND MAU-4 WITH MECHANICAL DRAWINGS. COORDINATE LOCATION OF THE STEEL BEAM SUPPORT WITH MECHANICAL CURB LOCATION PRIOR THE STEEL FABRICATION.

1 OPERATING GALLERY - ROOF PLAN NORTH
S-402 SCALE: 1/8" = 1'-0"



2 OPERATING GALLERY - ROOF PLAN SOUTH
S-402 SCALE: 1/8" = 1'-0"
T/STL EL +39.52'



OVERALL KEYPLAN

[illegible]

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

R M E Rubinos & Mesia Engineers, Inc.
6000 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

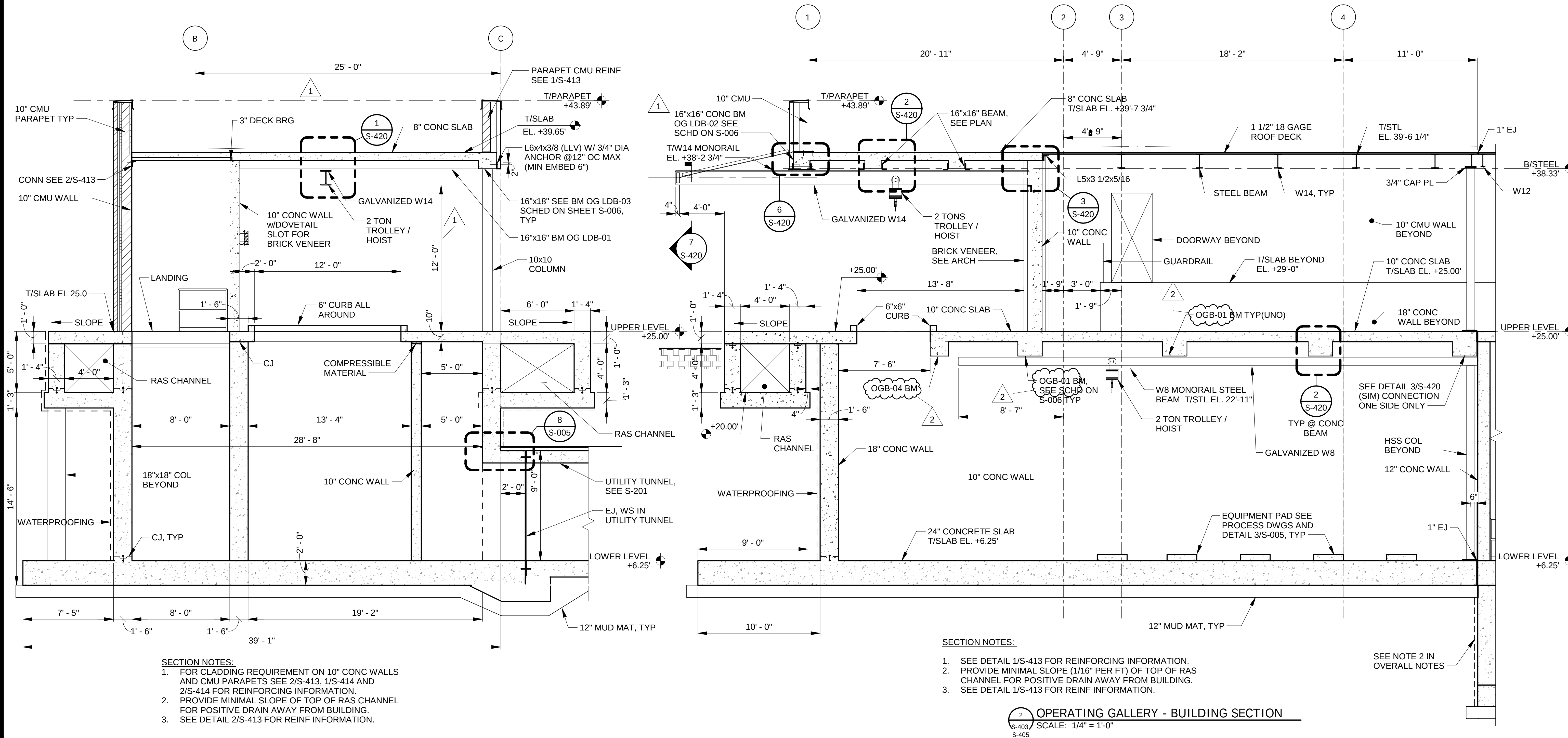
Designed by:	JB	Checked by:	AS
Drawn by:	DA	Reviewed by:	MF
Date:	7/1/2025	Scale:	1/8" = 1'-0"

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY
ROOF ENLARGED PLANS

Sheet Number:

S-405

Page Number: 144



- SECTION NOTES:**
- FOR CLADDING REQUIREMENT ON 10" CONC WALLS AND CMU PARAPETS SEE 2/S-413, 1/S-414 AND 2/S-414 FOR REINFORCING INFORMATION.
 - PROVIDE MINIMAL SLOPE OF TOP OF RAS CHANNEL FOR POSITIVE DRAIN AWAY FROM BUILDING.
 - SEE DETAIL 2/S-413 FOR REINF INFORMATION.

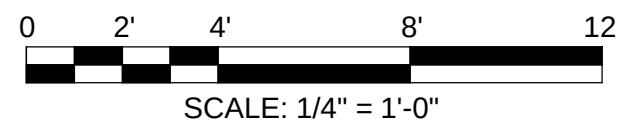
1 OPERATING GALLERY - BUILDING SECTION
S-403, S-404, S-405
SCALE: 1/4" = 1'-0"

- SECTION NOTES:**
- SEE DETAIL 1/S-413 FOR REINFORCING INFORMATION.
 - PROVIDE MINIMAL SLOPE (1/16" PER FT) OF TOP OF RAS CHANNEL FOR POSITIVE DRAIN AWAY FROM BUILDING.
 - SEE DETAIL 1/S-413 FOR REINF INFORMATION.

2 OPERATING GALLERY - BUILDING SECTION
S-403, S-405
SCALE: 1/4" = 1'-0"

NOTES:

- GENERAL NOTES SEE SHEETS S-001 AND S-002.
- SOIL STRENGTH IS MINIMUM. THE CONTRACTOR TO DESIGN THE RIGID BRACING SYSTEM (RBS) TO SUPPORT THE SOIL DURING CONSTRUCTION.
- ANY DISTURBED AREAS OF IN-SITU SOIL SHALL BE REPLACED WITH STRUCTURAL BACKFILL. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8" LIFTS TO 90% MODIFIED PROCTOR.
- FOR INSTALLATION OF ACCESS HATCH FRAME INTO CONCRETE SEE ARCHITECTURAL DRAWINGS.



**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

CONTRACT 21-092-3P
OBRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY

SECTIONS

Designed by:	Checked by:
JB	AS
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DA	MF
Date:	Scale:
7/1/2025	1/4" = 1'-0"

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Rubinos & Mesa
Engineers, Inc.
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 3	GD	10/15/25
2	ADDENDUM NO. 5	GD	11/19/25

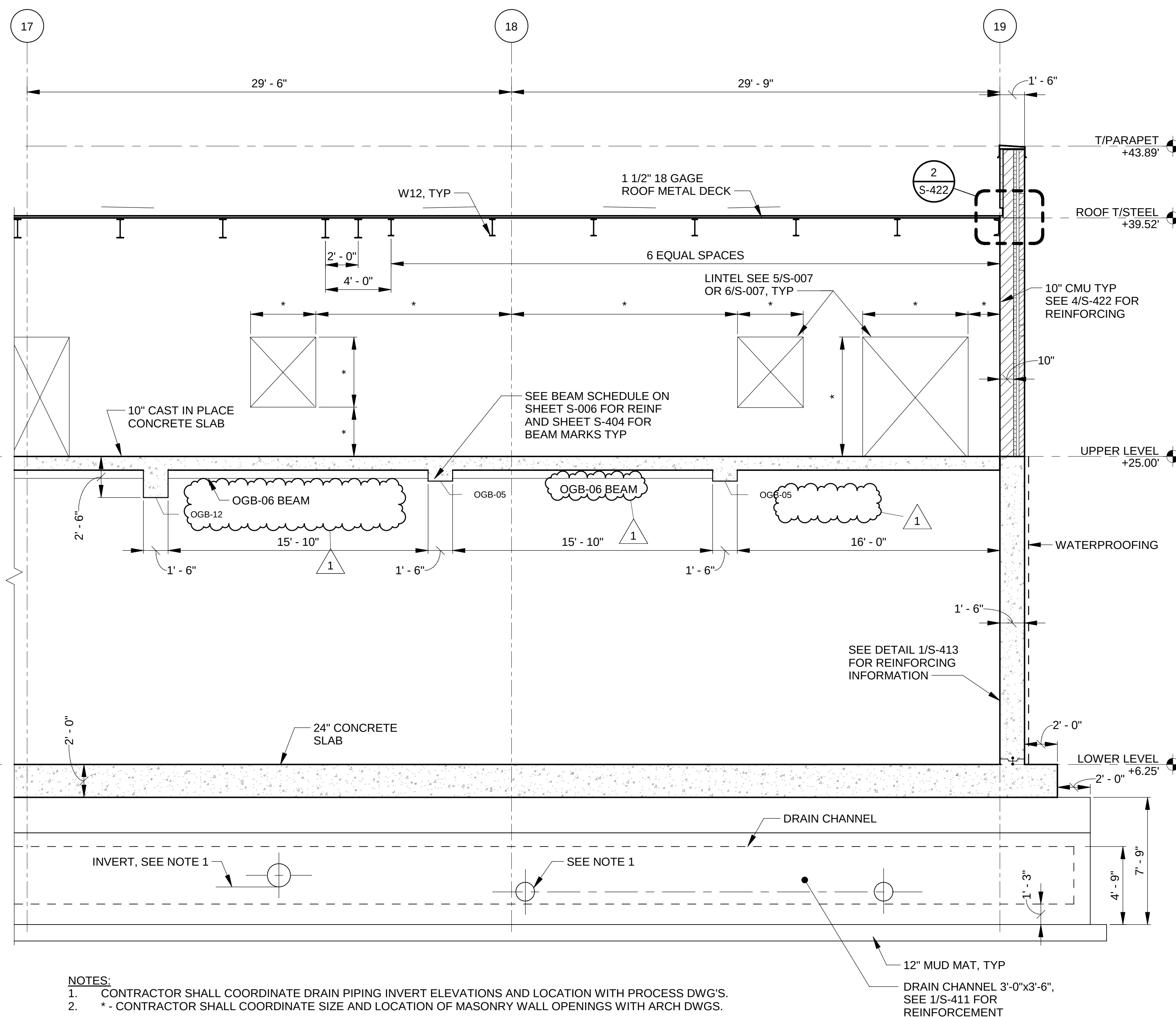
Sheet Number:

S-409

Page Number: 148

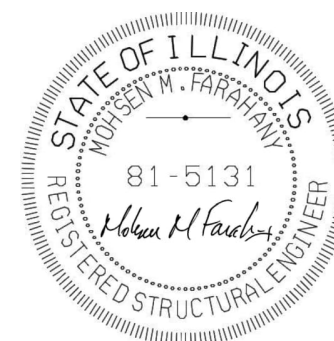
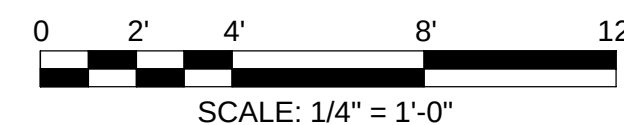


1 SECTION (LOOKING NORTH)
S-403, SCALE: 1/4" = 1'-0"
S-404,
S-405



2 OPERATING GALLERY - BUILDING SECTION
S-404, SCALE: 1/4" = 1'-0"
S-405,
S-408

- NOTES:**
1. GENERAL NOTES SEE SHEETS S-001 AND S-002.
 2. SOIL STRENGTH IS MINIMUM. THE CONTRACTOR TO DESIGN THE RIGID BRACING SYSTEM (RBS) TO SUPPORT THE SOIL DURING CONSTRUCTION.
 3. ANY DISTURBED AREAS OF IN-SITU SOIL SHALL BE REPLACED WITH STRUCTURAL BACKFILL. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8" LIFTS TO 90% MODIFIED PROCTOR.



CONTRACT 21-092-3P

O'BRIEN WATER RECLAMATION PLANT

BATTERY E ACTIVATED SLUDGE FACILITY

OPERATING GALLERY

SECTIONS

METROPOLITAN WATER RECLAMATION DISTRICT

OF GREATER CHICAGO

Designed by:

JB

Checked by:

AS

Drawn by:

DA

Reviewed by:

MF

Date:

7/1/2025

RME

AECOM

PRUDENTIAL PLAZA ONE

130 S RANDOLPH STREET

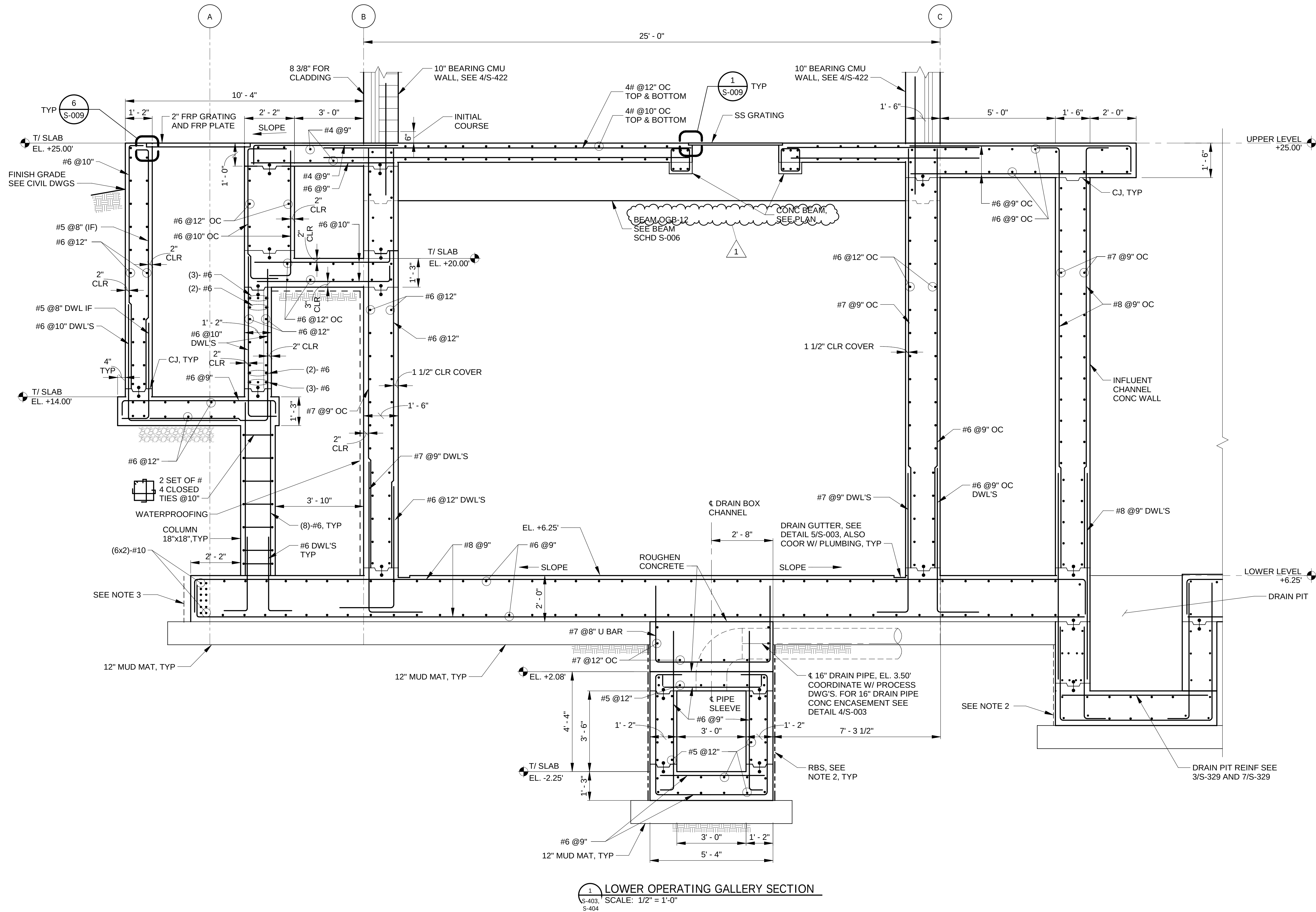
SUITE 2400

CHICAGO, IL 60601, USA

Rubinos & Mesia Engineers, Inc.

206 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2462

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NOTES:

- GENERAL NOTES SEE SHEETS S-001 AND S-002.
- SOIL STRENGTH IS MINIMUM. THE CONTRACTOR TO DESIGN THE RIGID BRACING SYSTEM (RBS) TO SUPPORT THE SOIL DURING CONSTRUCTION.
- ANY DISTURBED AREAS OF IN-SITU SOIL SHALL BE REPLACED WITH STRUCTURAL BACKFILL. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8" LIFTS TO 90% MODIFIED PROCTOR.



**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY

Sheet Number:

S-411

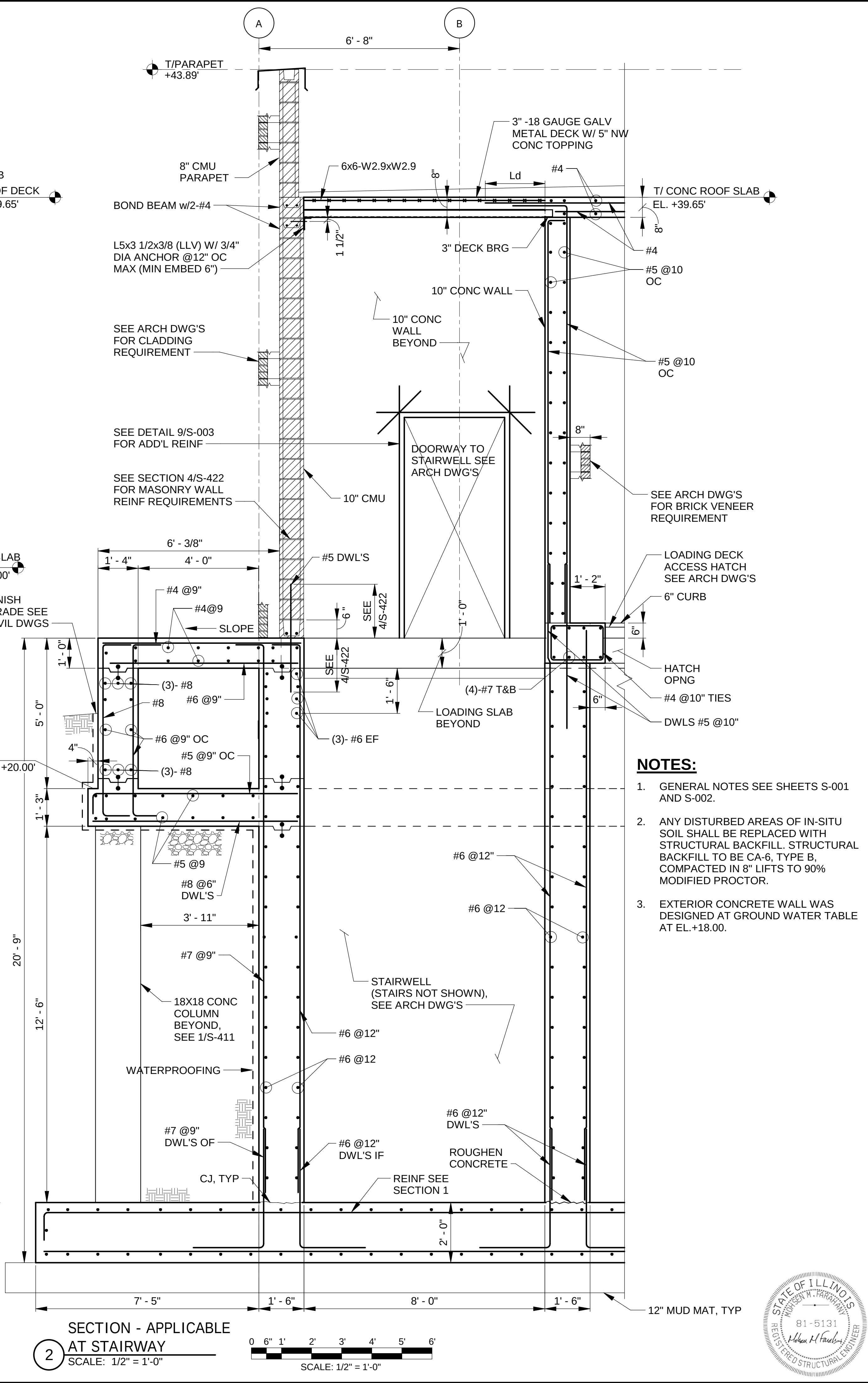
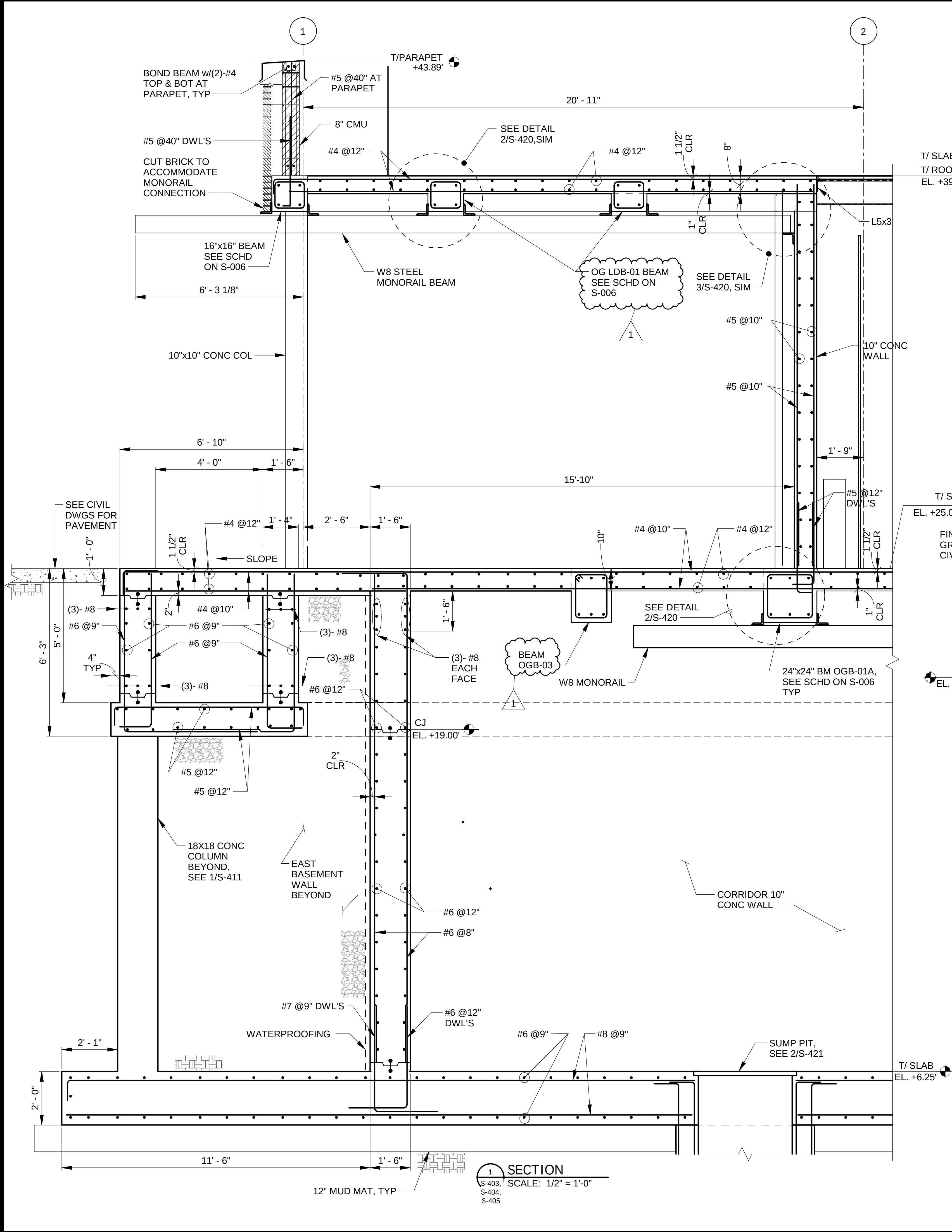
Page Number:

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Designed by: JB
Drawn by: DA
Date: 7/1/2025
Checked by: AS
Reviewed by: MF
Scale: 1/2" = 1'-0"

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Rubinos & Mesa
Engineers, Inc.
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25



Rev.

Description

Appr.

Date

1	ADDENDUM NO. 5	GD	11/19/25
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Designed by:

Checked by:

Drawn by:

Date:

JB

AS

DA

7/1/2025

Reviewed by:

Scale:

MF

1/2" = 1'-0"

130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Rubinos & Mesa
Engineers, Inc.

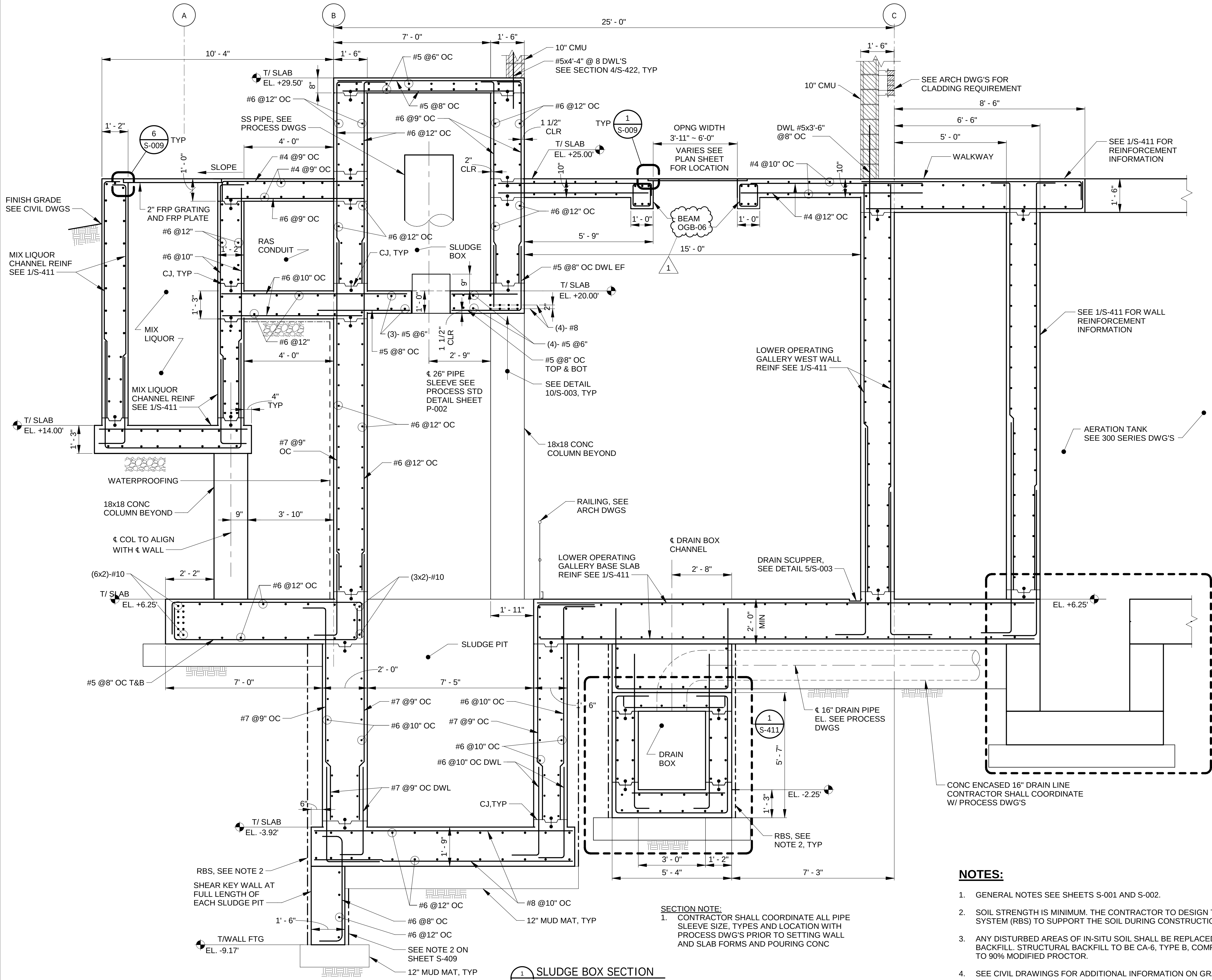
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482

81-5131
Professional Engineer
Robert H. Fruehling

CONTRACT 21-092-3P
OBRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY
SECTIONS

Sheet Number:
S-413

Page Number: 152

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**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

AECOM

RUBINOS &
MESA
ENGINEERS, INC.

200 S. MICHIGAN AVENUE, SUITE 1500, CHICAGO, IL 60604-2482

PRUDENTIAL PLAZA ONE
1330 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

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Date:	7/1/2025	Scale:	1/2" = 1'-0"

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY

SECTIONS

Sheet Number:

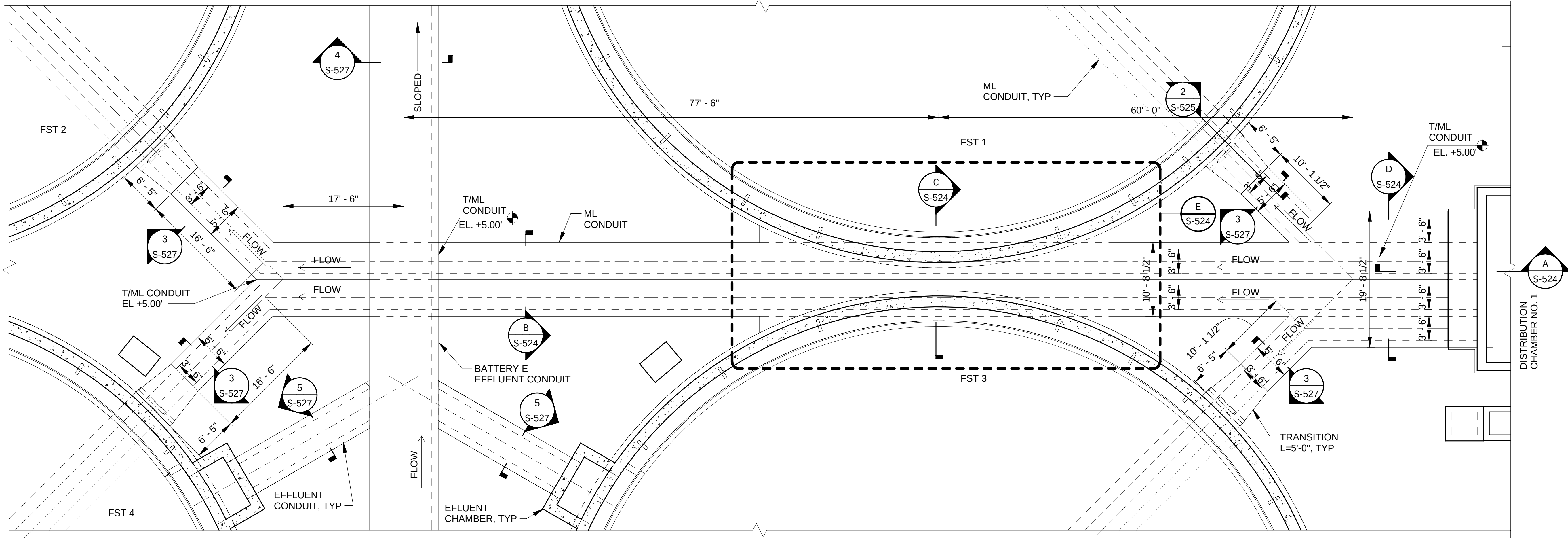
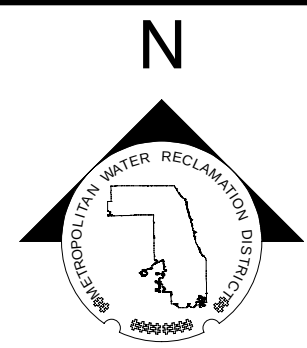
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Page Number: 154

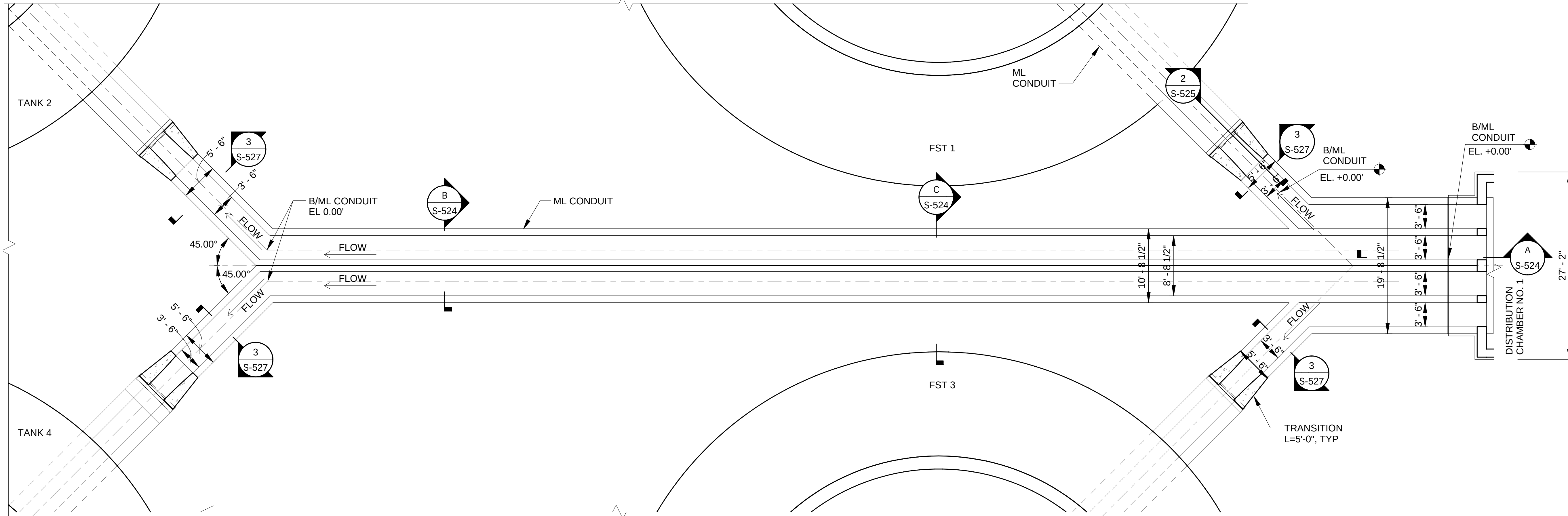


- NOTES:**
1. GENERAL NOTES SEE SHEETS S-001 AND S-002.
 2. SOIL STRENGTH IS MINIMUM. THE CONTRACTOR TO DESIGN THE RIGID BRACING SYSTEM (RBS) TO SUPPORT THE SOIL DURING CONSTRUCTION.
 3. ANY DISTURBED AREAS OF IN-SITU SOIL SHALL BE REPLACED WITH STRUCTURAL BACKFILL. STRUCTURAL BACKFILL TO BE CA-6, TYPE B, COMPACTED IN 8-INCH LIFTS TO 90% MODIFIED PROCTOR.
 4. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION ON GRADE AND TOP OF CURB





1 ML & EFFLUENT CONDUITS TOP PLAN(T/CONC EL.AS SHOWN)
SCALE: 1/8" = 1'-0"



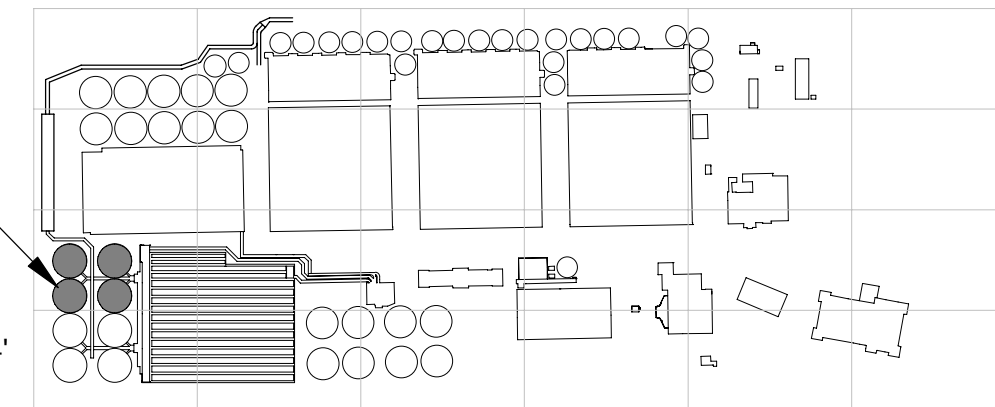
2 ML CONDUIT BASE PLAN(T/CONC EL.AS SHOWN)
SCALE: 1/8" = 1'-0"

NOTES

- SEE DETAILS 1 & 2 SHEET S-004 FOR EXPANSION JOINT DETAILS. FOR STRUCTURAL NOTES AND STANDARD DETAILS SEE S-001 THROUGH S-010.
- MAXIMUM SPACING BETWEEN CONSTRUCTION JOINTS, AND BETWEEN CONSTRUCTION JOINTS AND EXPANSION JOINTS SHALL BE 60'-0". JOINTS SHALL BE CONTINUOUS FROM BASE SLAB TO WALLS AND ROOFS OR WALKWAY SLABS. PROVIDE CONTINUOUS WATERSTOPS AT VERTICAL CONSTRUCTION JOINTS. REFER TO DETAIL 6/S-004, TYP. C2 JOINT.



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



OVERALL KEYPLAN



METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Designed by:	Checked by:	Rev.	Description	Appr.	Date
PA	AS	1	ADDENDUM NO. 5	GD	11/19/25
Drawn by:	Reviewed by:				
MS	MF				
Date:	Scale:				
7/1/2025	1/8" = 1'-0"				

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R M E
Rubinos &
Mesa
Engineers, Inc.
200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482

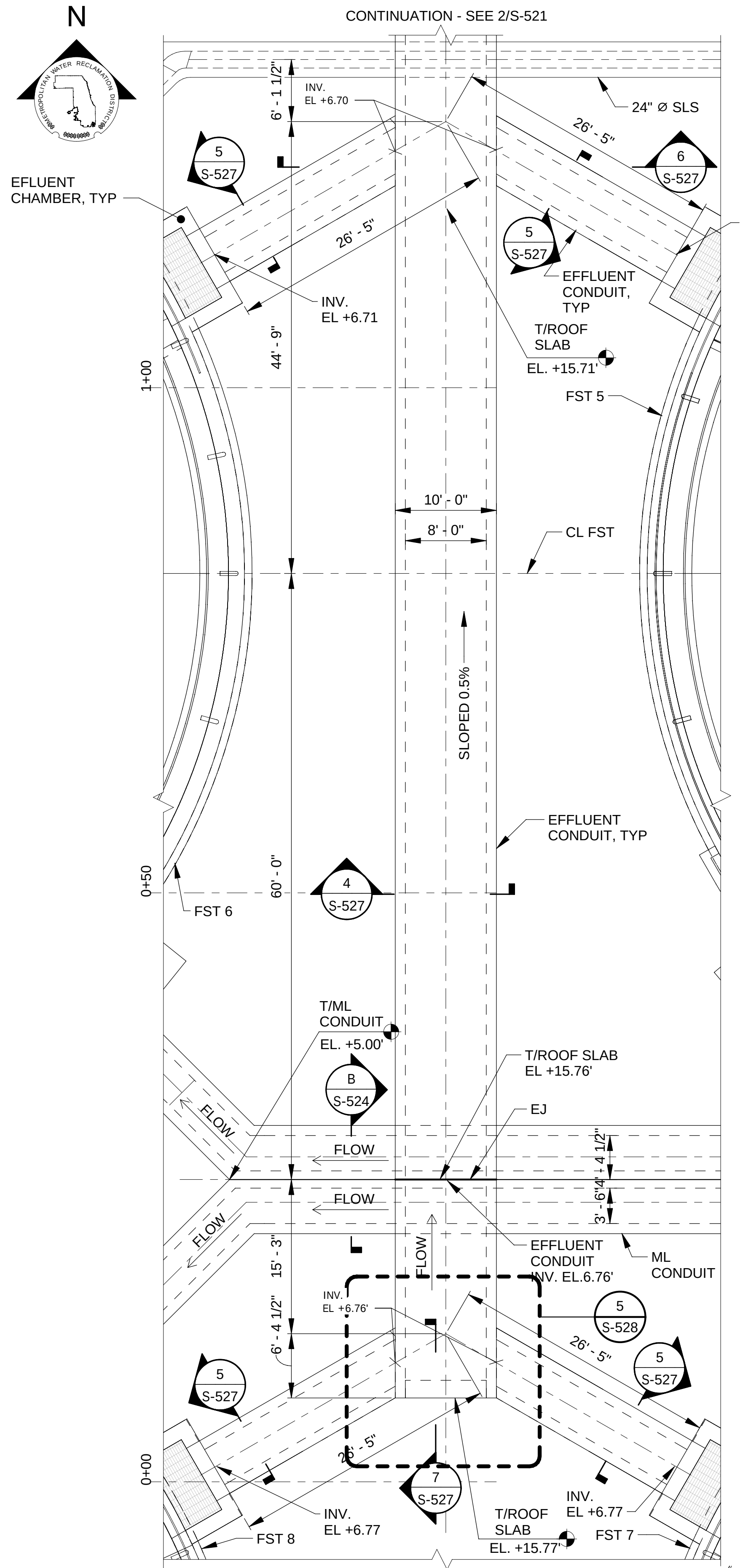
PRUDENTIAL PLAZA ONE
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CHICAGO, IL 60601, USA

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FINAL SETTLING TANKS & EFFLUENT CONDUIT
MIXED LIQUOR EFFLUENT CONDUITS PLAN -
NORTH

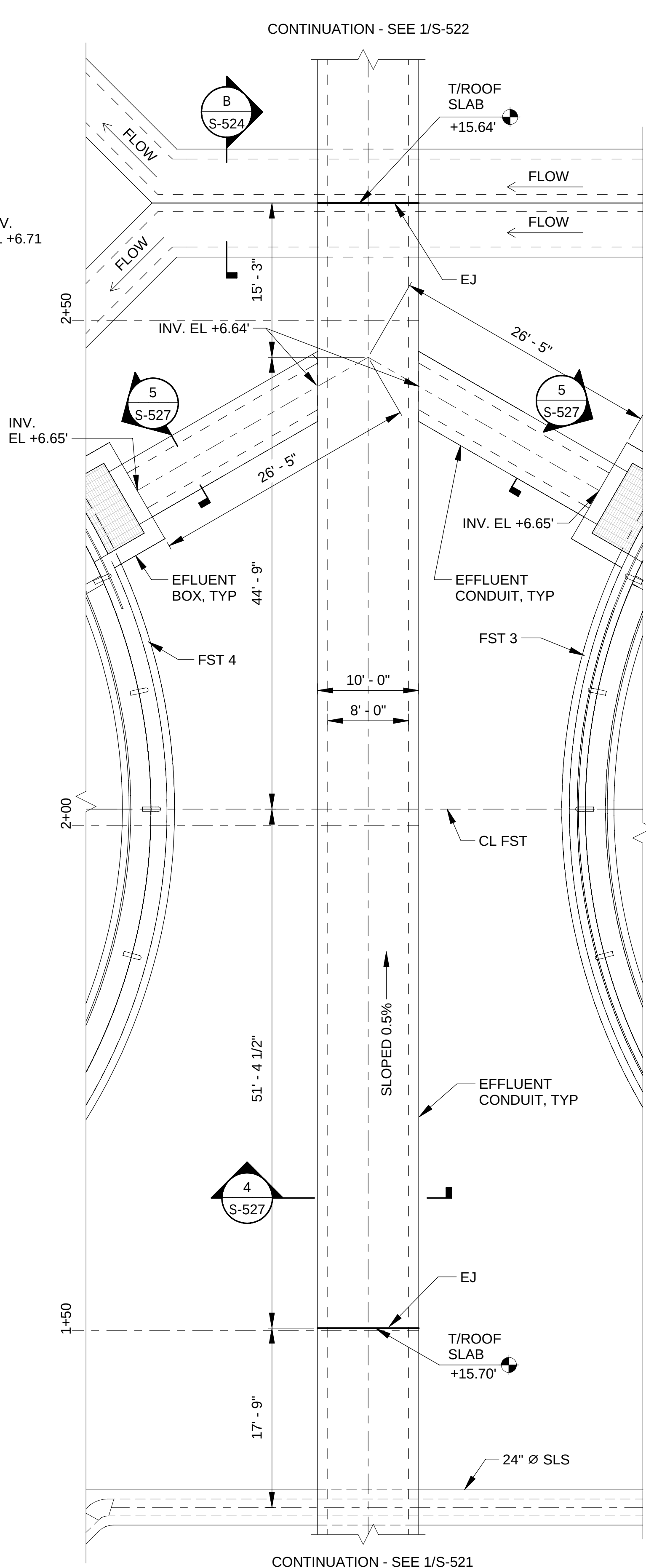
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S-520

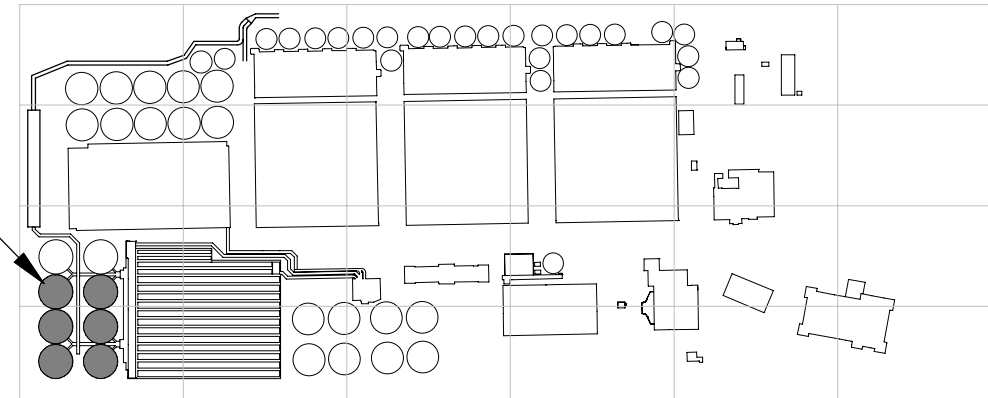
Page Number: 182



1 EFFLUENT CONDUIT PLAN - SOUTH(T/CONC EL.AS SHOWN)
SCALE: 1/8" = 1'-0"



2 EFFLUENT CONDUIT PLAN - SOUTH(T/CONC EL.AS SHOWN)
SCALE: 1/8" = 1'-0"



OVERALL KEYPLAN

NOTES

- SEE DETAILS 1 & 2 SHEET S-004 FOR EXPANSION JOINT DETAILS. FOR STRUCTURAL NOTES AND STANDARD DETAILS SEE S-001 THROUGH S-010.
- MAXIMUM SPACING BETWEEN CONSTRUCTION JOINTS, AND BETWEEN CONSTRUCTION JOINTS AND EXPANSION JOINTS SHALL BE 60'-0". JOINTS SHALL BE CONTINUOUS FROM BASE SLAB TO WALLS AND ROOFS OR WALKWAY SLABS. PROVIDE CONTINUOUS WATERSTOPS AT VERTICAL CONSTRUCTION JOINTS. REFER TO DETAIL 6/S-004, TYP. C2 JOINT.

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Designed by:	Checked by:	Reviewed by:	Date:
PA	AS	MF	7/1/2025
Drawn by:	Reviewed by:	Reviewed by:	Reviewed by:
MS	MF	MF	MF
Date:	Scale:	Scale:	Scale:
7/1/2025	1/8" = 1'-0"	1/8" = 1'-0"	1/8" = 1'-0"

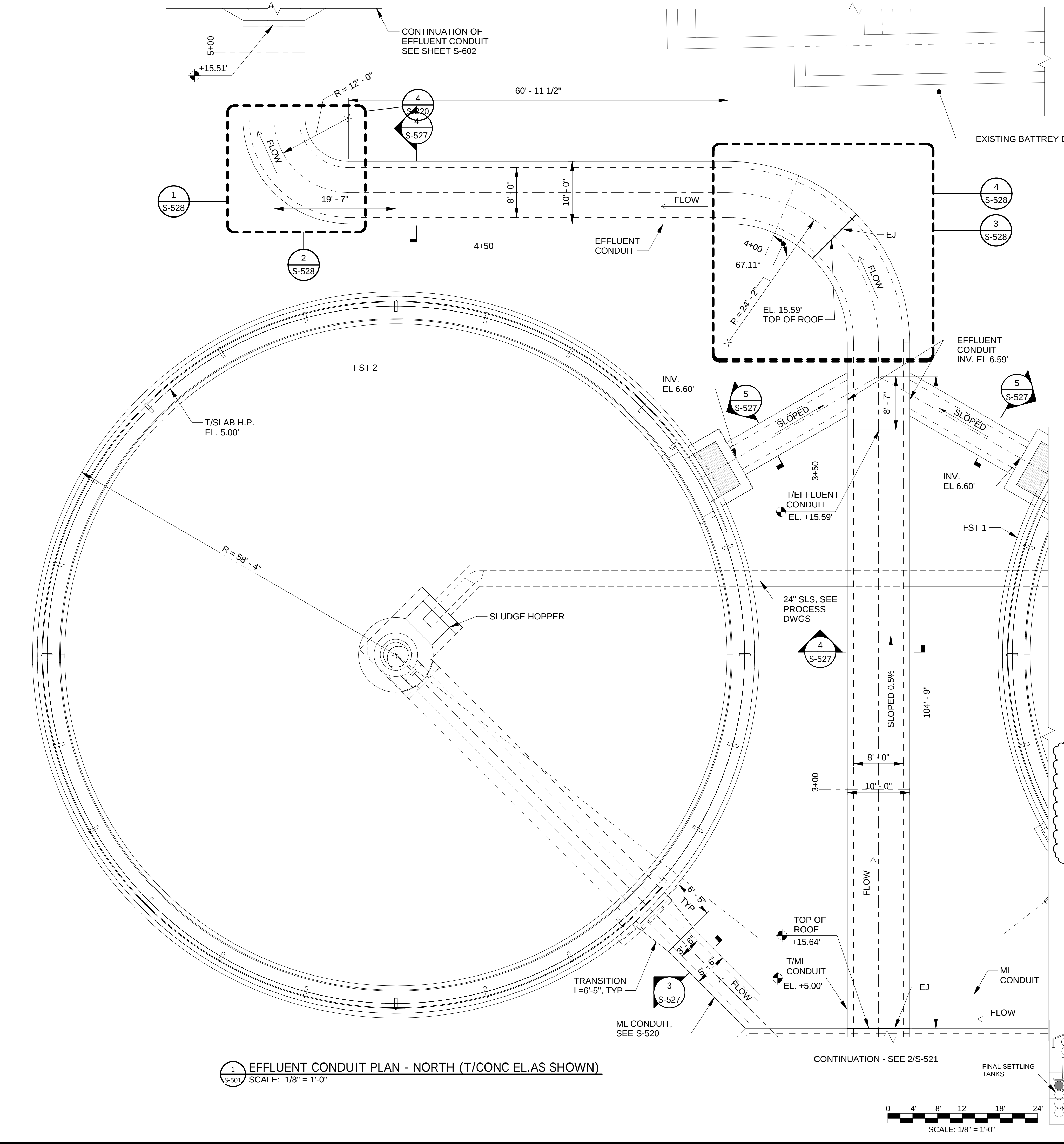
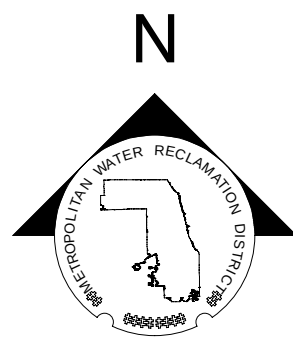
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FINAL SETTLING TANKS & EFFLUENT CONDUIT
EFFLUENT CONDUIT PLAN - SOUTH

Sheet Number:

S-521

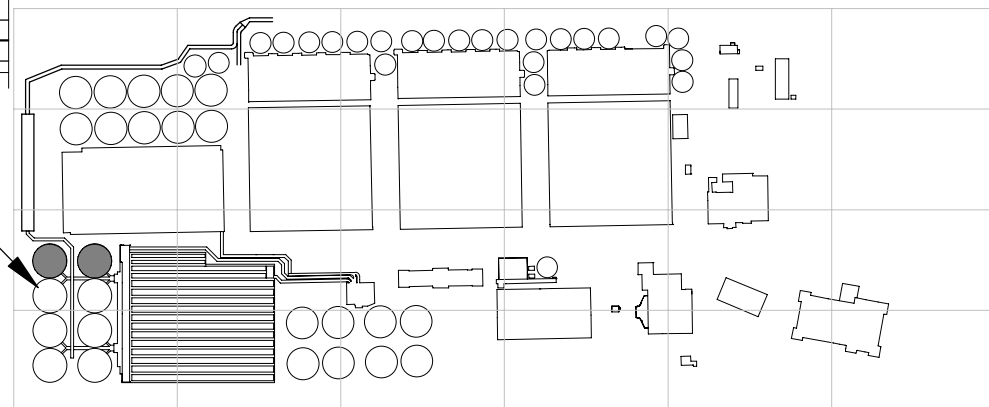
Page Number: 183

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RUBINOS & MESA ENGINEERS, INC.
200 S. MICHIGAN AVENUE, SUITE 1500, CHICAGO, IL 60604-2482
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA



1 EFFLUENT CONDUIT PLAN - NORTH (T/CONC EL.AS SHOWN)
S-501 SCALE: 1/8" = 1'-0"

- NOTES**
- SEE DETAILS 1 & 2 SHEET S-004 FOR EXPANSION JOINT DETAILS. FOR STRUCTURAL NOTES AND STANDARD DETAILS SEE S-001 THROUGH S-010.
 - PROVIDE VERTICAL CONSTRUCTION JOINTS IN ADDITION TO JOINTS SHOWN ON THESE DRAWINGS AT 60 FEET MAXIMUM SPACING. PROVIDE CONTINUOUS WATERSTOPS AT VERTICAL CONSTRUCTION JOINTS. REFER TO DETAIL 6/S004, TYP. C2 JOINT.



OVERALL KEYPLAN



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:		Checked by:	AECOM	R M E	Rubinos & Mesa Engineers, Inc. 200 S. Michigan Avenue, Suite 1500, Chicago, IL 60604-2482
RA		AS			
Drawn by:		Reviewed by:	PRUDENTIAL PLAZA ONE 130 E RANDOLPH STREET SUITE 2400 CHICAGO, IL 60601, USA		
MS		MF			
Date:		Scale:			
7/1/2025		1/8" = 1'-0"			

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FINAL SETTLING TANKS & EFFLUENT CONDUIT
EFFLUENT CONDUIT PLAN - NORTH

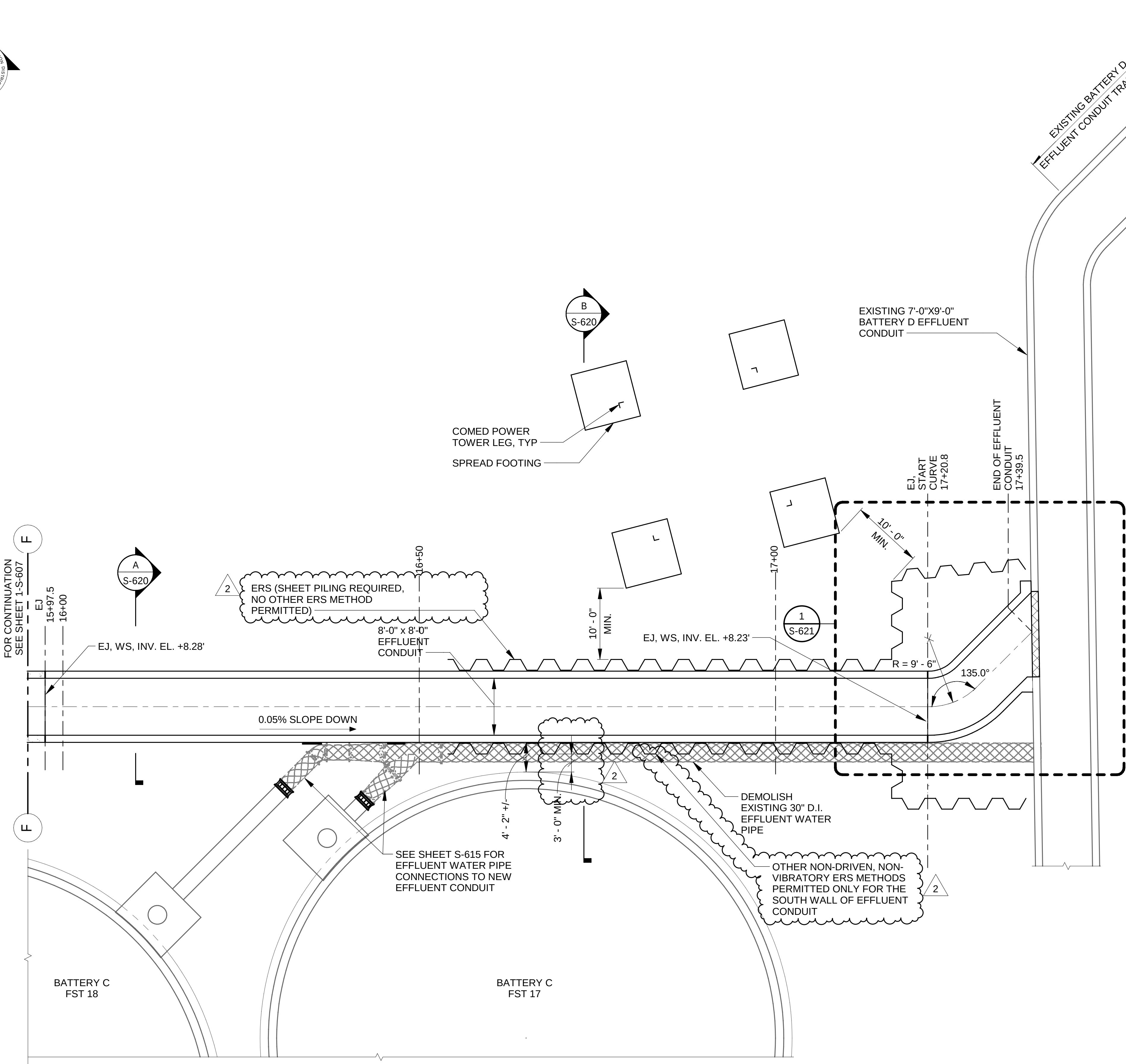
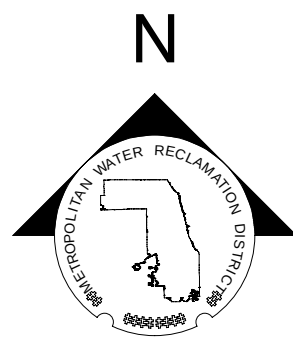
Sheet Number:

S-522

Page Number:

184

Rev.	Description	Appr.	Date
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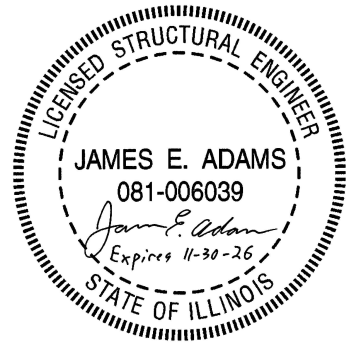
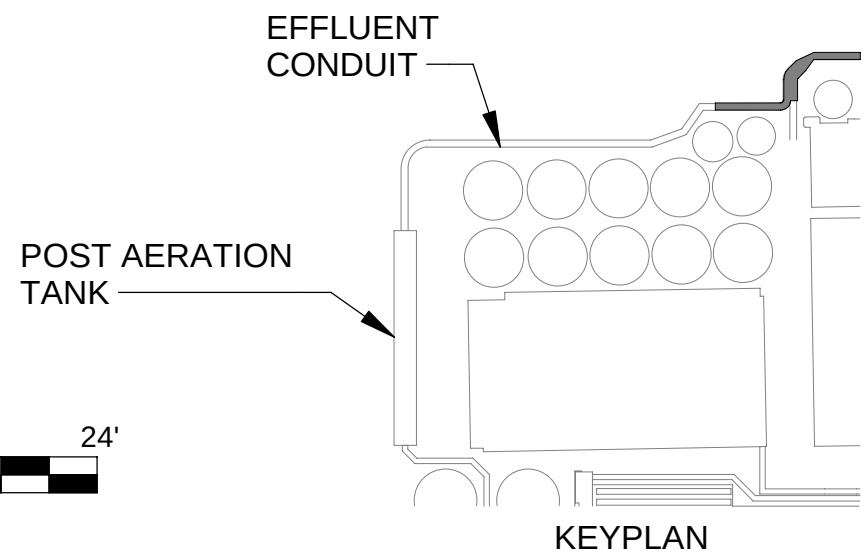
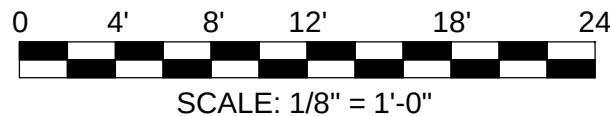
LEGEND:

- NEW OR EXISTING BACKGROUND
- EXISTING WORK TO REMAIN (OR NEW WORK FURNISHED AND INSTALLED UNDER OTHER CONTRACT ITEMS)
- NEW WORK
- REMOVAL WORK

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

NOTES

- STATIONING MEASURED ALONG CENTERLINE OF EFFLUENT CONDUIT.
- SEE DETAILS 1 & 2 SHEET S-004 FOR EXPANSION JOINT DETAILS. FOR STRUCTURAL NOTES AND STANDARD DETAILS SEE S-001 THROUGH S-010.
- MAXIMUM SPACING BETWEEN CONSTRUCTION JOINTS, AND BETWEEN CONSTRUCTION JOINTS AND EXPANSION JOINTS SHALL BE 60'-0". JOINTS SHALL BE CONTINUOUS FROM BASE SLAB TO WALLS AND ROOFS OR WALKWAY SLABS. PROVIDE CONTINUOUS WATERSTOPS AT VERTICAL CONSTRUCTION JOINTS. REFER TO DETAIL 6/S004, TYP. C2 JOINT.
- CONTRACTOR SHALL VERIFY EXTENTS OF EXISTING BATTERY D EFFLUENT CONDUIT VIA POTHOLING AND/OR GPR PRIOR TO WORK. NOTIFY DISTRICT OF DISCREPANCIES WITH THESE DRAWINGS. THE DISTRICT SHALL PROVIDE GUIDANCE REGARDING ADJUSTMENTS OF TUNNEL AND/OR CONDUITS REQUIRED DUE TO DISCREPANCIES.
- ACCORDING TO AVAILABLE DOCUMENTS, THE COMED TOWER FOOTING TYPICAL LENGTH AND WIDTH ARE 8'x8' MINIMUM AND 11'x11' MAXIMUM. CLEARANCE BETWEEN PERMANENT SHEET PILING ON THE NORTH SIDE OF THE EFFLUENT CONDUIT AND THE COMED TOWER FOOTINGS SHALL BE 10'-0" MINIMUM. CLEARANCE BETWEEN THE EDGES OF ANY OTHER OPEN EXCAVATIONS AND THE COMED TOWER FOOTINGS SHALL BE 15'-0" MINIMUM.
- CONTRACTOR SHALL PERFORM A GEOTECHNICAL INVESTIGATION IN THE VICINITY OF THE SHOWN EARTH RETENTION SYSTEM (ERS). THE GEOTECHNICAL INVESTIGATION SHALL INCLUDE AS MANY SOIL BORINGS AND EXPLORATORY DRILLING AS NECESSARY TO IDENTIFY ALL SOIL CONDITIONS AND UNDERGROUND OBSTRUCTIONS IN THE VICINITY OF THE ERS. THE CONTRACTOR SHALL PRODUCE A GEOTECHNICAL REPORT SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ILLINOIS. THE REPORT SHALL CONTAIN SOIL PARAMETERS FOR USE IN THE DESIGN OF THE ERS.
- CONTRACTOR SHALL PROVIDE TEMPORARY ERS SUCH AS TRENCH BOXES FOR THE DEMOLITION OF THE EFFLUENT WATER PIPE PRIOR TO INSTALLATION OF THE EFFLUENT CONDUIT PERMANENT ERS. NO PART OF THE TEMPORARY ERS SHALL BE CLOSER THAN 15 FEET TO THE COMED TOWER FOOTINGS. ANY VOIDS ALONG THE OUTSIDE OF THE ERS SHALL BE FILLED AS SOON AS POSSIBLE TO PREVENT GROUND MOVEMENT. THE EXCAVATION WITHIN THE ERS SHALL BE BACKFILLED AND ERS REMOVED AFTER PIPE DEMOLITION IS COMPLETE.
- REFER TO SHEET S-623 FOR SUGGESTED SEQUENCE OF DEMOLITION OF EFFLUENT WATER PIPE.
- GROUND INJECTION GROUTING WAS PERFORMED BY THE DISTRICT TO STOP LEAKAGE AT THE CONNECTION OF THE 30" EFFLUENT PIPE TO THE PLANT EFFLUENT CONDUIT. GROUT WAS INJECTED AT THE DEPTH OF THE EFFLUENT PIPE TO ENCASE IT. AT GROUND LEVEL, SEVERAL GROUT INJECTION POINTS WERE INSERTED OVER A 12' BY 20' AREA DIRECTLY ABOVE THE EFFLUENT PIPE CONNECTION POINT TO THE EFFLUENT CONDUIT. ANY GROUT OR CONCRETE THAT THE CONTRACTOR ENCOUNTERS DURING THE ERS INSTALLATION, DEMOLITION, OR PIPING REROUTING SHALL BE REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DISTRICT.
- CONTRACTOR SHALL ENGAGE AN ILLINOIS LICENSED STRUCTURAL ENGINEER TO DESIGN ALL PROPOSED ERS SYSTEMS. CALCULATIONS AND STAMPED DRAWINGS FOR THE ERS SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW.
- SHOWN ERS ON THIS DRAWING SHALL BE INTERNALLY BRACED SHEET PILING. WALERS ALONG THE INSIDE FACES OF THE SHEET PILING SHALL BE PART OF THE BRACING SYSTEM. SHOWN SHEET PILING LAYOUT AND SHAPES ARE CONCEPTUAL, WITH THE EXCEPTION OF SHOWN REQUIRED MINIMUM CLEARANCES. CONTRACTOR SHALL DETERMINE FINAL LAYOUT AND SHEET PILING SHAPES.
- SHEET PILING (ERS) INSTALLED WITHIN 60 FEET OF SHOWN COMED TOWER FOOTINGS SHALL BE PERMANENT, WITH THE EXCEPTION OF REMOVAL OF BRACES AND THE TOPS OF THE SHEET PILING, PER SECTION B ON SHEET S-620.
- ERS SHALL BE DESIGNED FOR APPLIED LOADS FROM THE COMED TOWER FOOTING. THE DESIGN BEARING PRESSURE FROM THE FOOTING SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER OF RECORD FOR THE ERS DESIGN, BUT IN NO CASE SHALL BE LESS THAN 1500 PSF.
- IF UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED AT ERS LOCATIONS, THE CONTRACTOR SHALL MODIFY THE DESIGN AND INSTALLATION OF ERS AS NECESSARY AT NO ADDITIONAL COST TO THE DISTRICT.
- CONTRACTOR SHALL NOT IMPOSE A SURCHARGE OF GREATER THAN 300 PSF WITHIN 20 FEET OF THE EXISTING BATTERY D EFFLUENT CONDUIT. THIS PERTAINS TO EQUIPMENT OR MATERIALS TO BE PLACED AT OR NEAR CURRENT TOP OF GRADE. IT DOES NOT APPLY TO EQUIPMENT OR MATERIALS TO BE PLACED AT THE BOTTOM OF THE EXCAVATION FOR NEW CONSTRUCTION.
- CONTRACTOR SHALL VERIFY EXTENTS OF EXISTING BATTERY D EFFLUENT CONDUIT VIA POTHOLING AND/OR GPR PRIOR TO WORK. NOTIFY DISTRICT OF DISCREPANCIES WITH THESE DRAWINGS. THE ENGINEER SHALL PROVIDE GUIDANCE REGARDING ADJUSTMENTS OF BATTERY E EFFLUENT CONDUIT REQUIRED DUE TO DISCREPANCIES. ANY ADJUSTMENTS TO THE PROPOSED EFFLUENT CONDUIT MUST BE APPROVED BY THE ENGINEER.



**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 4	GD	10/27/25
2	ADDENDUM NO. 5	GD	11/19/25

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by:	Checked by:
JA	JA
Drawn by:	Reviewed by:
MM	JA
Date:	Scale:
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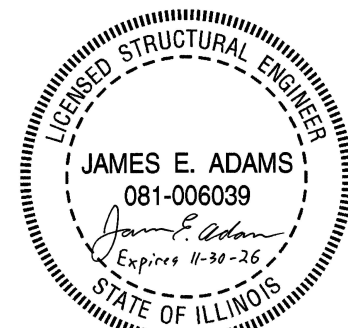
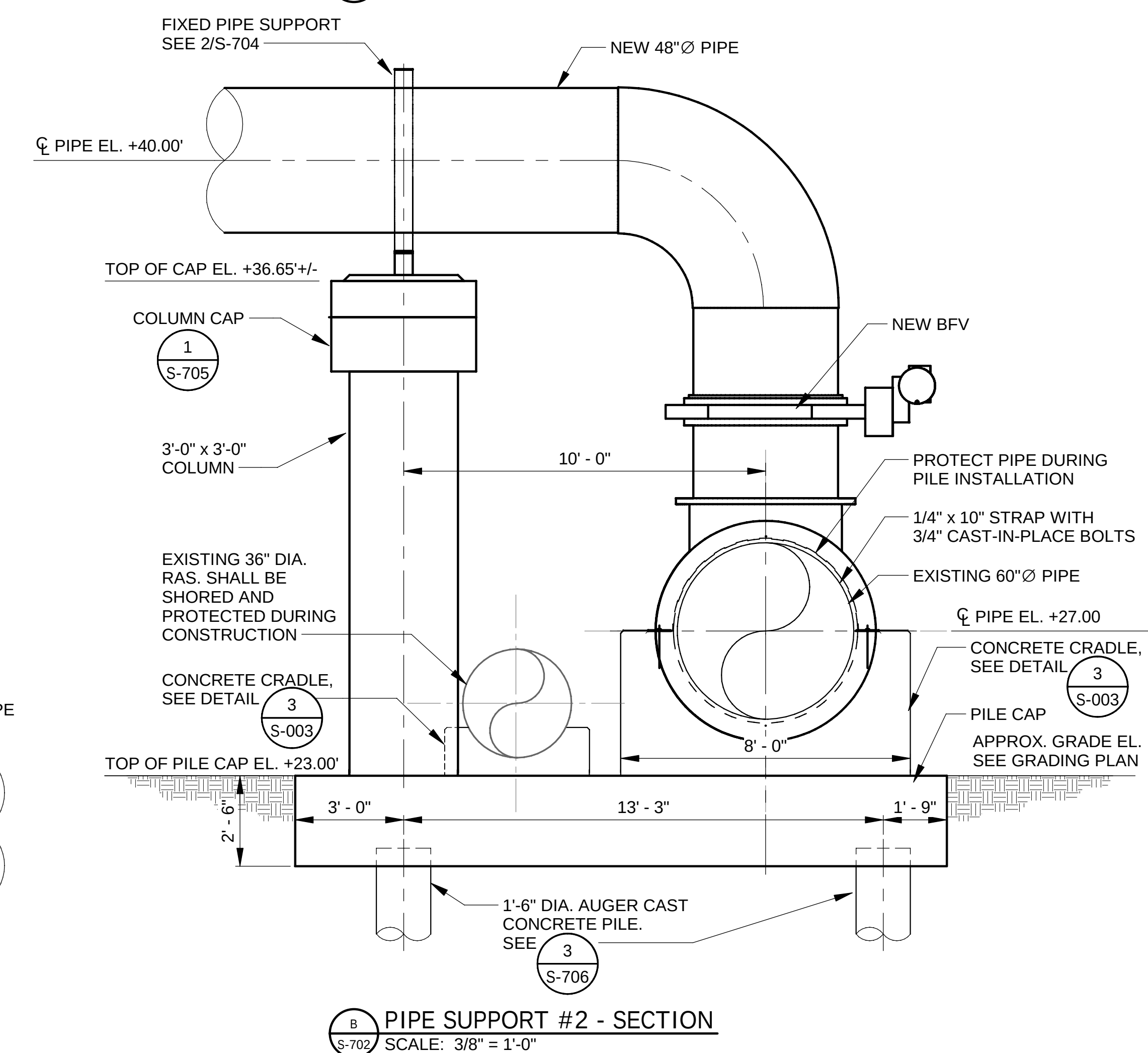
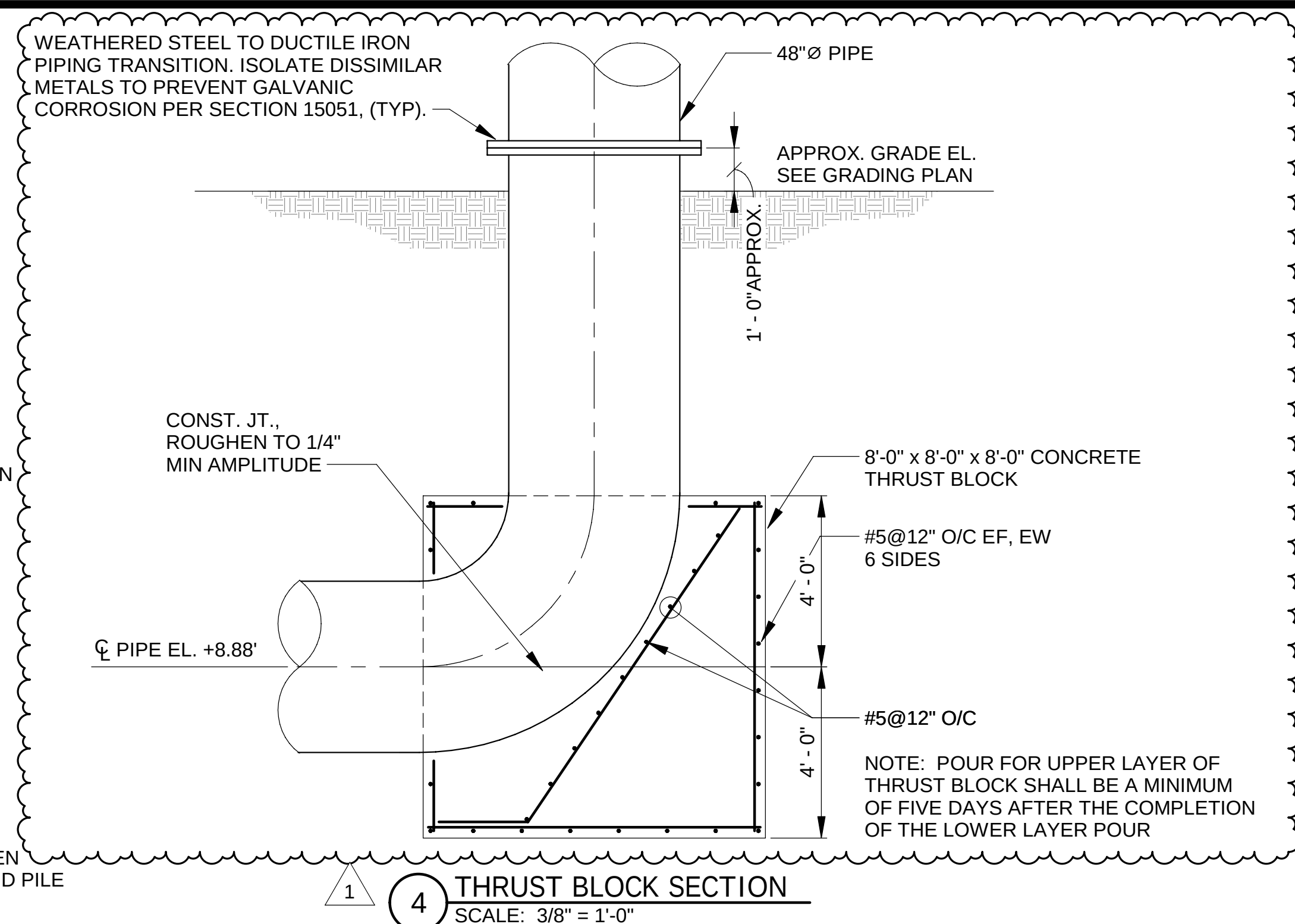
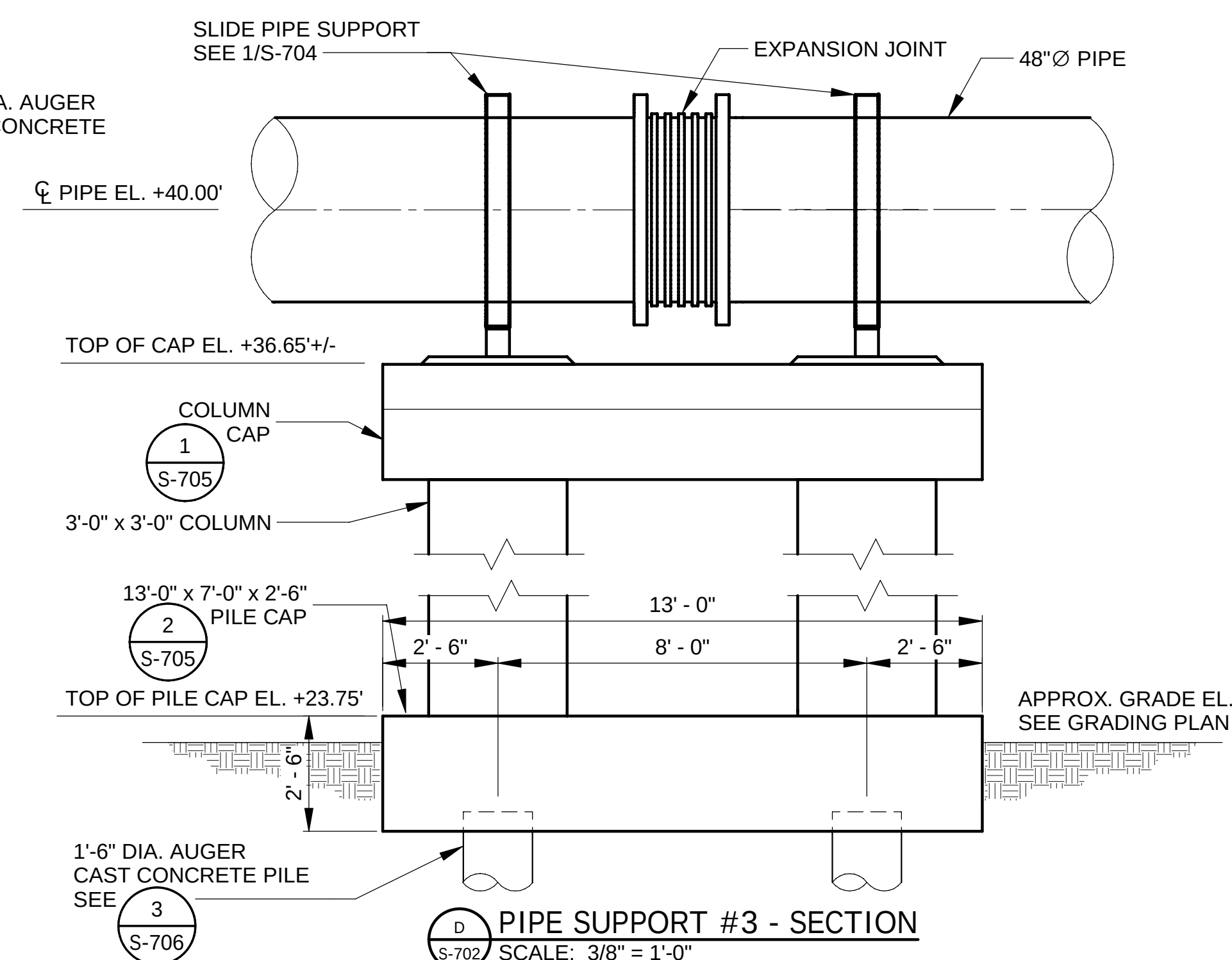
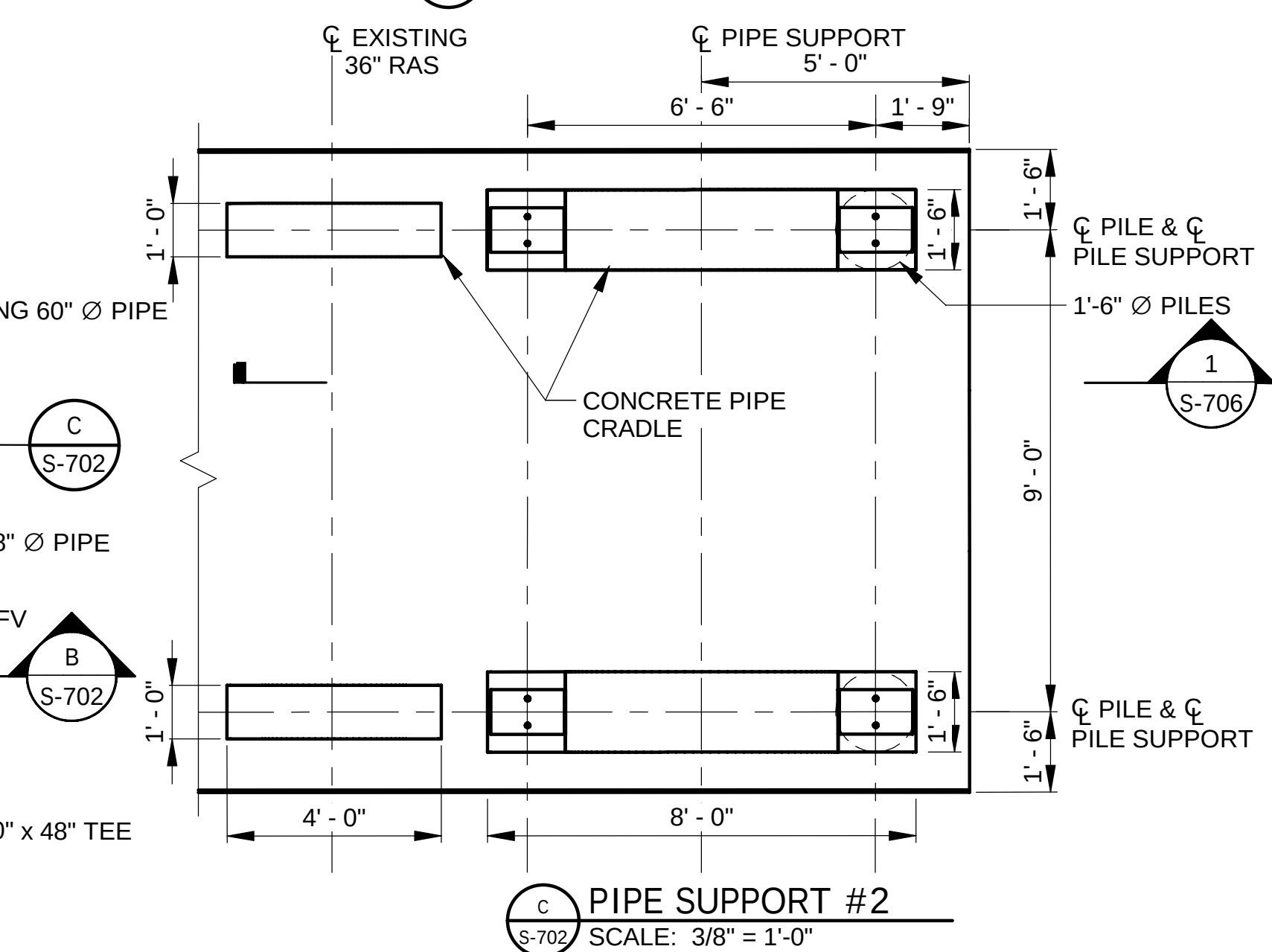
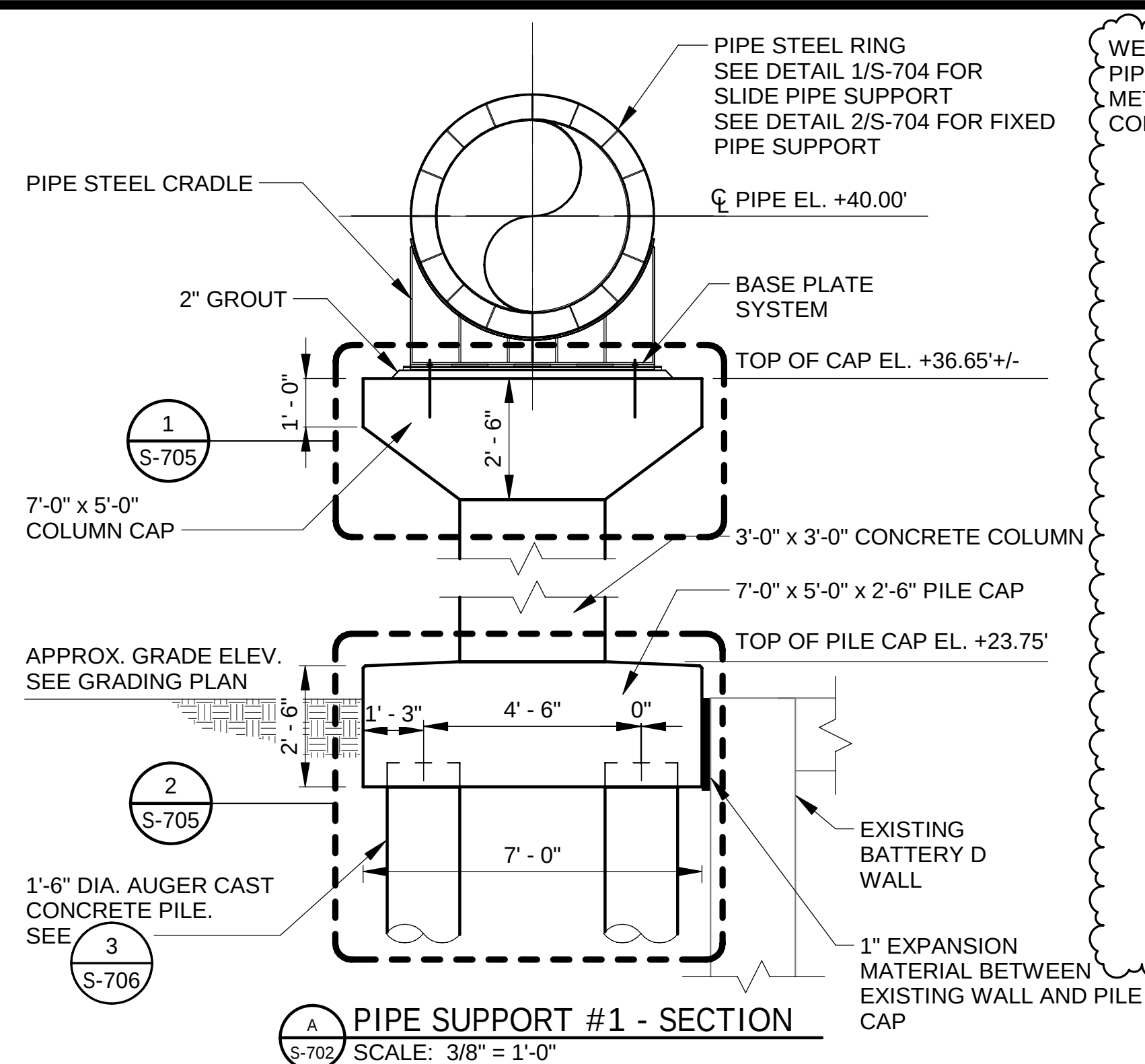
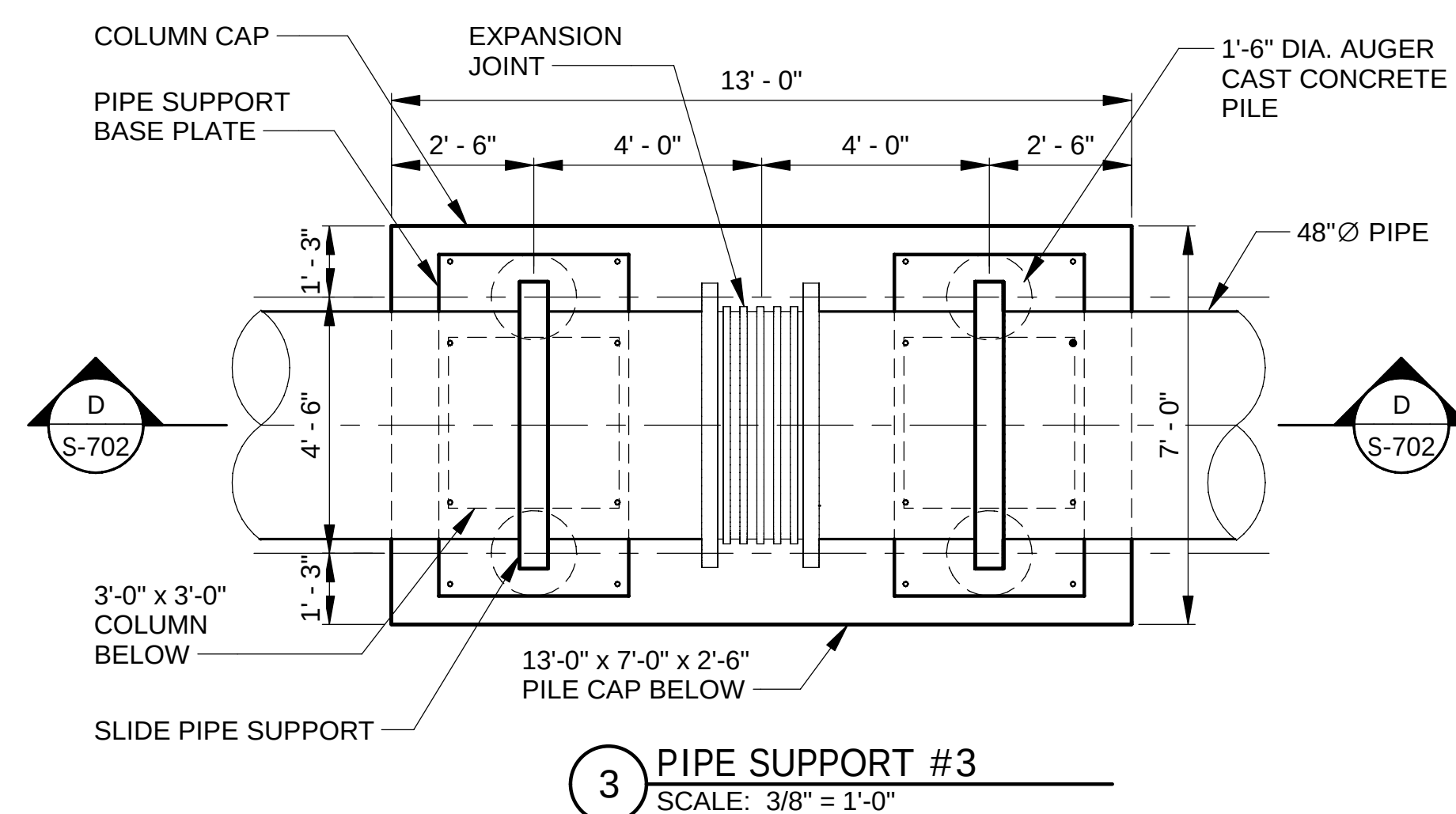
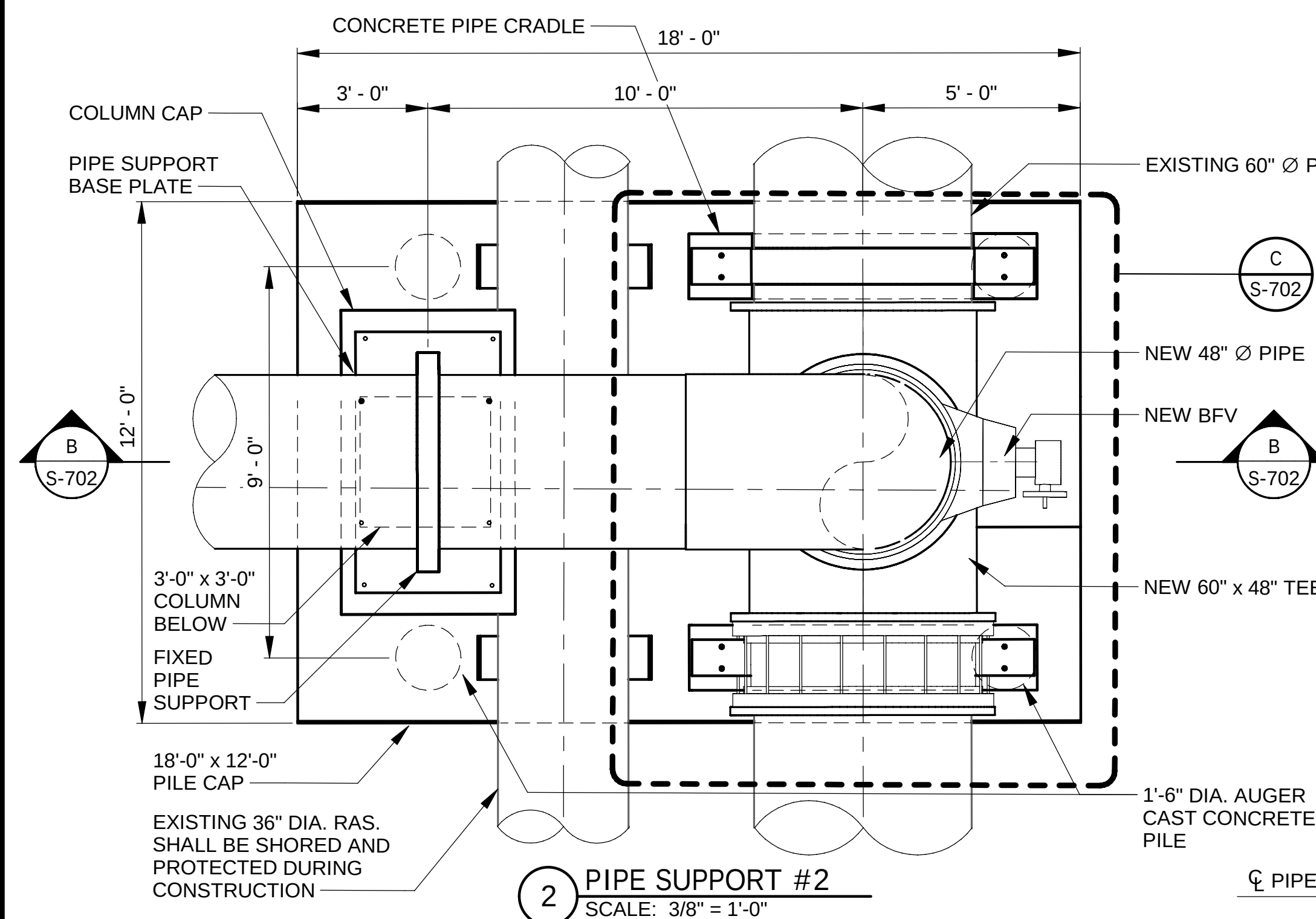
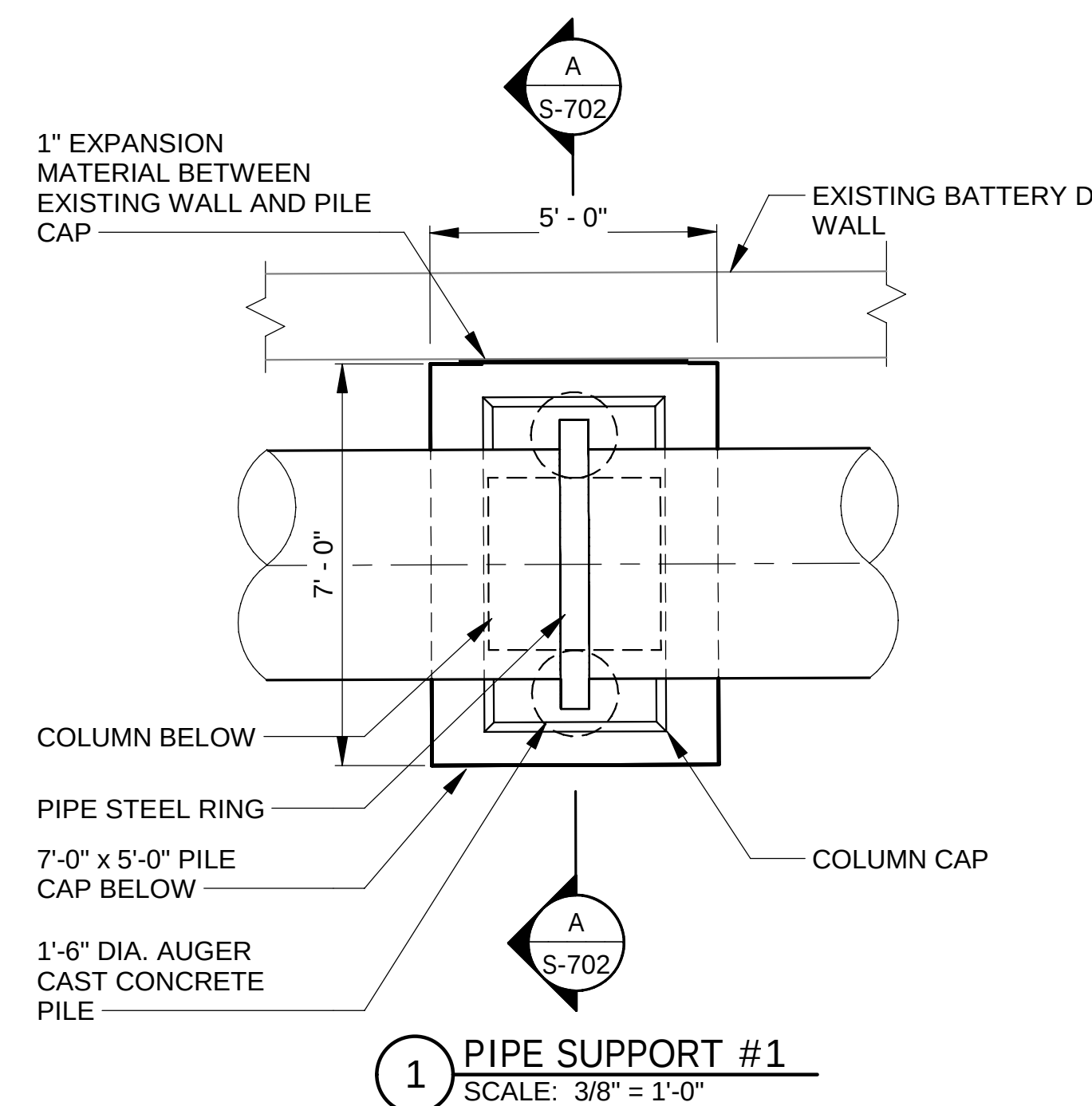
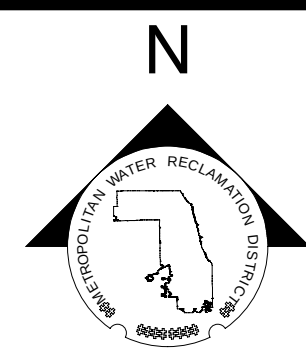
**CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
POST AERATION TANK & EFFLUENT CONDUIT**

BASE PLAN

Sheet Number:

S-608

Page Number: 198

[illegible]

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

AECOM

PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Checked by:

Reviewed by:

BP
Reviewed by:

Scale:

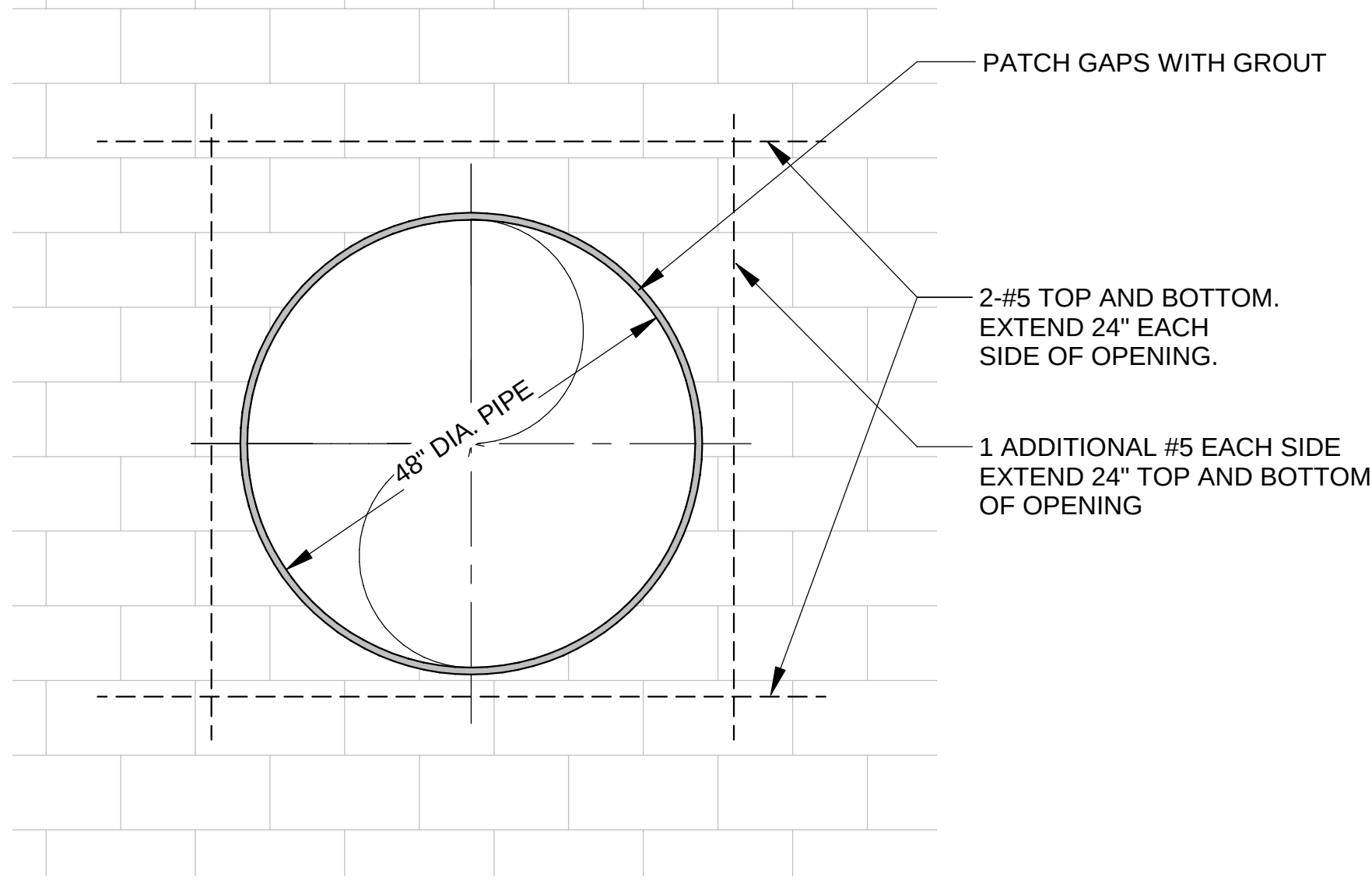
3/8" = 1'-0"

BATTERY E ACTIVATED SLUDGE FACILITY AIR MAIN SUPPORTS AIR MAIN CONNECTIONS - SECTIONS AND DETAILS

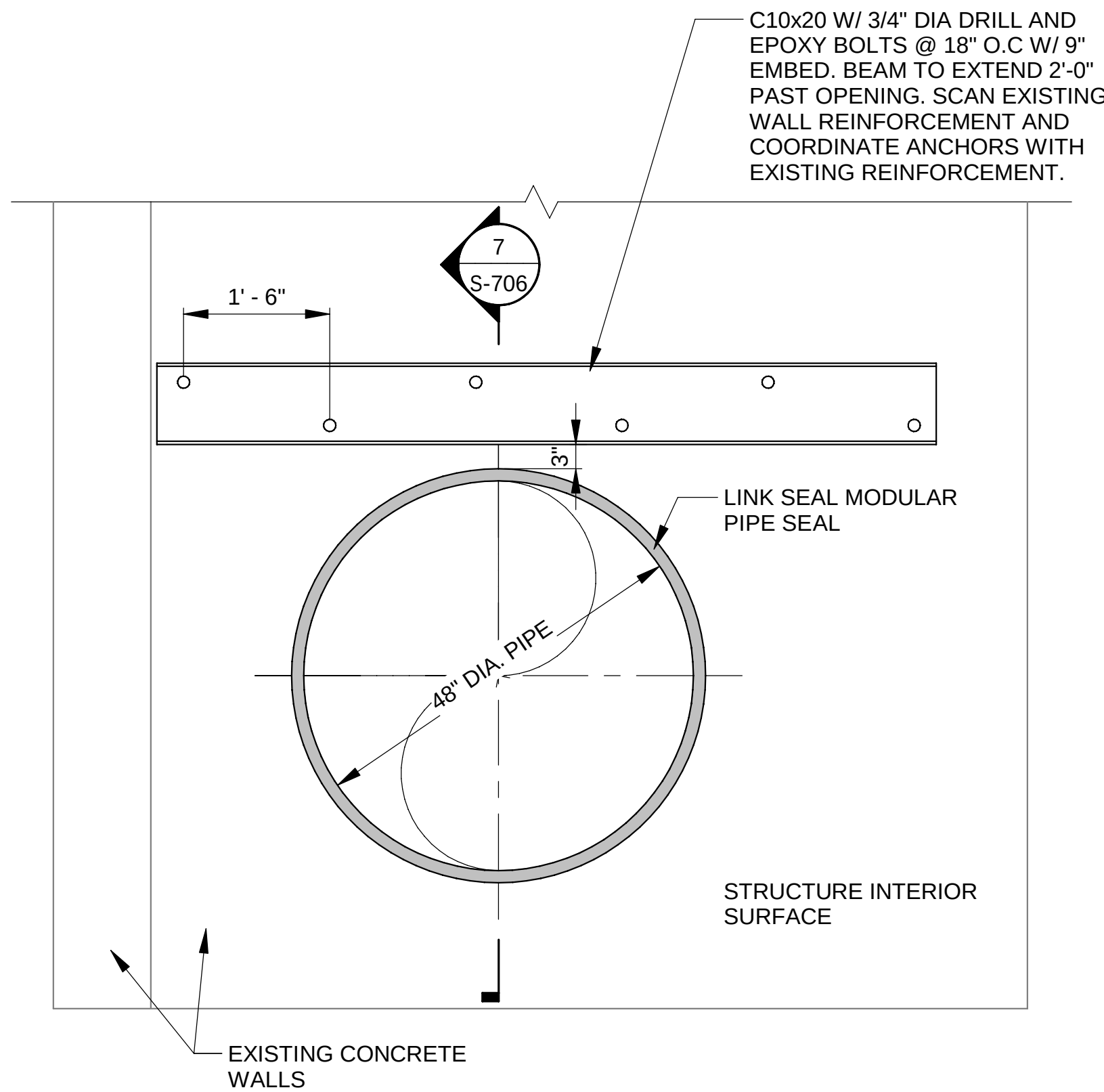
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S-702

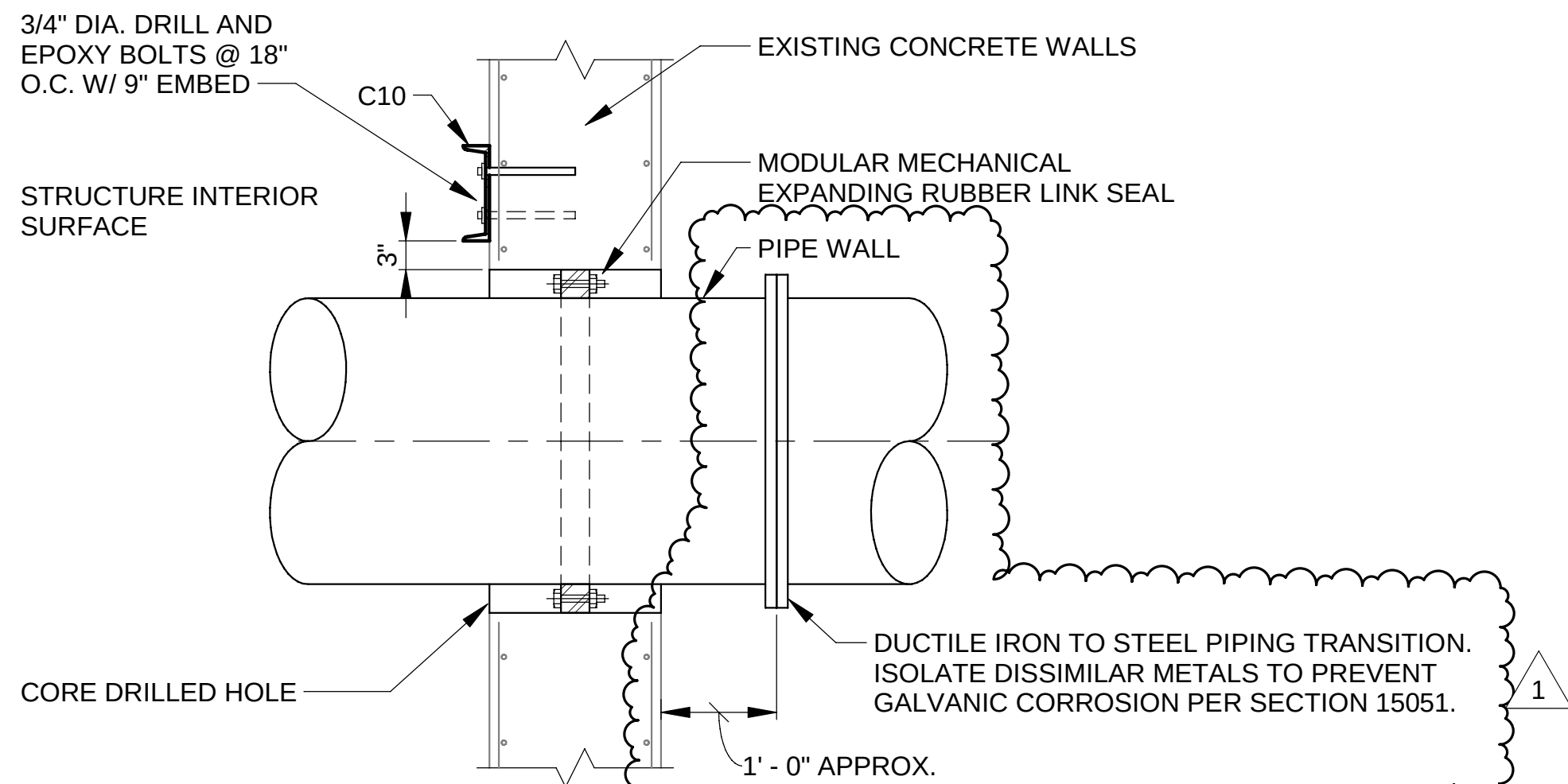
Page Number: 215



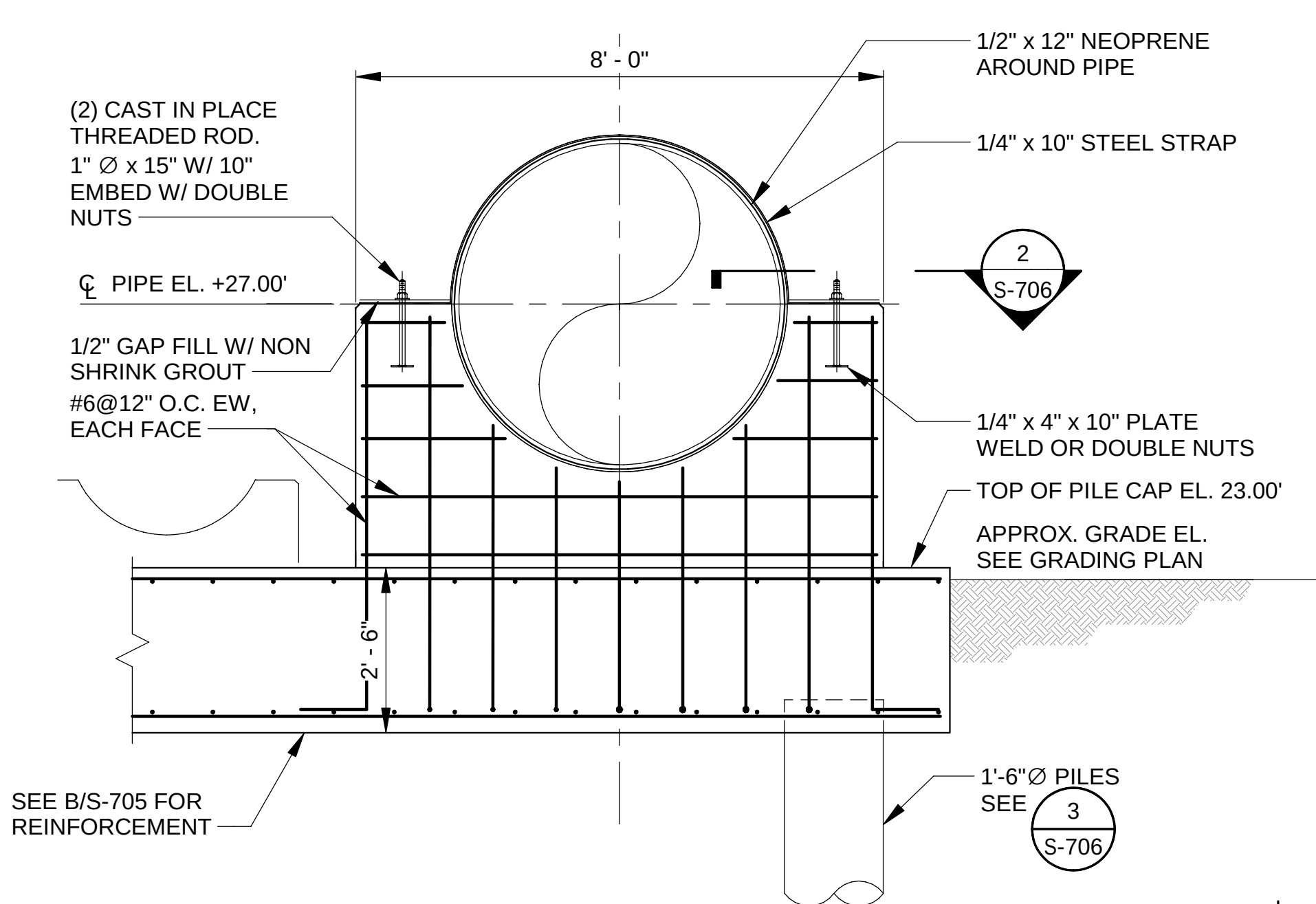
5 CMU WALL PENETRATION DETAIL
SCALE: 3/4" = 1'-0"



6 CONCRETE WALL PENETRATION DETAIL
SCALE: 3/4" = 1'-0"



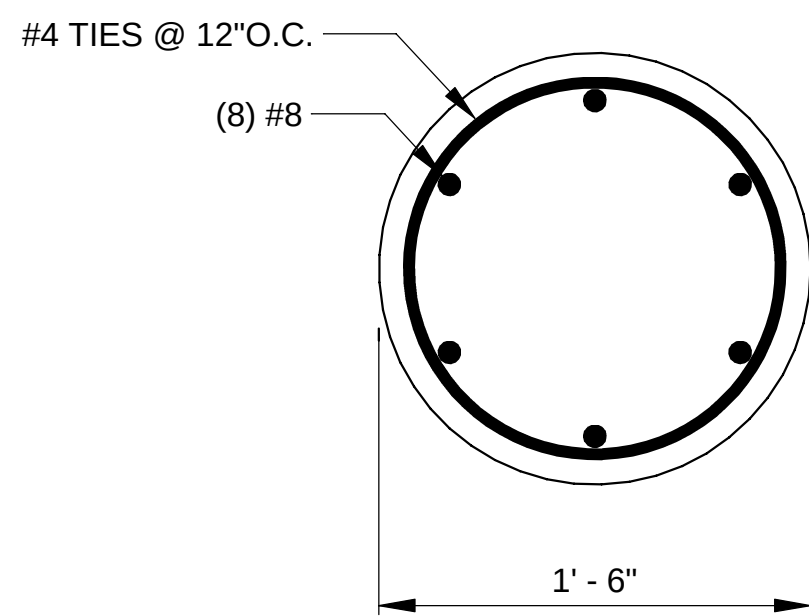
7 DETAIL
NOT TO SCALE



1 DETAIL
SCALE: 1 1/2" = 1'-0"

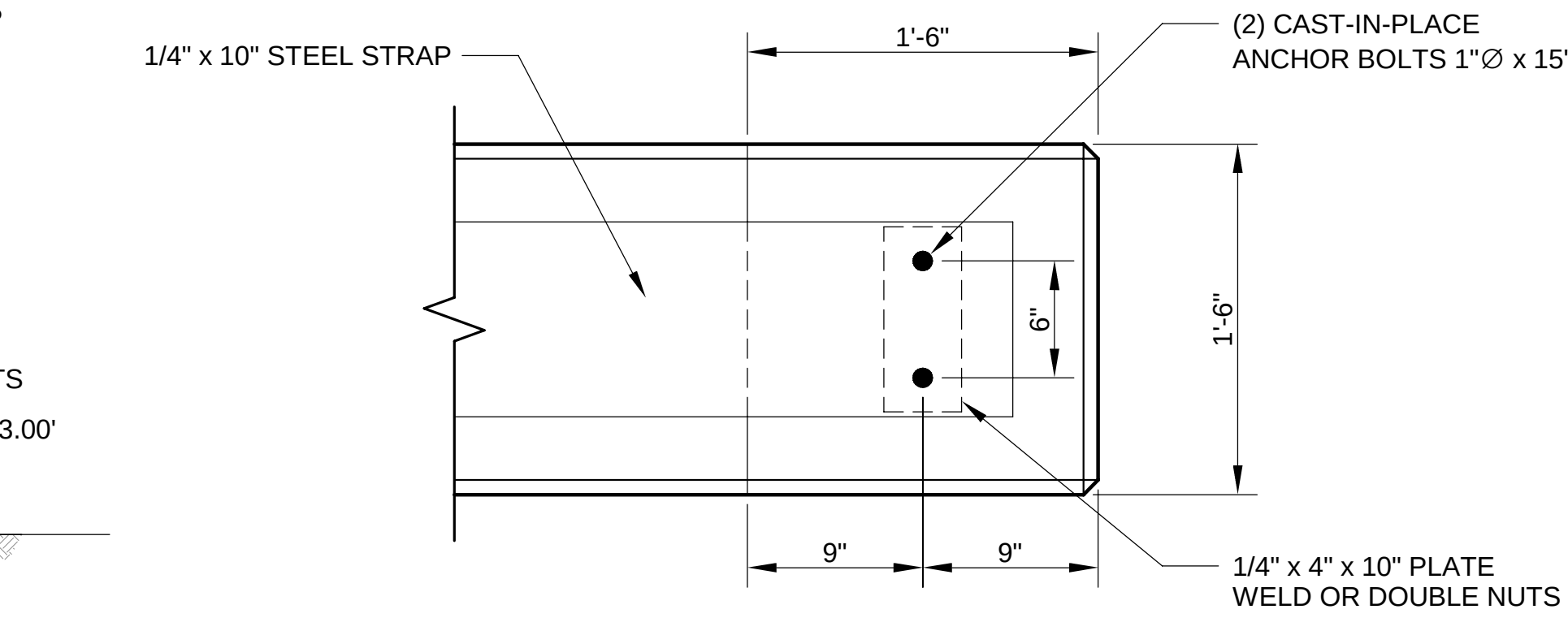
OPERATING GALLERY DELEGATED PIPE SUPPORT LOADINGS				
	MAX DEAD LOAD (Kip)	MAX LIVE LOAD (Kip)	TRANSVERSE LATERAL LOAD (Kip)	LONGITUDINAL LATERAL LOAD (Kip)
AIR MAIN FIXED SUPPORT	11.6	4.8	1.2	60
AIR MAIN SLIDE SUPPORT	8.3	3.4	1	0

*PIPE SUPPORT SHALL BE DESIGNED BY A LICENSED STRUCTURAL ENGINEER IN ILLINOIS
*PIPE SUPPORT SHOP DRAWINGS SHALL BE SEALED BY A LICENSED STRUCTURAL ENGINEER IN ILLINOIS AND SUBMIT FOR EOR REVIEW.
*LOADS SHOWN ARE SERVICE LEVEL LOADS.

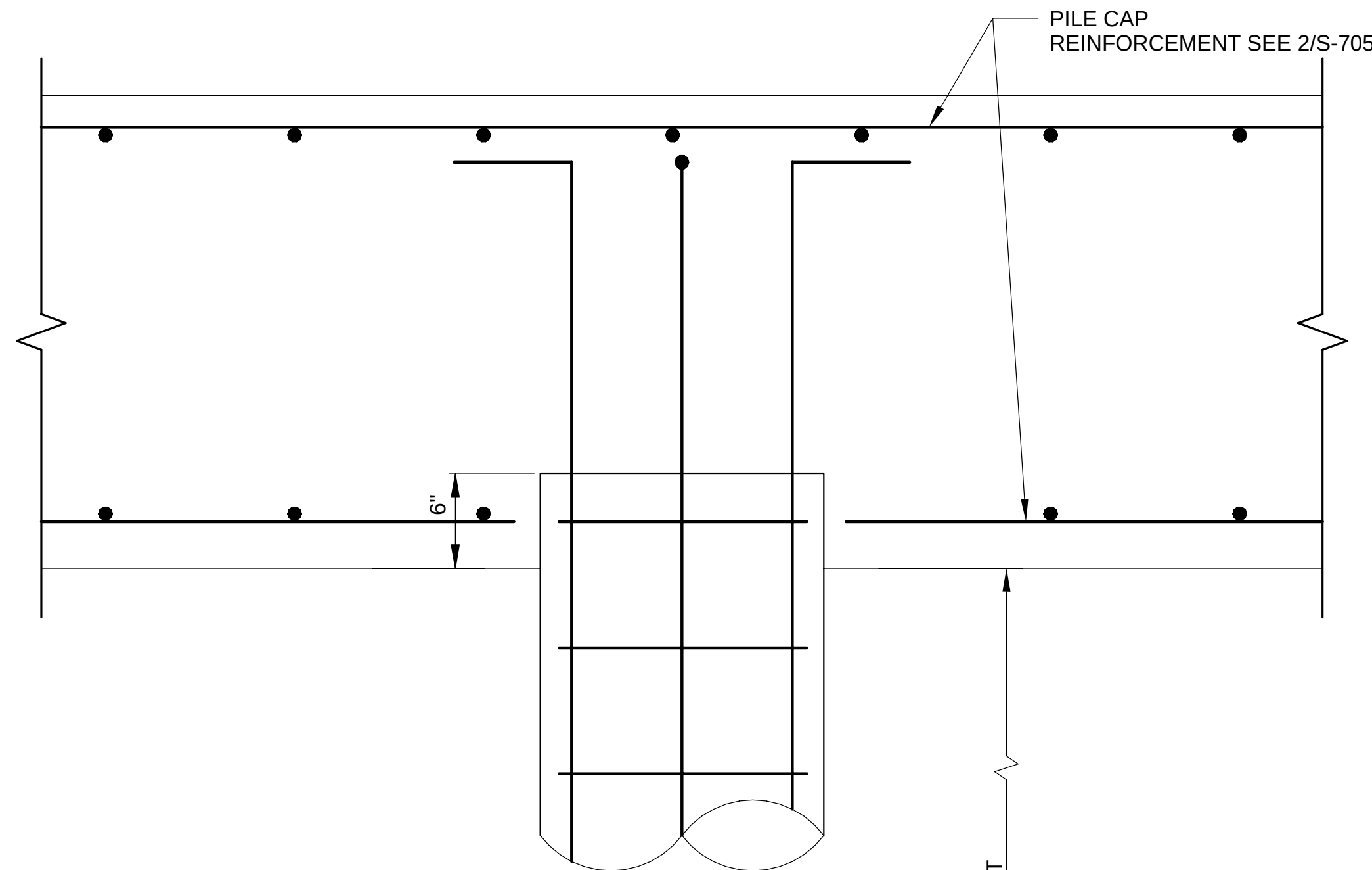


4 DETAIL
SCALE: 1 1/2" = 1'-0"

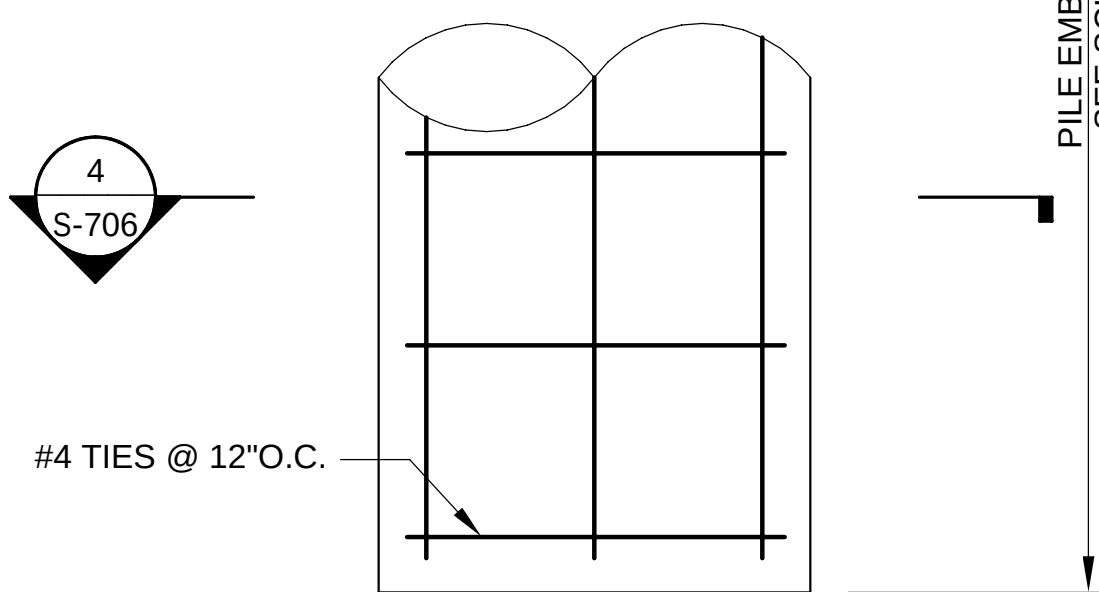
CONCRETE PILE SCHEDULE	
	PILE EMBEDMENT (FT)
SUPPORT 1	18' - 0"
SUPPORT 2	10' - 0"
SUPPORT 3	18' - 0"
SUPPORT 4	18' - 0"
SUPPORT 5	22' - 0"
SUPPORT 6	22' - 0"



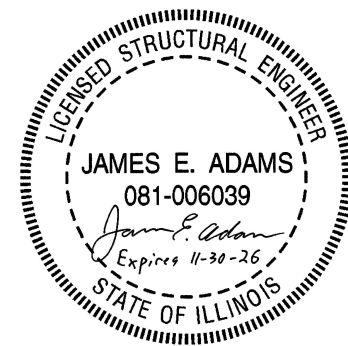
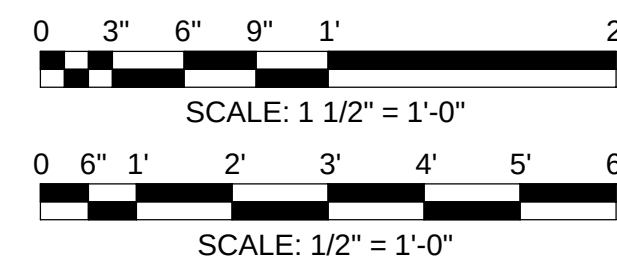
2 DETAIL
SCALE: 1 1/2" = 1'-0"



3 DETAIL
SCALE: 1 1/2" = 1'-0"



4 DETAIL
SCALE: 1 1/2" = 1'-0"



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by: JA
Checked by: JA
Drawn by: AC
Reviewed by: JA
Date: 7/1/2025
Scale: AS SHOWN

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
AIR MAIN SUPPORTS
AIR MAIN CONNECTIONS - SECTIONS AND DETAILS

Sheet Number:
S-706
Page Number: 219

1

2

2

1

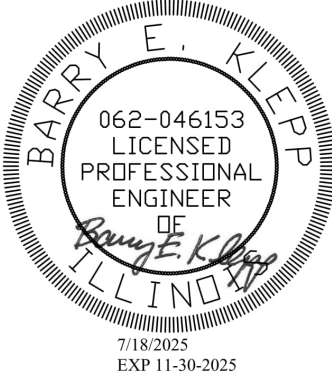
2

2

PROCESS PIPING SCHEDULE - SPEC SECTION 15370											
PIPING						SYSTEM DESIGN CONDITIONS			REMARKS		
LEGEND	SERVICE	DIAMETER RANGE (INCH)	MATERIAL	LOCATION	COATING		JOINT TYPE	MIN/MAX TEMP (F)	MAX WORKING PRESSURE (PSI)	PIPE TESTING	
					INTERIOR	EXTERIOR					
WAS	WAS	6, 8	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
WAS	WAS	8, 10	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	15	HYDROSTATIC	TEST AT 50 PSI.
RAS	RAS	60	FRP SN72 PN100	BURIED / INTERIOR EXPOSED	-	-	FRP COUPLING / RESTRAINED COUPLING	40/75	15	HYDROSTATIC	NOMINAL INSIDE DIAMETER 60-INCH / TEST AT 50 PSI.
RAS	RAS	60	STEEL	INTERIOR EXPOSED	EPOXY	PAINTED	FLANGED	40/75	15	HYDROSTATIC	TEST AT 50 PSI.
FM RAS	FERMENTER RAS	18	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	15	HYDROSTATIC	TEST AT 50 PSI.
FM RAS	FERMENTER RAS	12, 18, 24	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
FM RAS	FERMENTER RAS	24	DUCTILE IRON	IMMERSED / SEWAGE CONTACT	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
SLS	SECONDARY SLUDGE	24	DUCTILE IRON	BURIED (CONCRETE ENCASED / POLYETHYLENE WRAP)	CEMENT MORTAR LINED	- / ASPHALTIC COATING	MECHANICAL	40/75	20	HYDROSTATIC	TEST AT 50 PSI.
ML	MIXED LIQUOR	42	DUCTILE IRON	IMMERSED / SEWAGE CONTACT	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	10	HYDROSTATIC	TEST AT 50 PSI.
ML	MIXED LIQUOR	42	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	10	HYDROSTATIC	TEST AT 50 PSI.
ML	MIXED LIQUOR	42	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	10	HYDROSTATIC	TEST AT 50 PSI.
PD	PLANT DRAIN	8, 12, 16	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	25	LOW PRESSURE AIR	TEST AT 50 PSI.
PD	PLANT DRAIN	36	DUCTILE IRON/HDPE	BURIED / BURIED	CEMENT MORTAR LINED/-	ASPHALTIC COATING / -	MECHANICAL/HEAT FUSION	40/75	25	LOW PRESSURE AIR	TEST AT 50 PSI.
PD	PLANT DRAIN	6, 8, 12	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	25	LOW PRESSURE AIR	TEST AT 50 PSI.
WNP	WATER NON-POTABLE	4" AND SMALLER	GALVANIZED	INTERIOR EXPOSED	-	PAINTED	FLANGED / SCREWED	40/75	90	HYDROSTATIC	TEST AT 150 PSI.
SC	SCUM	6, 8	HDPE	BURIED	-	-	HEAT FUSION	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
SAN	SANITARY	6	DUCTILE IRON	BURIED (POLYETHYLENE WRAP)	CEMENT MORTAR LINED	ASPHALTIC COATING	MECHANICAL	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
WP	WATER POTABLE	3	GALVANIZED/HDPE	BURIED	-	PAINTED/-	WELDED/HEAT FUSION	40/75	100	HYDROSTATIC	TEST AT 150 PSI.
WP	WATER POTABLE	8	HDPE	BURIED	-	-	HEAT FUSION	40/75	100	HYDROSTATIC	TEST AT 150PSI.
WNP	WATER NON-POTABLE	6, 8	HDPE	BURIED	-	-	HEAT FUSION	40/75	100	HYDROSTATIC	TEST AT 150PSI.
LPA	AIR HEADER	48	CORTEN STEEL	OUTDOOR	-	-	WELDED / FLANGED	0/220	10	HIGH PRESSURE AIR	ASTM A588 NO EXTERIOR COATING TEST AT 15 PSI.
LPA	AIR HEADER	4, 8, 12, 18, 48	STEEL	INTERIOR EXPOSED	EPOXY	HIGH TEMP	WELDED / FLANGED	75/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
LPA	AIR HEADER	48	DUCTILE IRON	BURIED (POLYETHYLENE WRAP)	-	ASPHALTIC COATING	MECHANICAL	0/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
LPA	AIR SUPPLY TO POST AERATION TANK	10	DUCTILE IRON	BURIED (POLYETHYLENE WRAP)	-	ASPHALTIC COATING	MECHANICAL	0/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
LPA	AIR SUPPLY TO AERATION TANK	18	STAINLESS STEEL	OUTDOOR/INTERIOR EXPOSED	-	-	WELDED / FLANGED	0/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
LPA	AIR SUPPLY TO DIFFUSERS (AERATION TANKS AND POST-AERATION TANK)	3, 4, 5, 6, 8, 10	STAINLESS STEEL	OUTDOOR EXPOSED	-	-	WELDED / FLANGED	0/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
LPA	AIR SUPPLY TO SLUDGE LEVEL INDICATORS	1, 1-1/2, 2, 4	STAINLESS STEEL	BURIED	-	-	WELDED / THREADED / PRESS FIT	0/220	10	HIGH PRESSURE AIR	TEST AT 15 PSI.
SAM	BATTERY E EFFLUENT WATER SAMPLE	3	DUCTILE IRON	BURIED (POLYETHYLENE WRAP)	CEMENT MORTAR LINED	ASPHALTIC COATING	MECHANICAL	40/75	25	HYDROSTATIC	TEST AT 50 PSI.
SAM	BATTERY E EFFLUENT WATER SAMPLE	1	GALVANIZED	INTERIOR EXPOSED	-	PAINTED	THREADED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
EFF	FST 17/18 EFFLUENT	24	DUCTILE IRON/HDPE	BURIED (CONCRETE ENCASED)/BURIED	CEMENT MORTAR LINED/-	-	MECHANICAL/HEAT FUSION	40/75	25	LOW PRESSURE AIR	TEST AT 50 PSI.
SP	BATTERY E INFLUENT CONDUIT	72	STEEL	INTERIOR EXPOSED	EPOXY	PAINTED	WELDED	40/75	15	HYDROSTATIC	TEST AT 50 PSI.
ML SAM	MIXED LIQUOR SAMPLE	3	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
ML SAM	MIXED LIQUOR SAMPLE	3	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
RAS SAM	RAS SAMPLE	3	DUCTILE IRON	BURIED (CONCRETE ENCASED)	CEMENT MORTAR LINED	-	MECHANICAL	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
RAS SAM	RAS SAMPLE	3	DUCTILE IRON	INTERIOR EXPOSED	CEMENT MORTAR LINED	PAINTED	FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
IMLR	INTERNAL MIXED LIQUOR RECYCLE DISCHARGE	30	STAINLESS STEEL	IMMERSED / SEWAGE CONTACT	-	-	WELDED/FLANGED	40/75	30	HYDROSTATIC	TEST AT 50 PSI.
ML	MIXED LIQUOR	48	STEEL	BURIED (CONCRETE ENCASED)	EPOXY	-	WELDED	40/75	10	HYDROSTATIC	TEST AT 50 PSI.

NOTES:

1. SEE TABLE 1 IN GSPC FOR PIPING COLOR CODING SCHEDULE.
2. FIELD WELDED JOINTS ON EPOXY COATED STEEL PIPING SHALL BE PROPERLY REPAIRED. SEE SPECIFICATION 15061 FOR REQUIREMENTS.



Rev.	Description	Appr.	Date
1	ADDENDUM NO. 2	GD	10/06/25
2	ADDENDUM NO. 5	GD	11/19/25

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Checked by: RK		Reviewed by: BK		Scale: NONE
Designed by: WW/FK	Drawn by: AT	Date: 7/1/2025		



PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

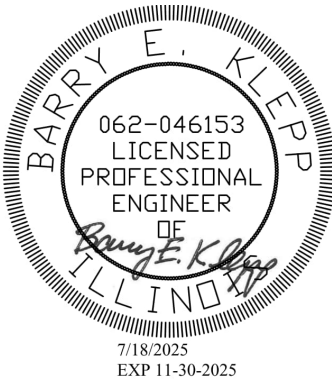
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL
PROCESS EQUIPMENT SCHEDULES

STOP LOG SCHEDULE - SPEC SECTION 11283										
TAG NUMBER	NUMBER OF UNITS	LOCATION	OPENING SIZE WxH (FT) (NOTE 1)	FRAME TYPE	HEAD (FT) MAX WS TO INVERT	LOG HEIGHT (INCH)	NUMBER OF LOGS	NUMBER OF LIFTING DEVICE	HEAD TYPE	MATERIAL
SL1 THRU SL2	2	INFLUENT CHANNEL	5 x 18.75	SURFACE MOUNT	16.52	12	17	1	NOT APPLICABLE	316L SS
SL3	1	MIXED LIQUOR CHANNEL	4 x 11	SURFACE MOUNT	7.62	12	8	1	NOT APPLICABLE	316L SS

NOTES:
1. GATE HEIGHT "H" REPRESENTS THE HEIGHT FROM THE BOTTOM SLAB/INVERT TO THE OPERATING LEVEL.

SUBMERSIBLE MIXER SCHEDULE - SPEC SECTION 11377										
TAG NUMBER	NUMBER OF UNITS	ZONE	TANK/ZONE DIMENSIONS				MIXER PARAMETERS			
			LENGTH (FT)	WIDTH (FT)	DEPTH (FT)	VOLUME (GAL)	RATED POWER (HP)	SPEED TYPE	PROPELLER DIA (IN)	WEIGHT (LB)
FT1 M01 THRU FT1 M04 FT2 M01 THRU FT2 M04	8	FERMENTER TANK PASS 1 & FERMENTER TANK PASS 2	261.33	18.00	20.50	712,360	3	VARIABLE (INTEGRATED VFD)	79	610
FT3 M01 THRU FT3 M06	6	FERMENTER TANK PASS 3	436.83	22.75	20.50	1,523,980	3	VARIABLE (INTEGRATED VFD)	79	610
AP M01 THRU AP M06	8	ANOXIC PASS	428.83	22.75	16.52	1,205,620	3	VARIABLE (INTEGRATED VFD)	79	610
INFL M01 THRU INFL M04	4	INFLUENT CHANNEL	377.13	5.00	16.52	233,100	3	VARIABLE (INTEGRATED VFD)	23	188
AT1 M01 THRU AT6 M01 AT1 M02 THRU AT6 M02	12	AERATION TANKS 1 TO 6 - ANOXIC ZONE	123.00	27.50	16.25	411,200	1.5	VARIABLE (INTEGRATED VFD)	79	610

NOTES:
1. LENGTH, WIDTH, AND DEPTH DIMENSIONS ARE ROUNDED TO THE NEAREST HUNDREDTHS PLACE. VOLUME IS ROUNDED UP TO TENS PLACE.



CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

PROCESS EQUIPMENT SCHEDULES

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:
WWJFK

Drawn by:
AT

Date:
7/1/2025

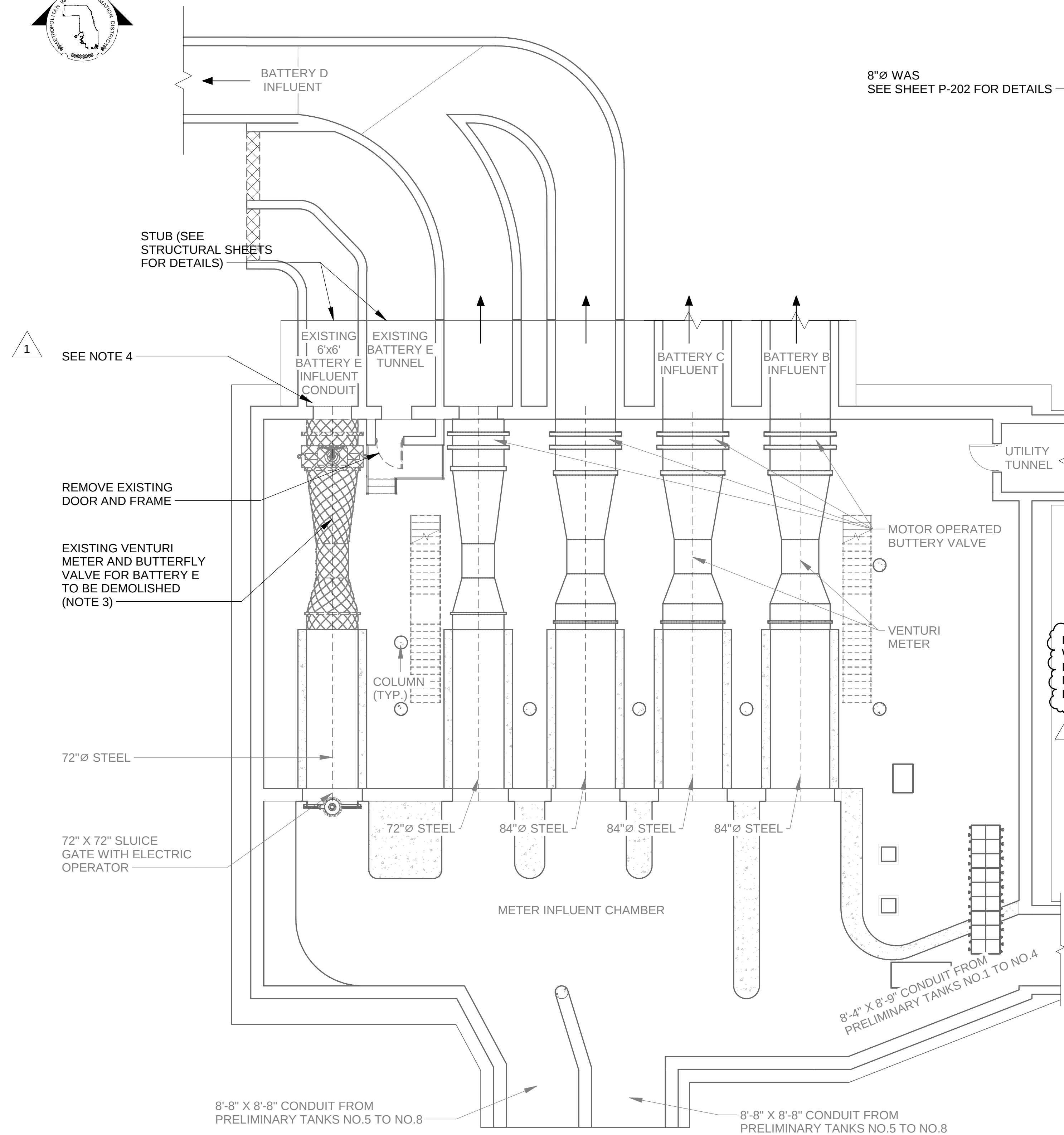
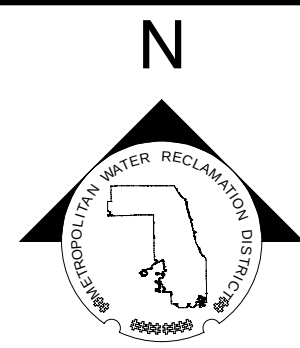
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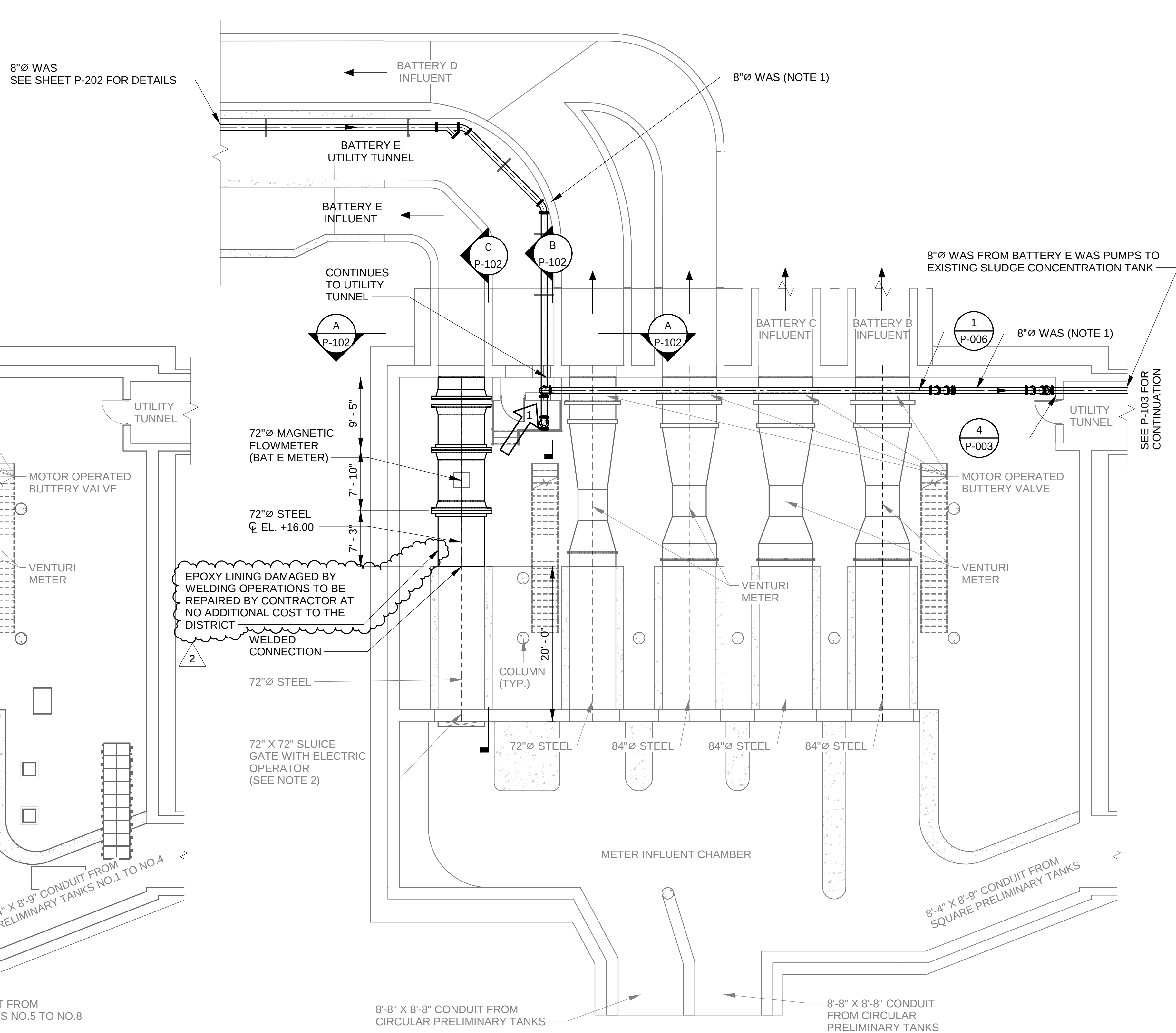
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AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25



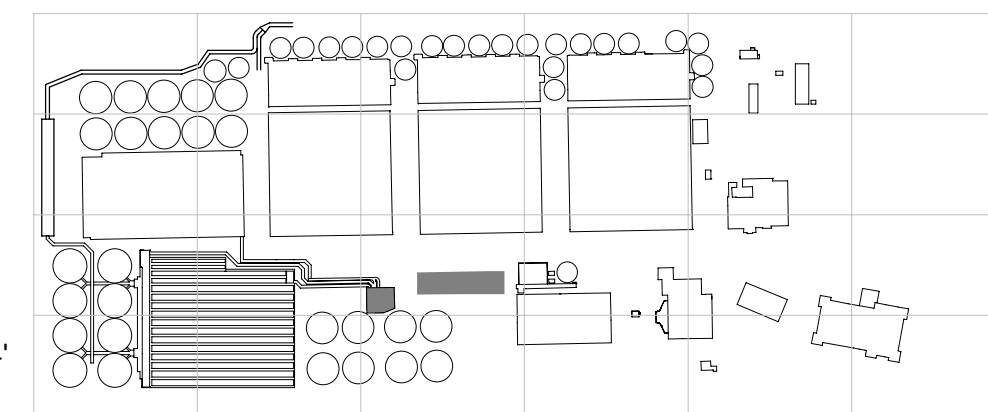
1 METER BUILDING DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



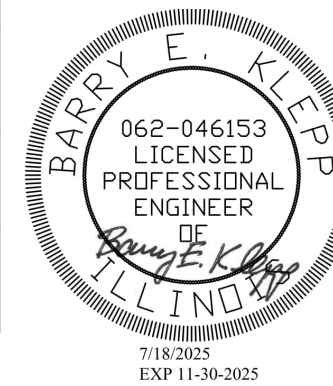
2 METER BUILDING PROPOSED PLAN
SCALE: 1/8" = 1'-0"

NOTES:

- SEE PHOTOGRAPHS ON P-104 FOR 3D REPRESENTATION OF WAS ROUTE.
- EXISTING 72" x 72" SLUICE GATE MAY NOT ENABLE COMPLETE ISOLATION FOR CONSTRUCTION OF BATTERY E CONDUIT. CONTRACTOR TO PROVIDE ADDITIONAL STOP LOGS OR OTHER APPROVED MODIFICATIONS NEEDED TO ISOLATE THE CONDUIT TO ENABLE LEAK PROOF ISOLATION.
- SEE REFERENCE DRAWINGS R-29 TO R-42 FOR DETAILS ON EXISTING METER BUILDING AND TROLLEY HOIST.
- CONTRACTOR SHALL ASSUME THAT THE EXISTING BATTERY E 72" PIPING, FLOW METER, VALVE, AND CONDUIT STUB IS COMPLETELY FULL OF WASTEWATER. CONTRACTOR SHALL BE RESPONSIBLE FOR PUMPING OUT THE WASTEWATER PRIOR TO DEMOLITION. CONTRACTOR WILL BE ALLOWED TO PUMP INTO THE METER BUILDING INFLUENT CHAMBER.



OVERALL KEYPLAN



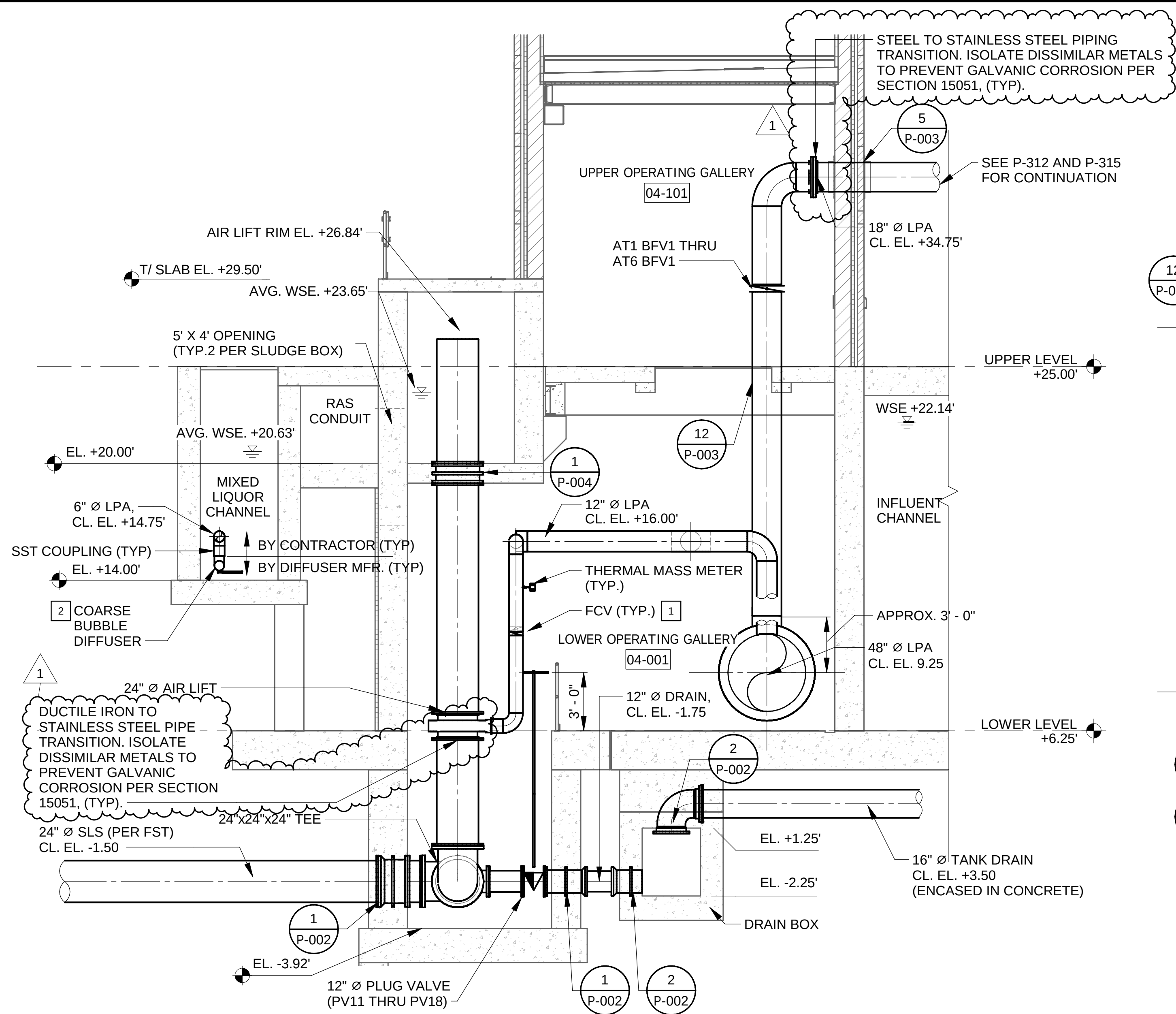
METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Designed by:
WW/JFK
Checked by:
RK
Drawn by:
AT
Reviewed by:
BK
Date:
7/1/2025
Scale:
1/8" = 1'-0"

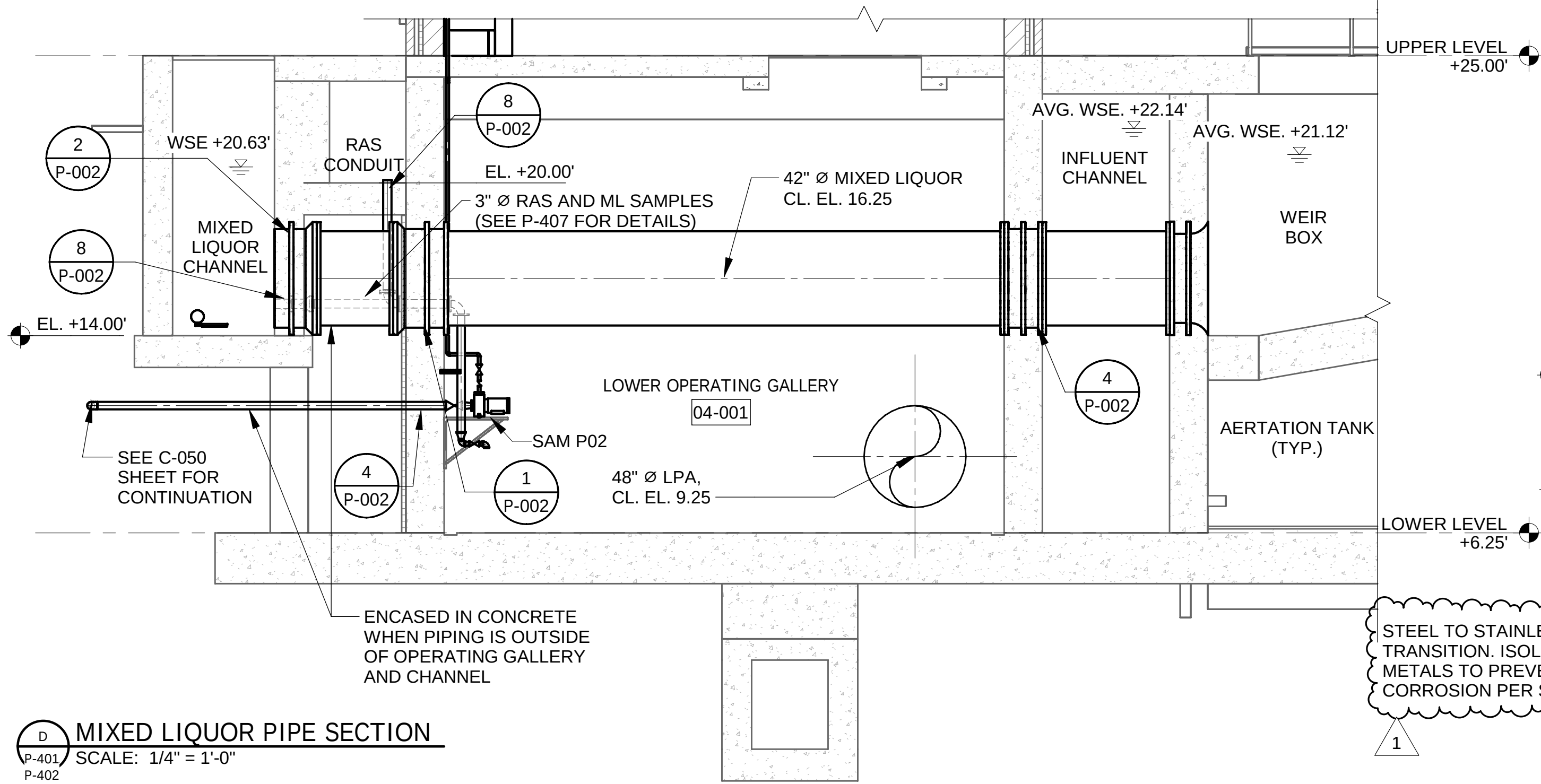
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
PROCESS CONTROL BUILDING & METER BUILDING
METER BUILDING - DEMOLITION AND NEW WORK

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 3	GD	10/15/25
2	ADDENDUM NO. 5	GD	11/19/25

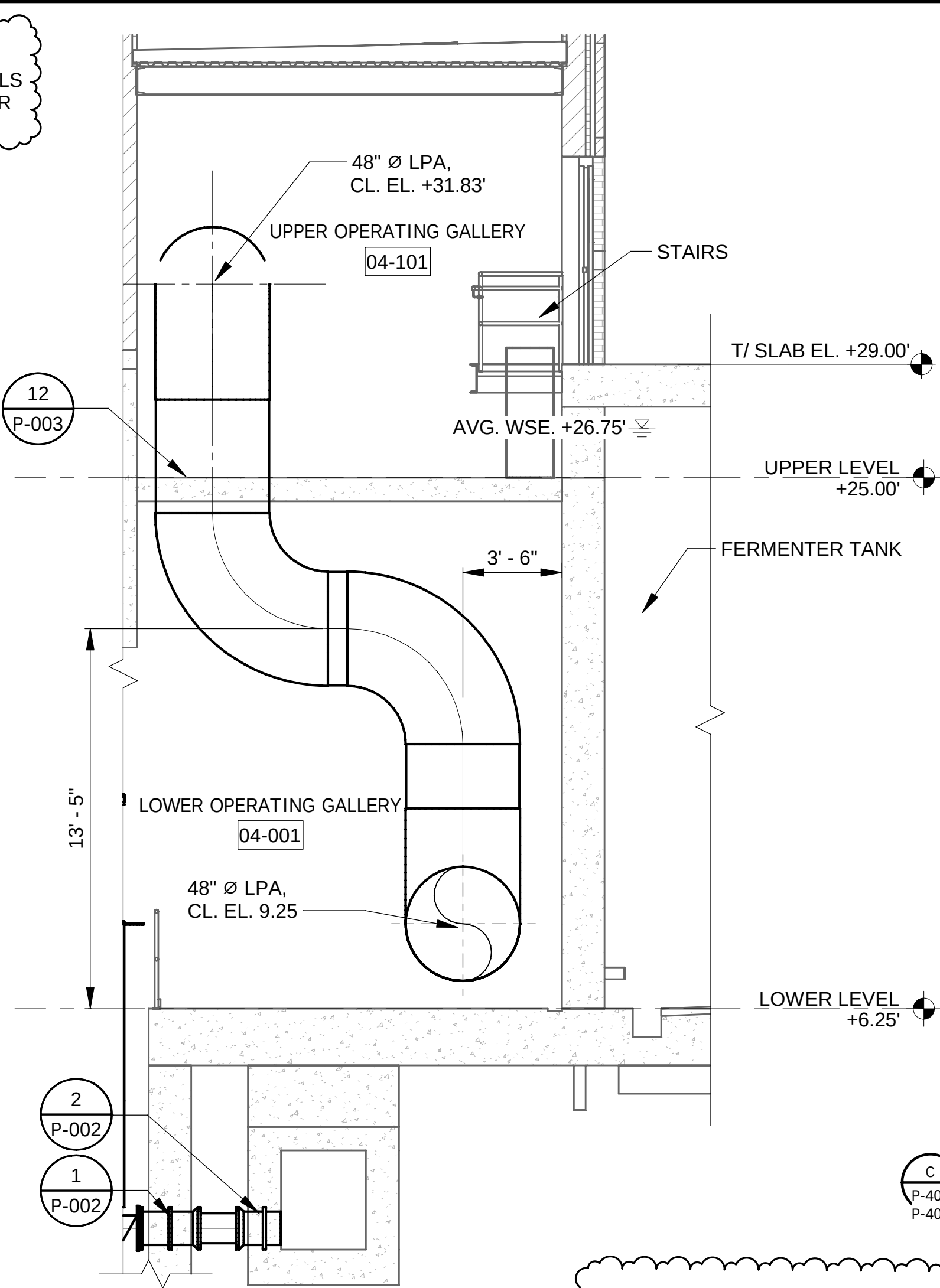
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P-101
Page Number: 260



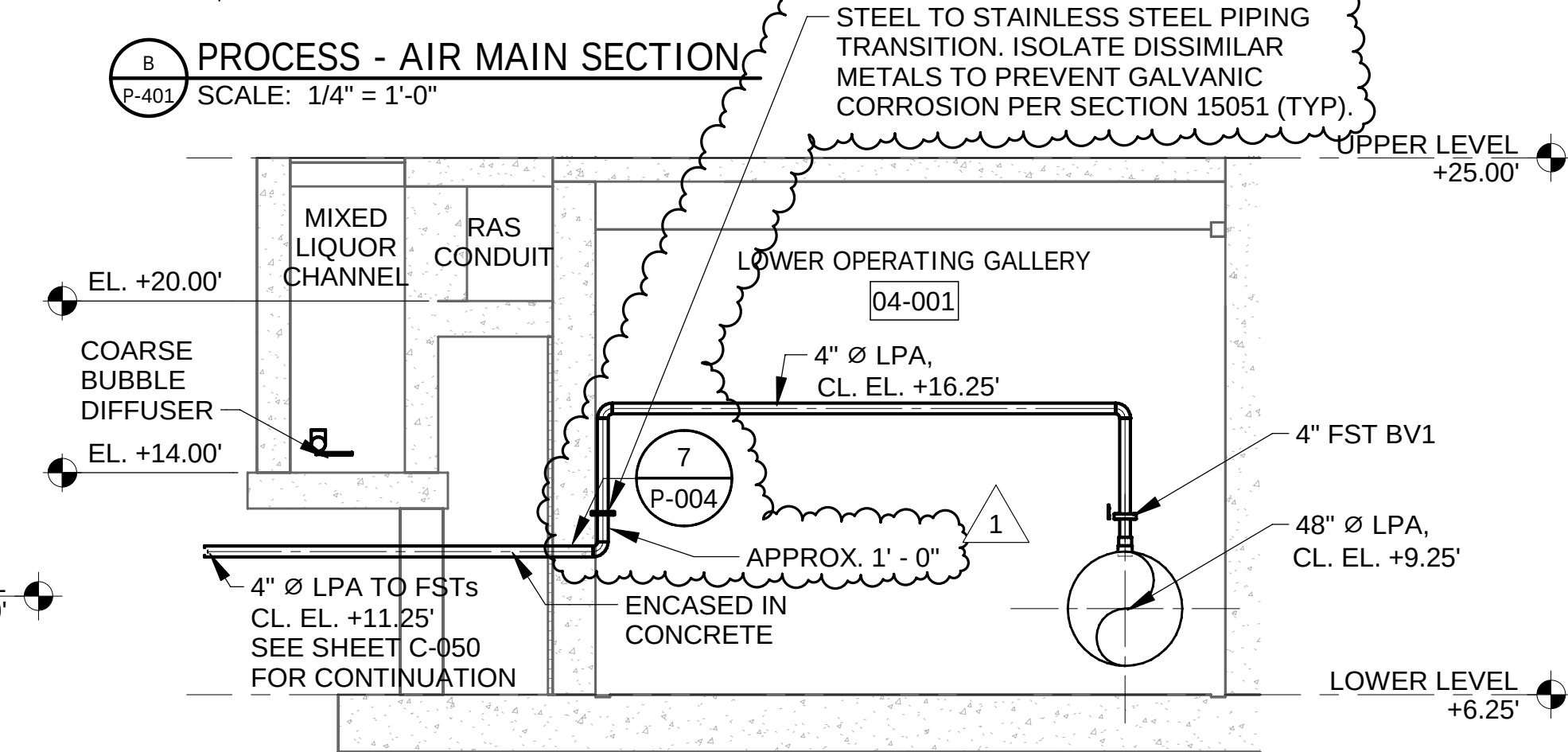
A PROCESS - OPERATING GALLERY SECTION
P-401 SCALE: 1/4" = 1'-0"
P-402



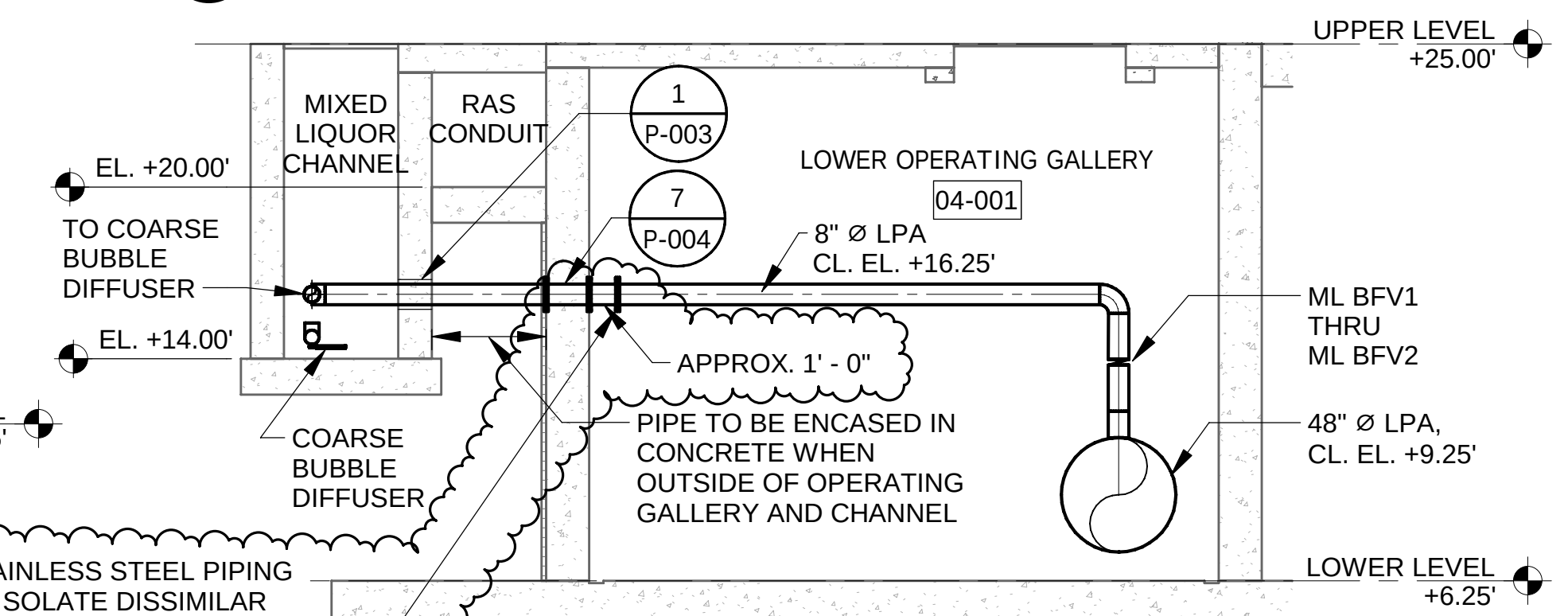
D MIXED LIQUOR PIPE SECTION
P-401 SCALE: 1/4" = 1'-0"
P-402



B PROCESS - AIR MAIN SECTION
P-401 SCALE: 1/4" = 1'-0"
P-402

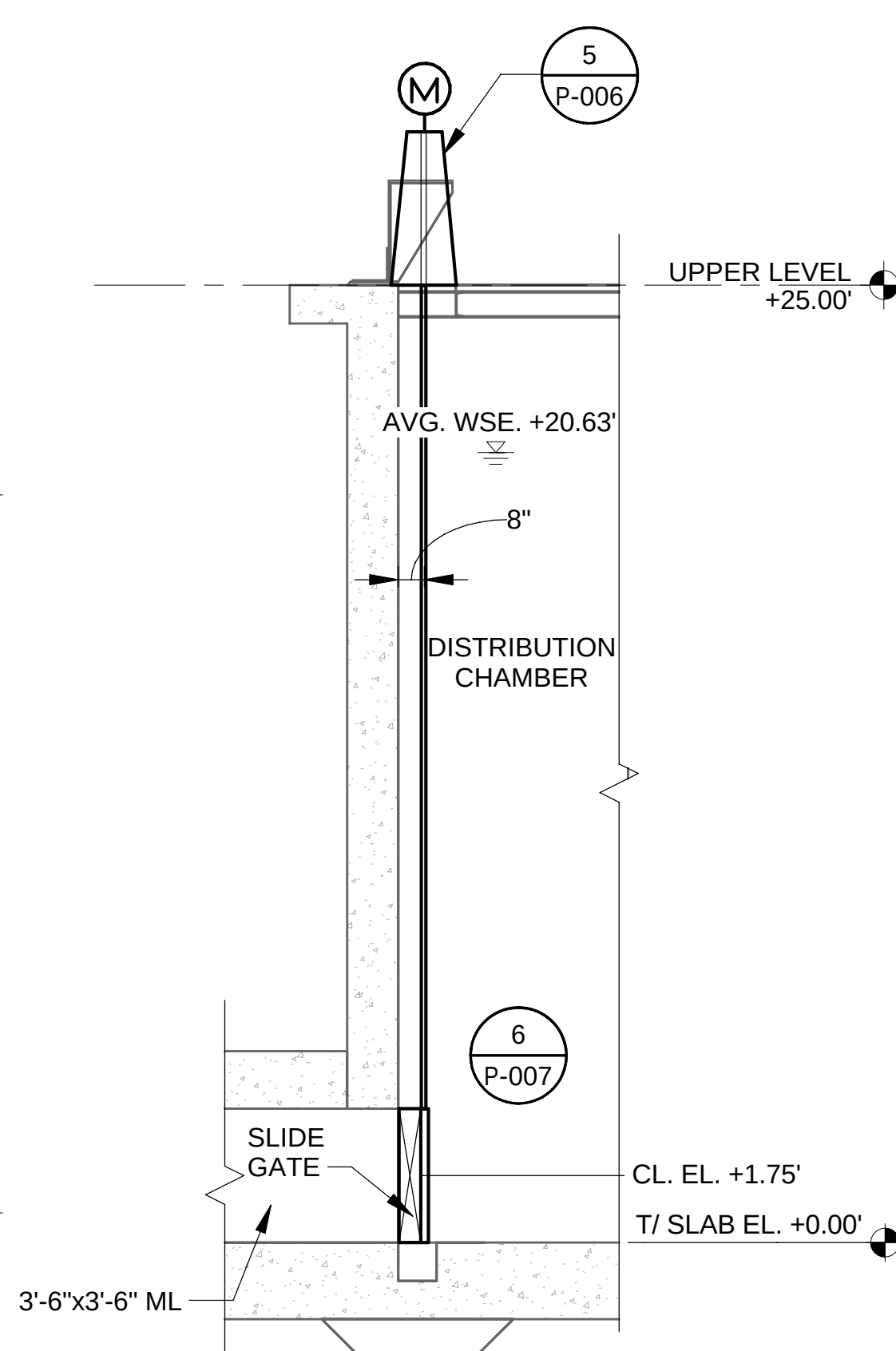


E AIR MAIN TO SLUDGE LEVEL INDICATORS AT FST 1 THRU FST 8
P-401 SCALE: 3/16" = 1'-0"



F AIR MAIN TO ML CHANNEL (TYP. 2)
P-401 SCALE: 3/16" = 1'-0"

C DISTRIBUTION CHAMBER SLIDE GATE - SECTION (TYP. SG07 THRU SG14)
P-401 SCALE: 1/4" = 1'-0"
P-402

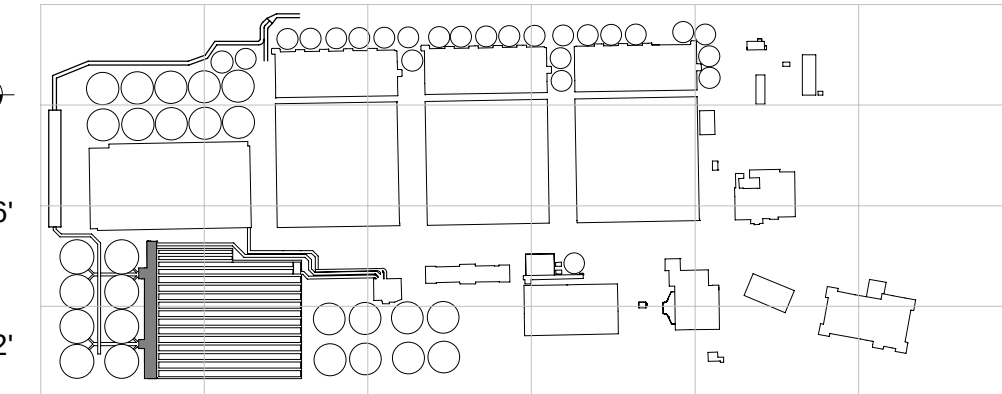
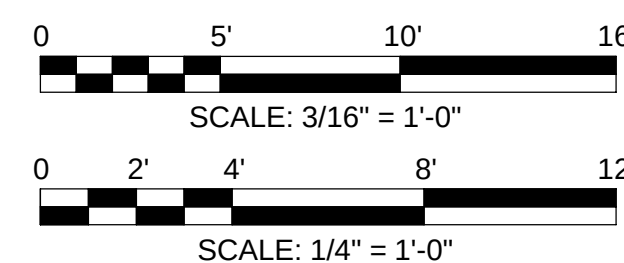


KEYNOTES:

- FST 1 FCV 1A THRU FST 8 FCV 8A AND FST 1 FCV 1B THRU FST 8 FCV 8B.
- DIFFUSER MANUFACTURER TO PROVIDE REDUCER IF DIFFUSER DROP IS A DIFFERENT PIPE DIAMETER THAN AIR DROP (LPA) INDICATED ON DRAWINGS PER SECTION 11902.

NOTES:

- SEE SHEET P-018 FOR SLIDE GATE SCHEDULE.



OVERALL KEYPLAN

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO



PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by:	Checked by:
WW/FR	RK
Drawn by:	Reviewed by:
AT	BK
Date:	Scale:
7/1/2025	As indicated

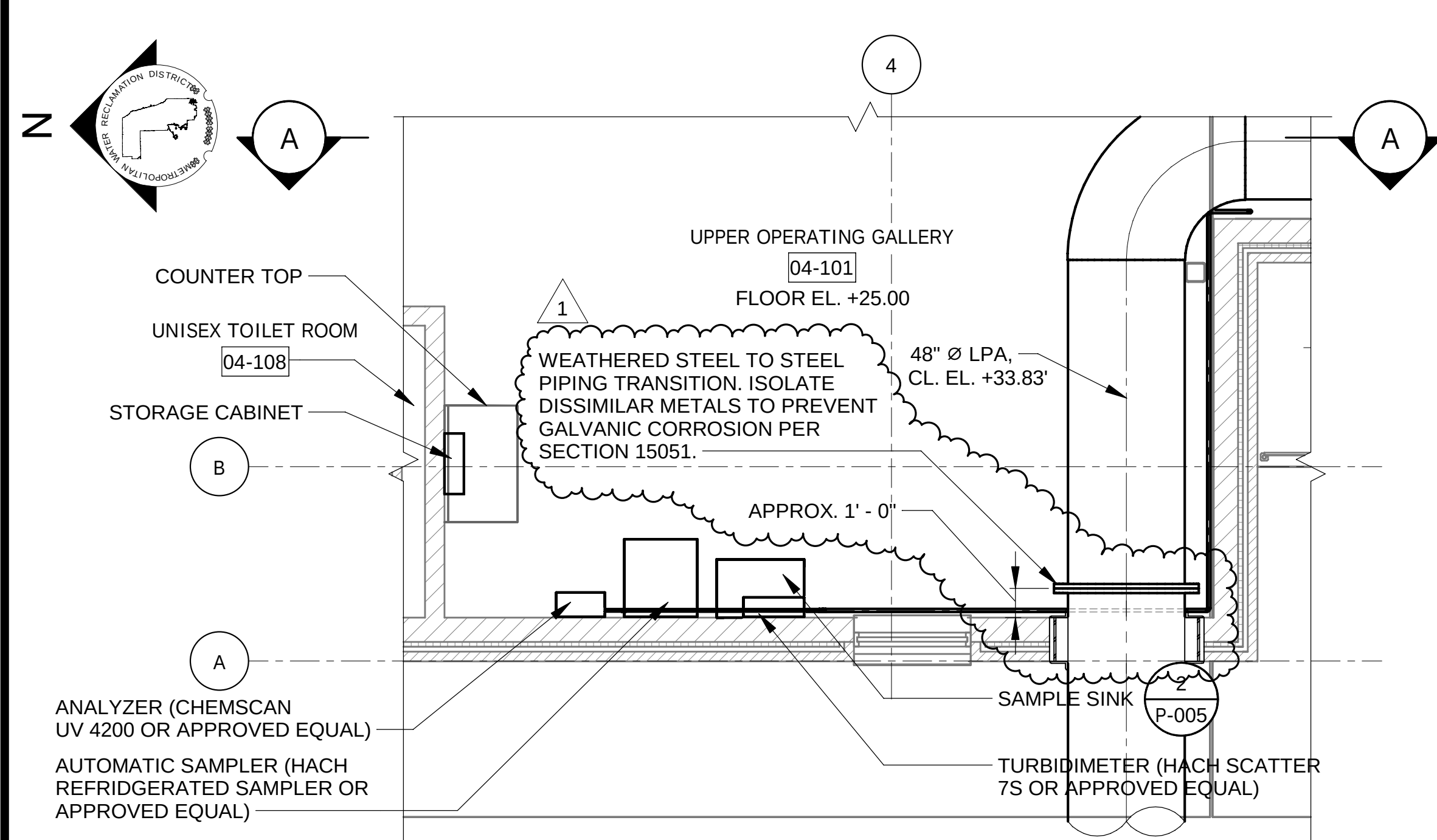
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY - SECTIONS

Sheet Number:

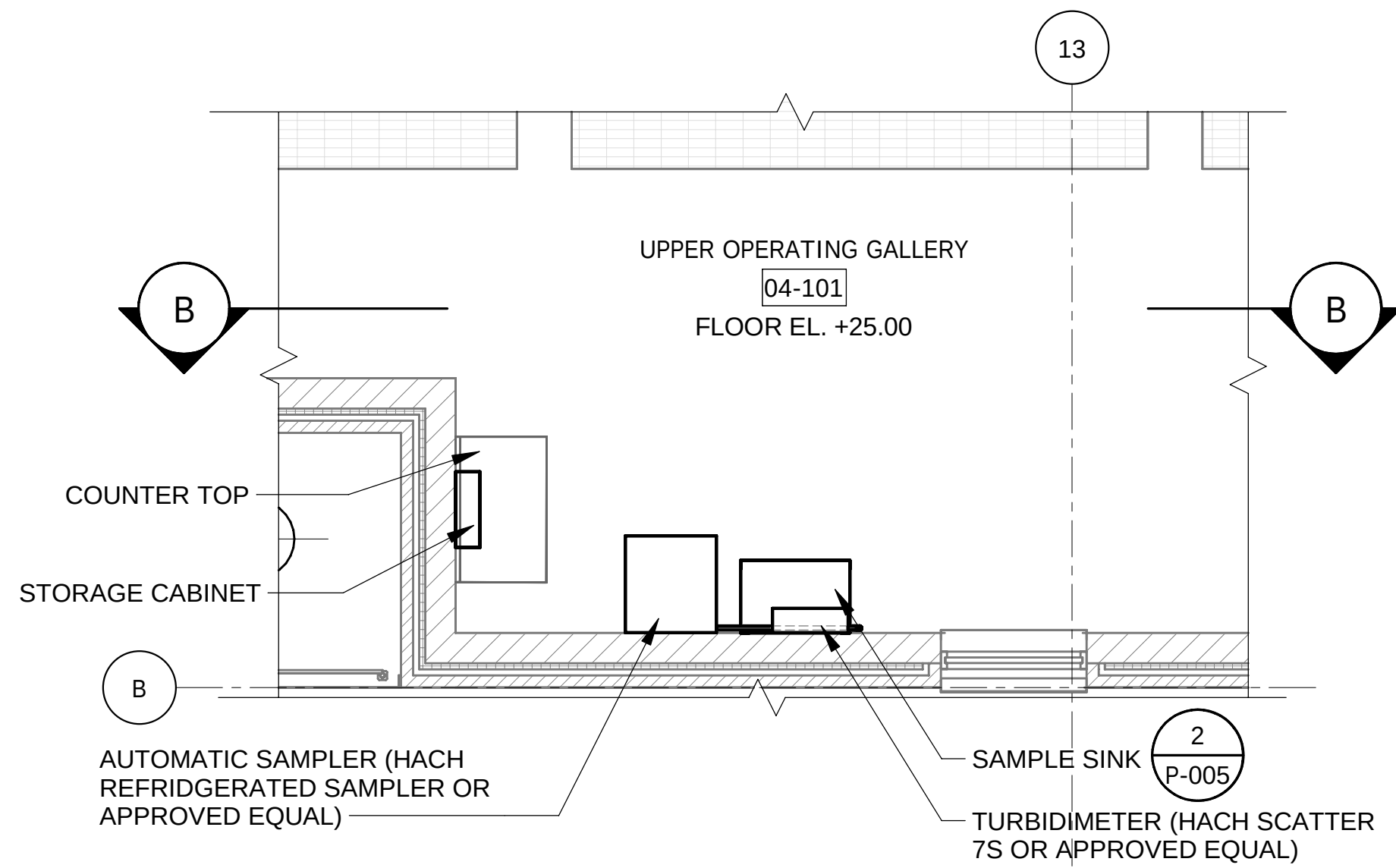
P-404

Page Number: 298

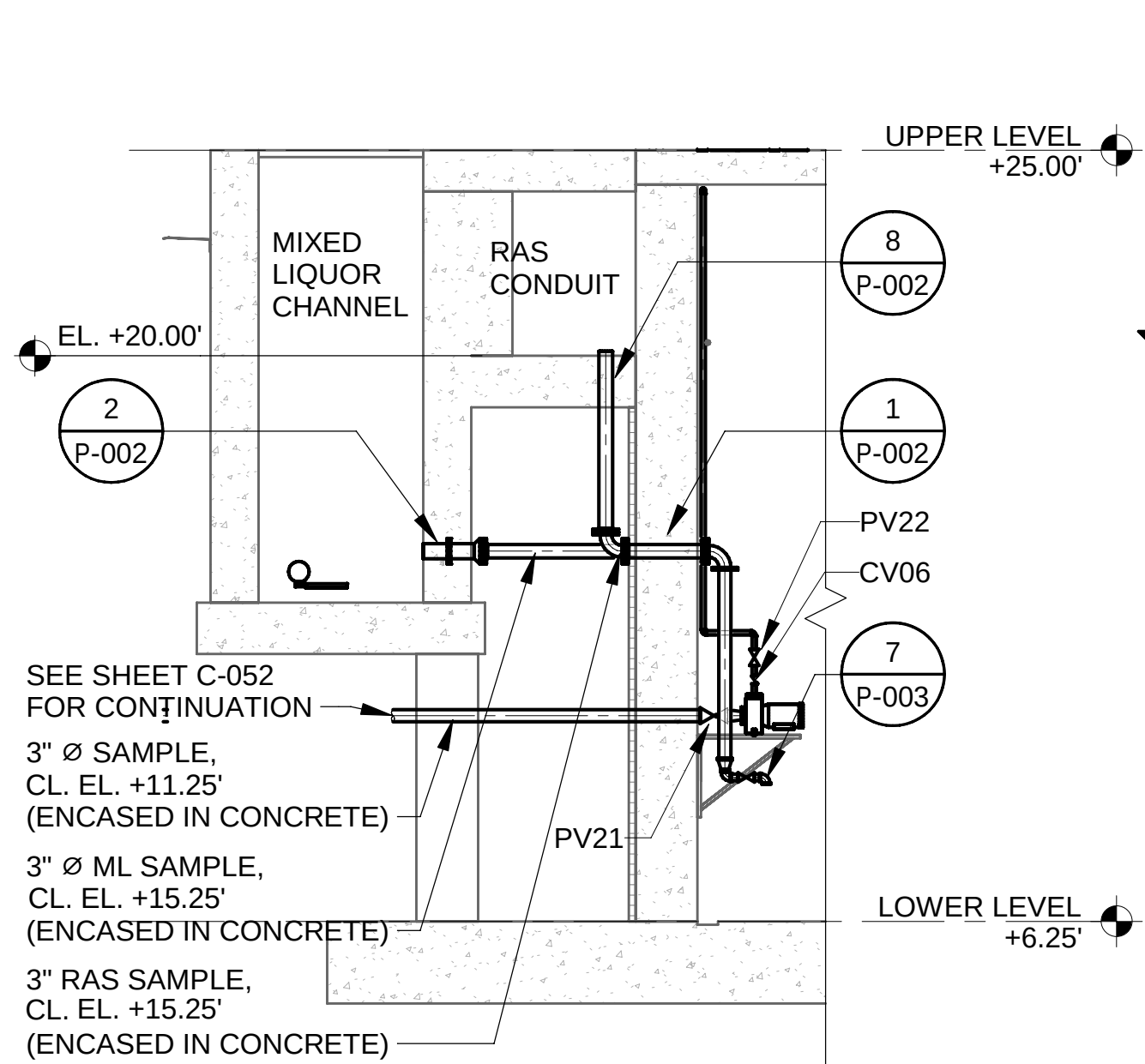




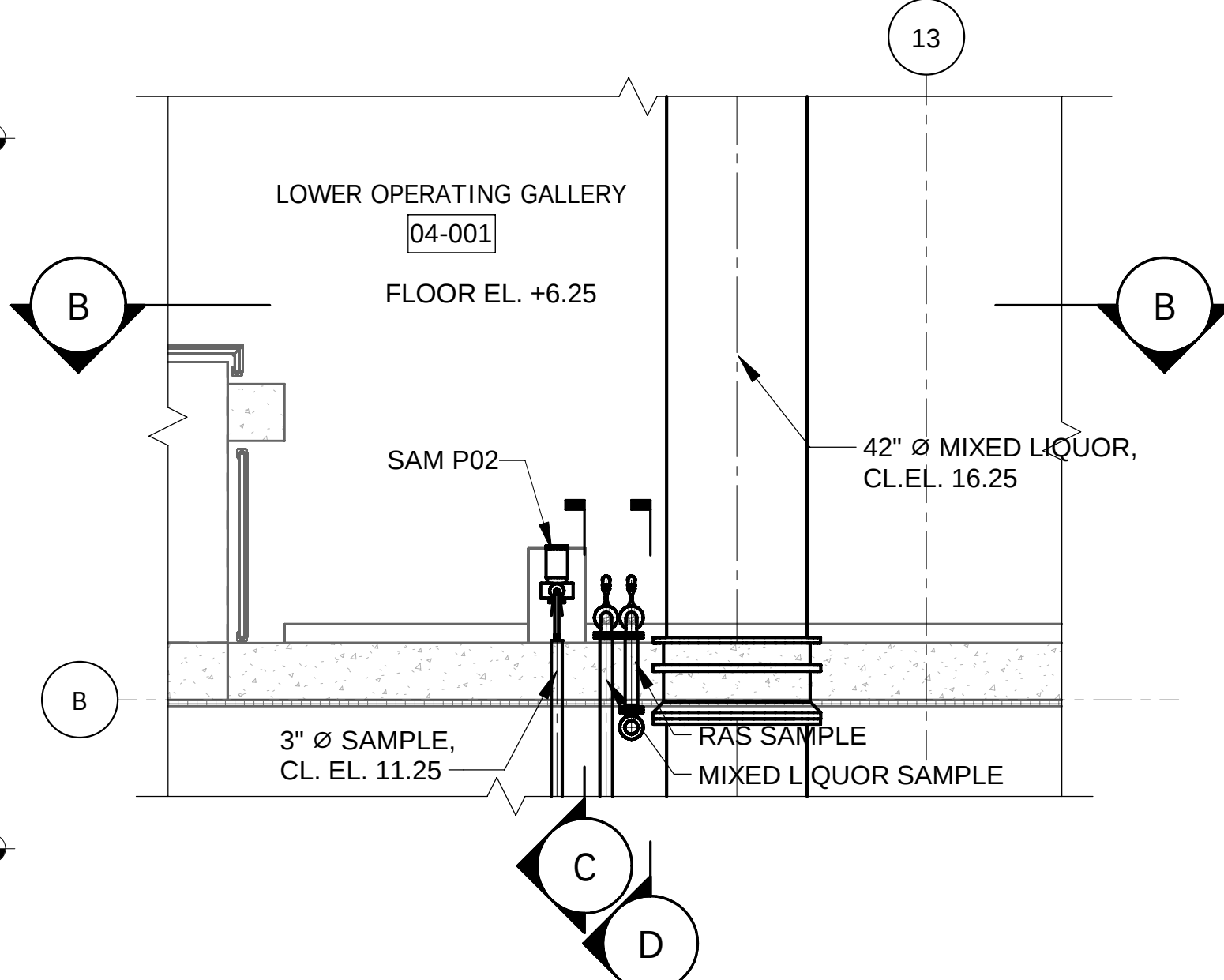
1 UPPER GALLERY - ENLARGED PLAN (NORTH) - SAMPLING EQUIPMENT 01
P-401 SCALE: 1/4" = 1'-0"
P-402



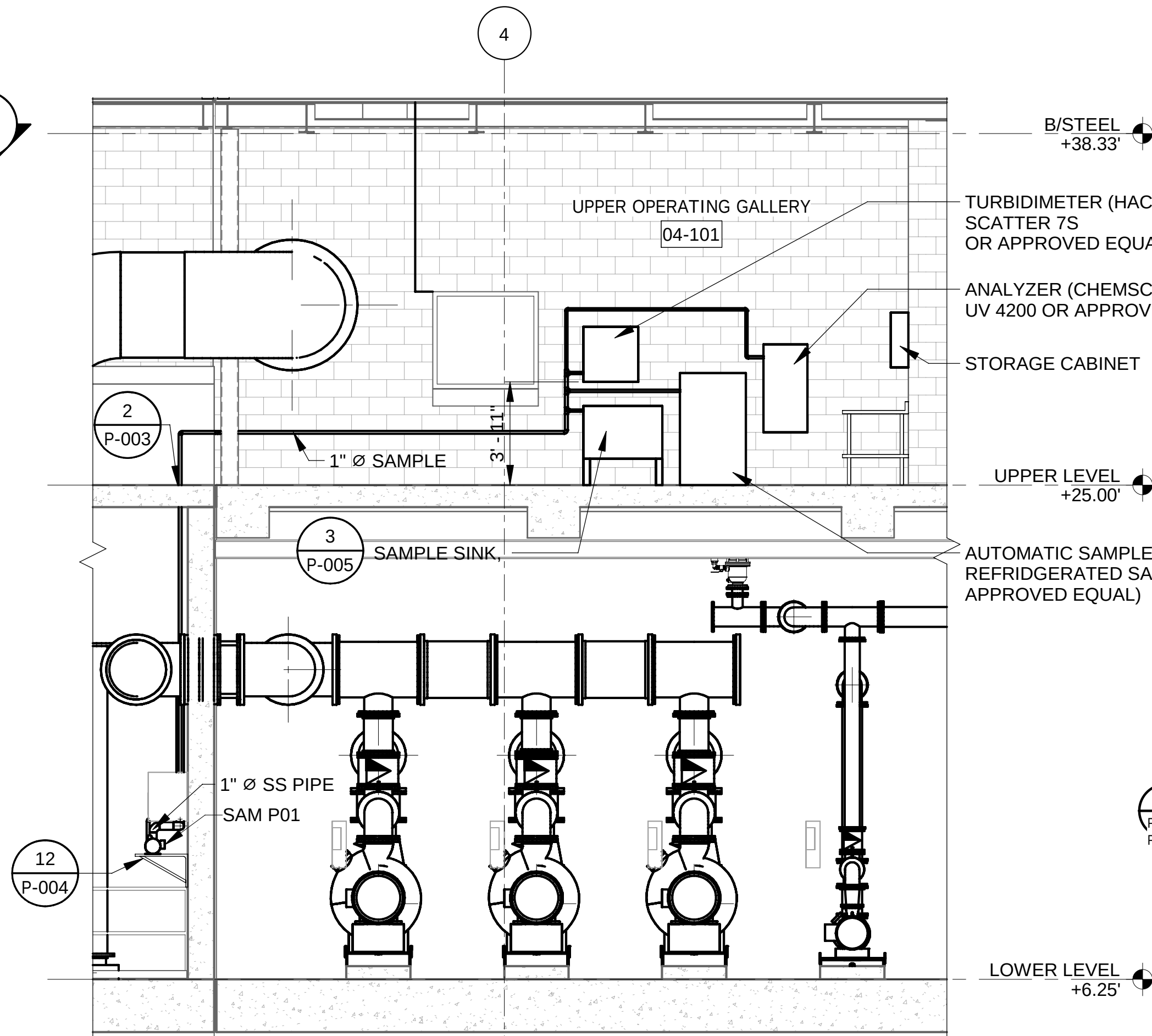
2 UPPER GALLERY - ENLARGED PLAN (SOUTH) - SAMPLING EQUIPMENT 02
P-401 SCALE: 1/4" = 1'-0"
P-402



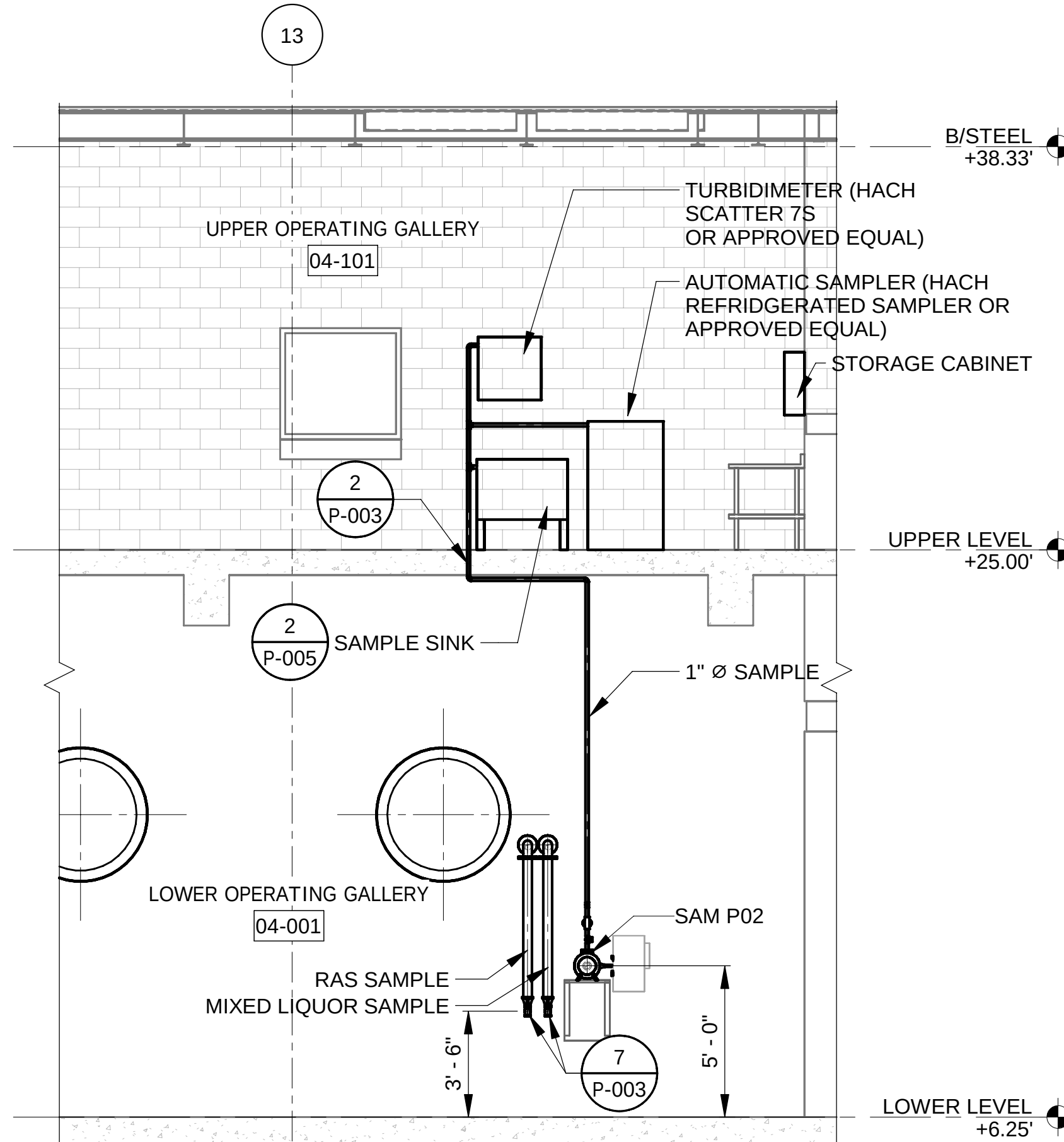
D D RAS / MIXED LIQUOR SAMPLE
SCALE: 1/4" = 1'-0"



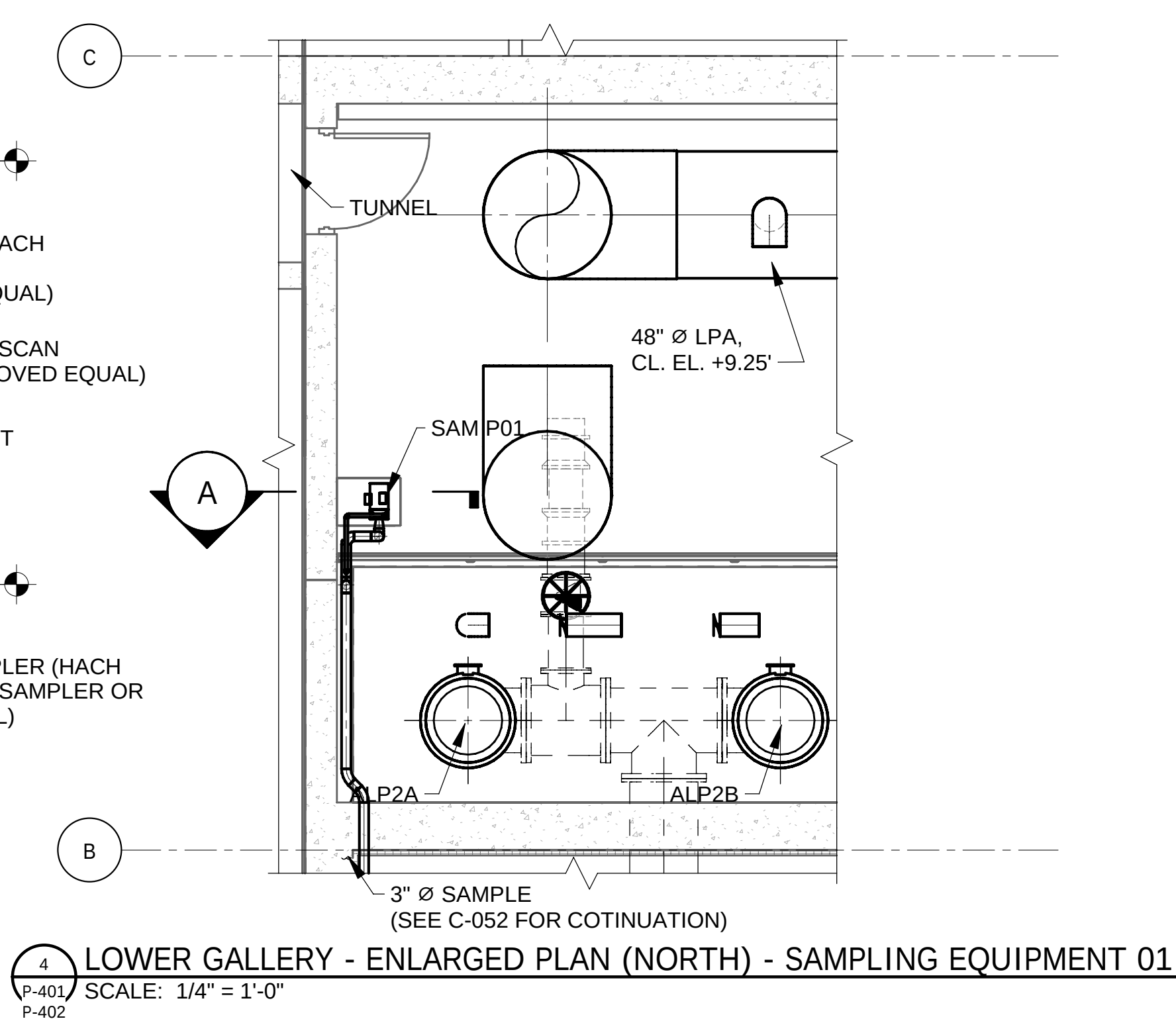
3 LOWER GALLERY - ENLARGED PLAN - SAMPLING EQUIPMENT 02
P-401 SCALE: 1/4" = 1'-0"
P-402



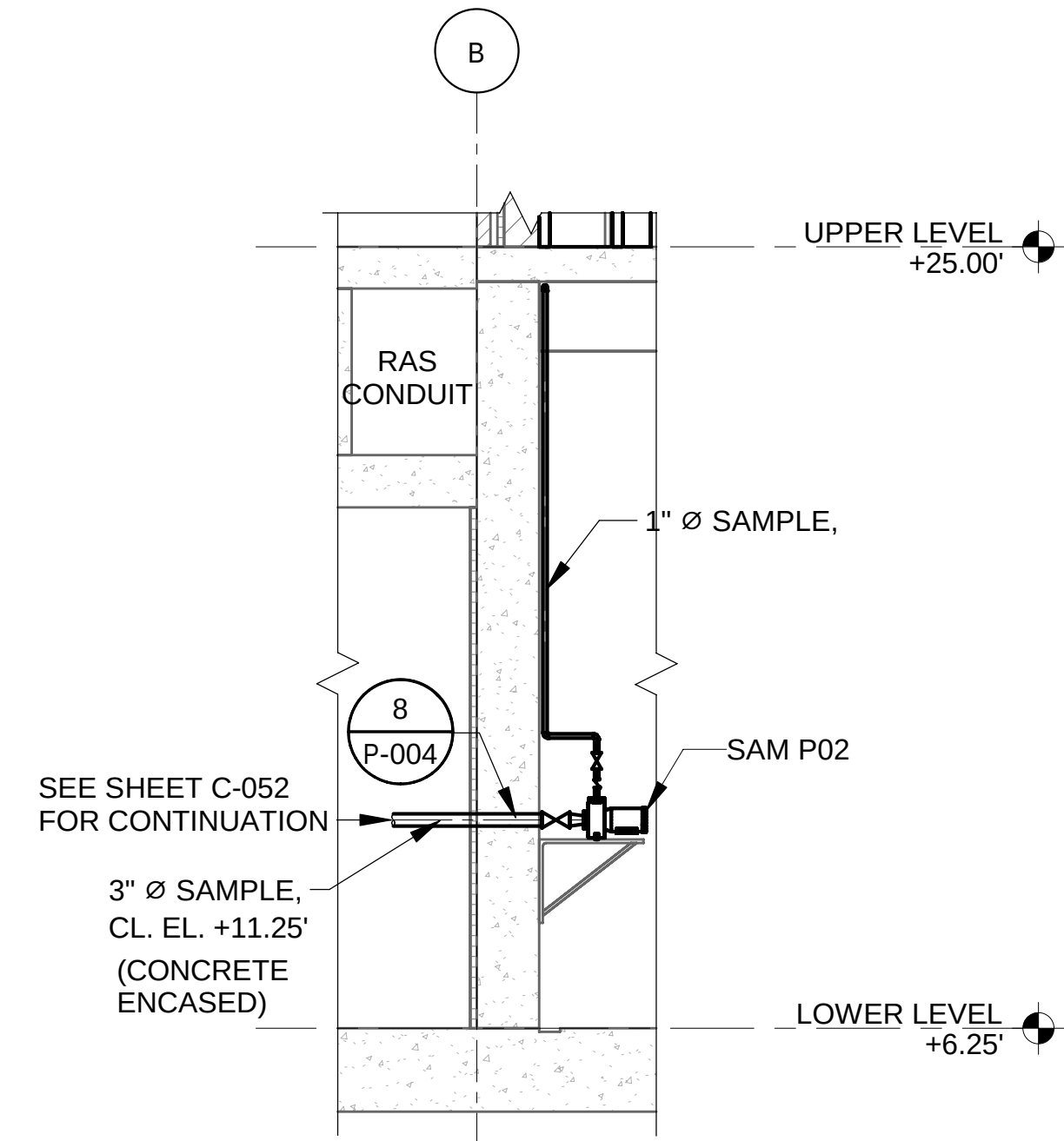
A SECTION - SAMPLING EQUIPMENT 01
SCALE: 1/4" = 1'-0"



B SAMPLING EQUIPMENT 02
SCALE: 1/4" = 1'-0"



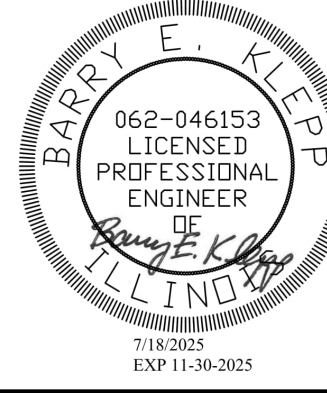
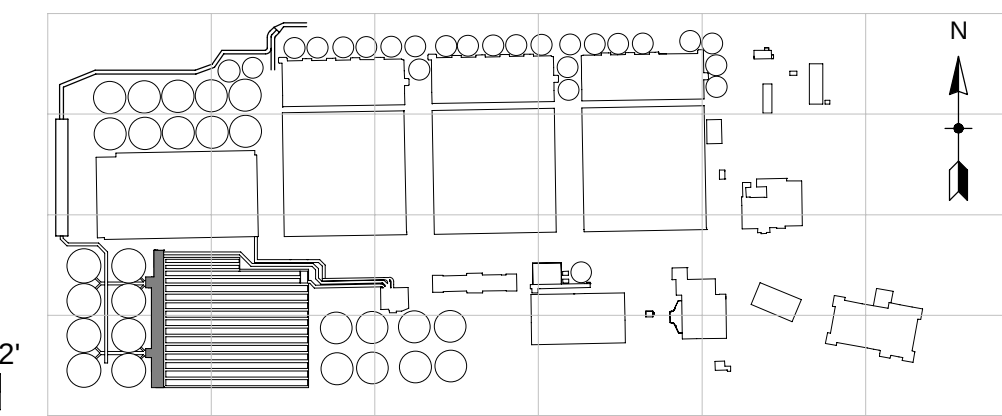
4 LOWER GALLERY - ENLARGED PLAN (NORTH) - SAMPLING EQUIPMENT 01
P-401 SCALE: 1/4" = 1'-0"
P-402



C SAMPLE EQUIPMENT 02 SECTION
SCALE: 1/4" = 1'-0"

NOTES:

1. FIELD ROUTE ALL SAMPLING PIPING. SAMPLING PIPING SHALL BE INSTALLED ALONG THE WALL AND AT LEAST 7-FT ABOVE THE FLOOR. CONTRACTOR SHALL SUBMIT A SHOP DRAWING OF SAMPLING PIPING ROUTE FOR APPROVAL.
2. SEE DETAIL 13 ON P-004 FOR SAMPLE PUMP PIPING SCHEMATIC.



Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO



PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

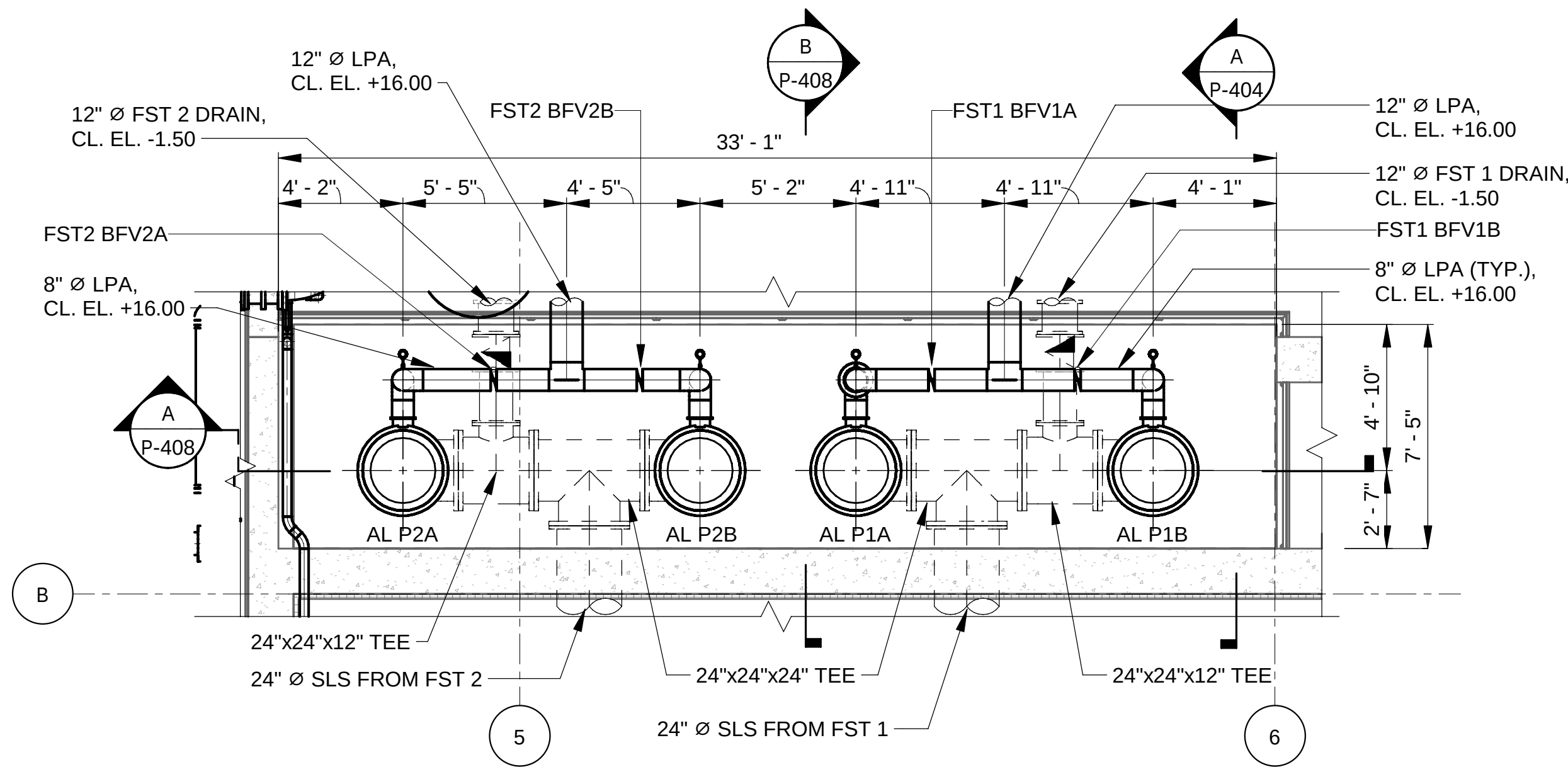
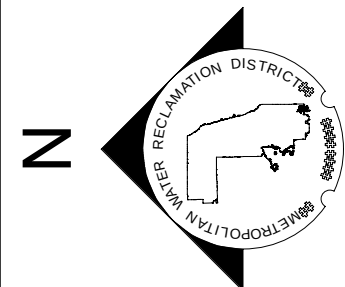
Designed by:	Checked by:
WW/FR	RK
Drawn by:	Reviewed by:
AT	BK
Date:	Scale:
7/1/2025	1/4" = 1'-0"

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY
SAMPLE EQUIPMENT - PLAN AND SECTION

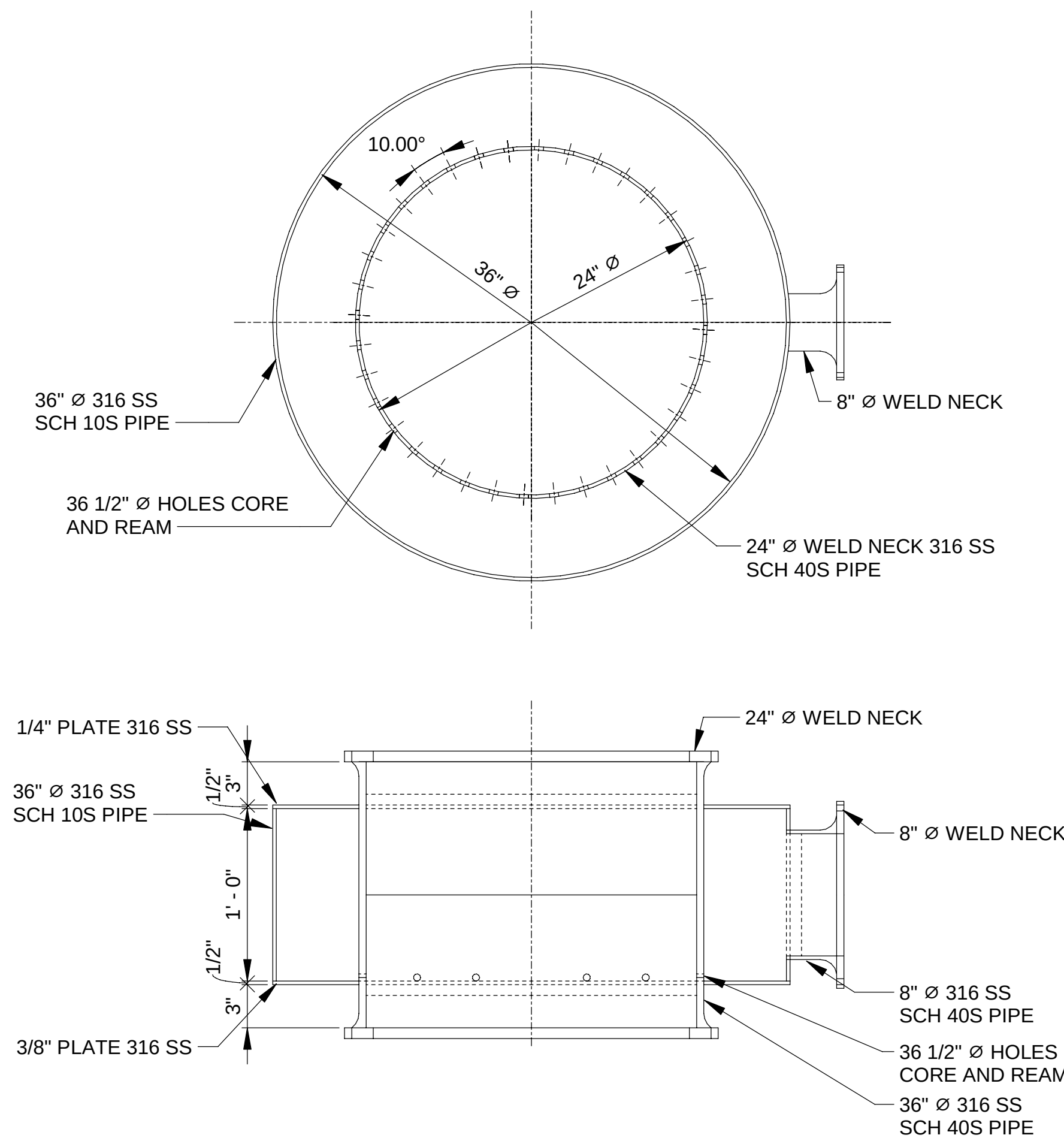
Sheet Number:

P-407

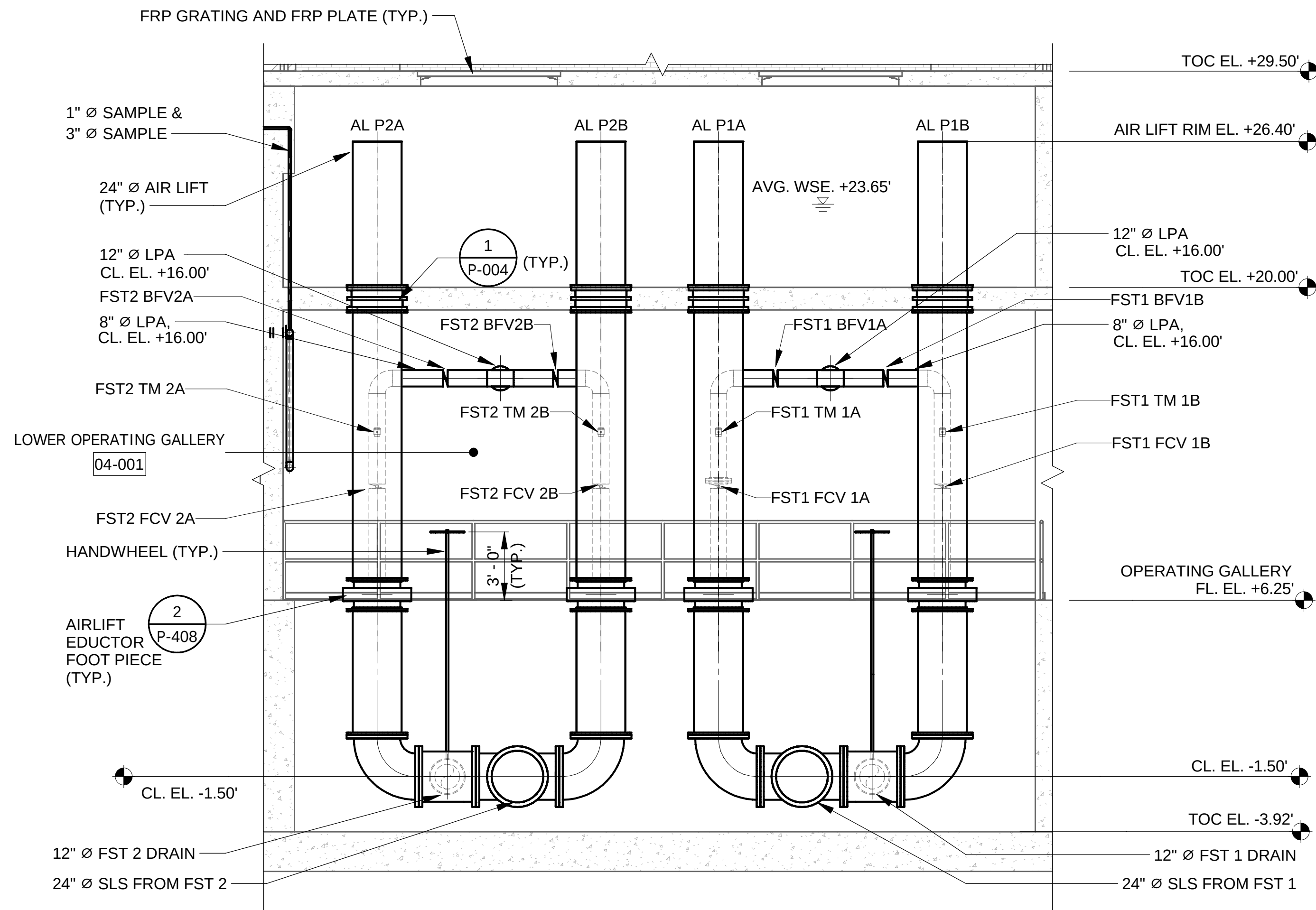
Page Number: 301



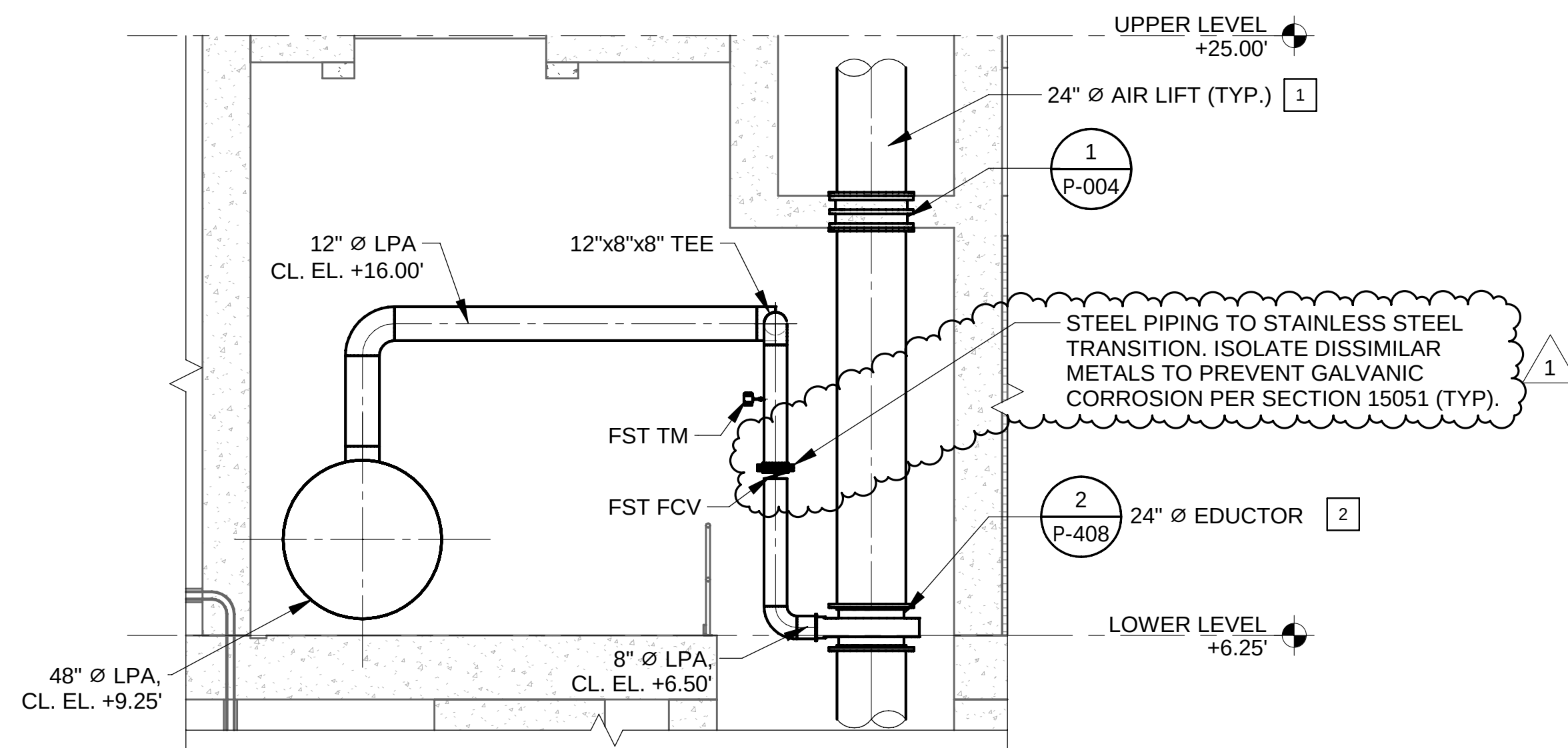
1 SLUDGE BOX 01 - ENLARGED PLAN
SCALE: 1/4" = 1'-0"



2 AIRLIFT EDUCTOR FOOT PIECE
SCALE: 1 1/2" = 1'-0"



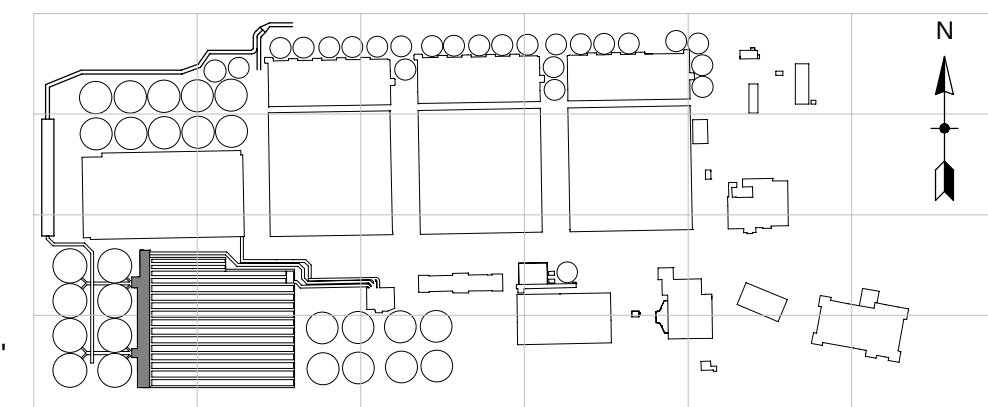
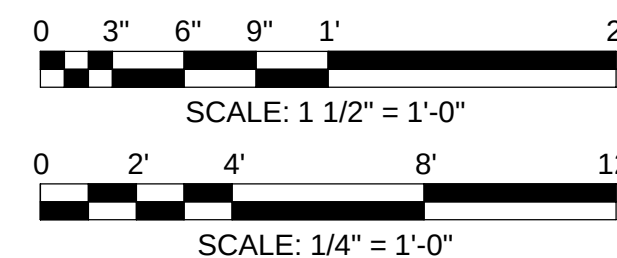
A SLUDGE BOX-01
SCALE: 1/4" = 1'-0"



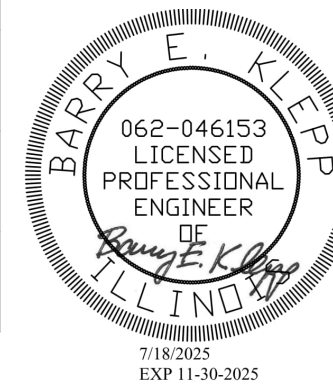
B AIR MAIN CONNECTION
SCALE: 1/4" = 1'-0"

KEYNOTES:

- CONTRACTOR SHALL PROVIDE SUPPORT OF AIR LIFT PER SECTION 11219.
- MANUFACTURER MUST PROVIDE A 24 INCH DIAMETER MINIMUM EDUCTOR.



OVERALL KEYPLAN



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

Designed by:	Checked by:
WWJFK	RK
Drawn by:	Reviewed by:
AT	BK
Date:	Scale:
7/1/2025	As indicated

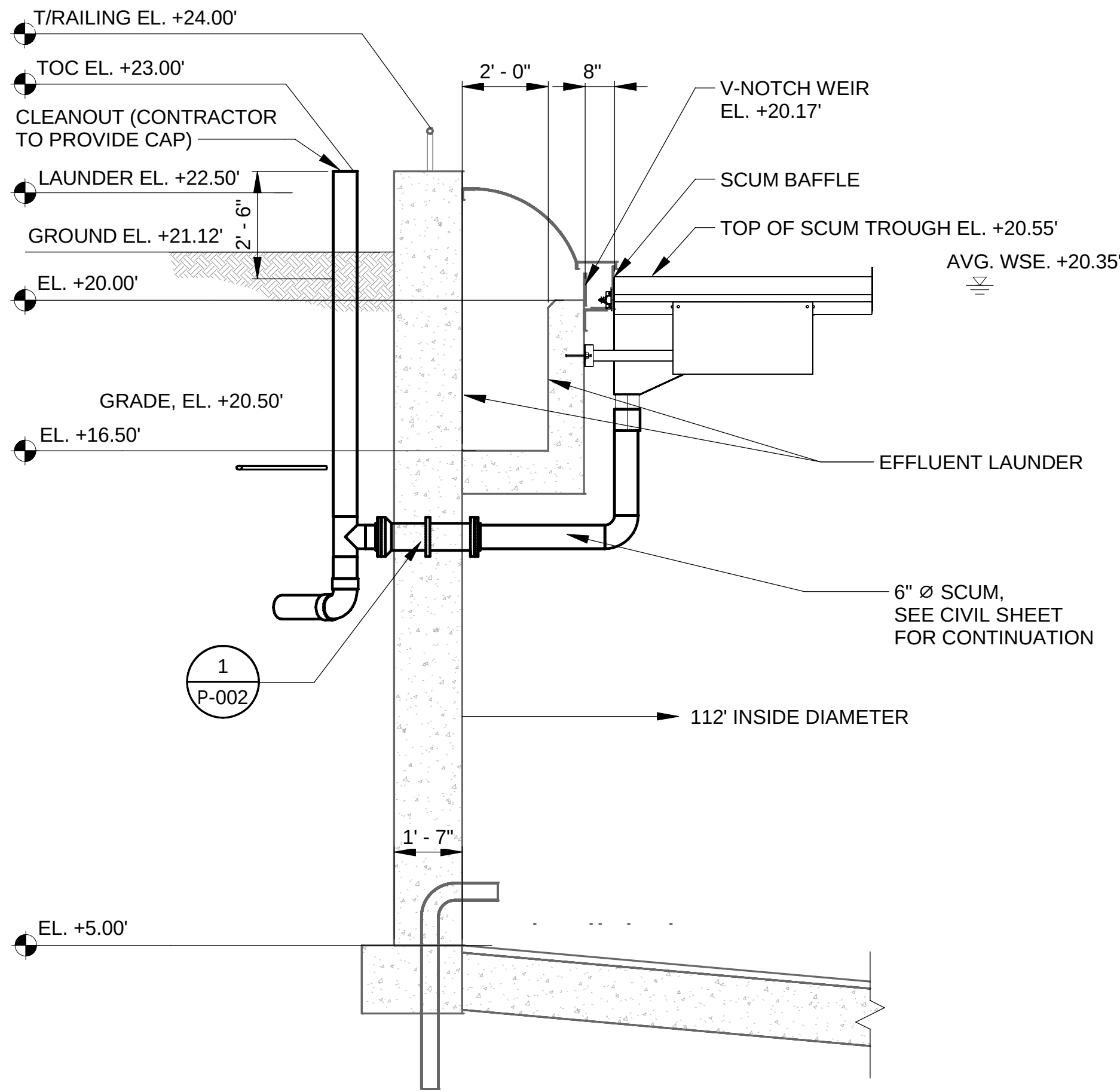
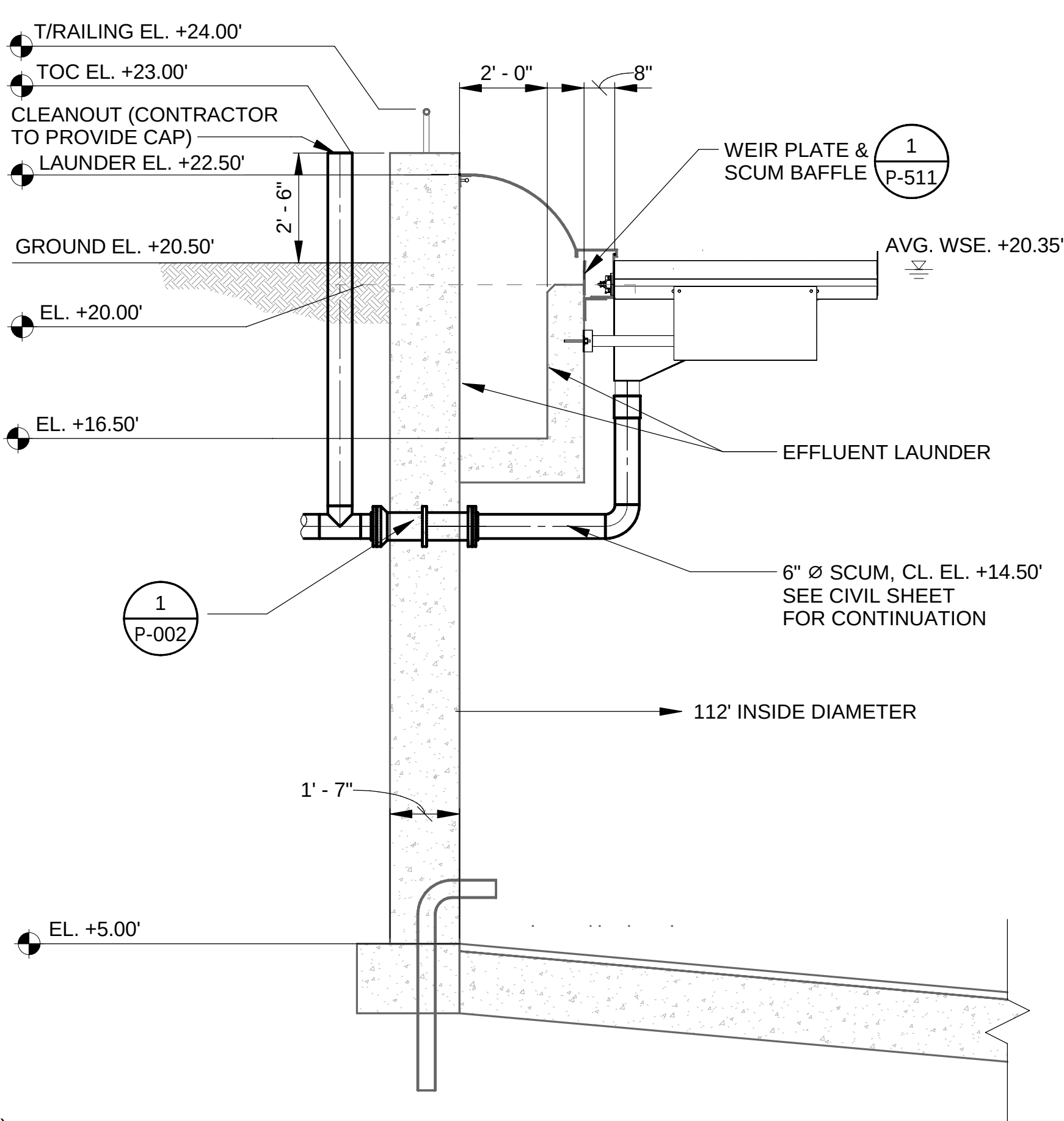
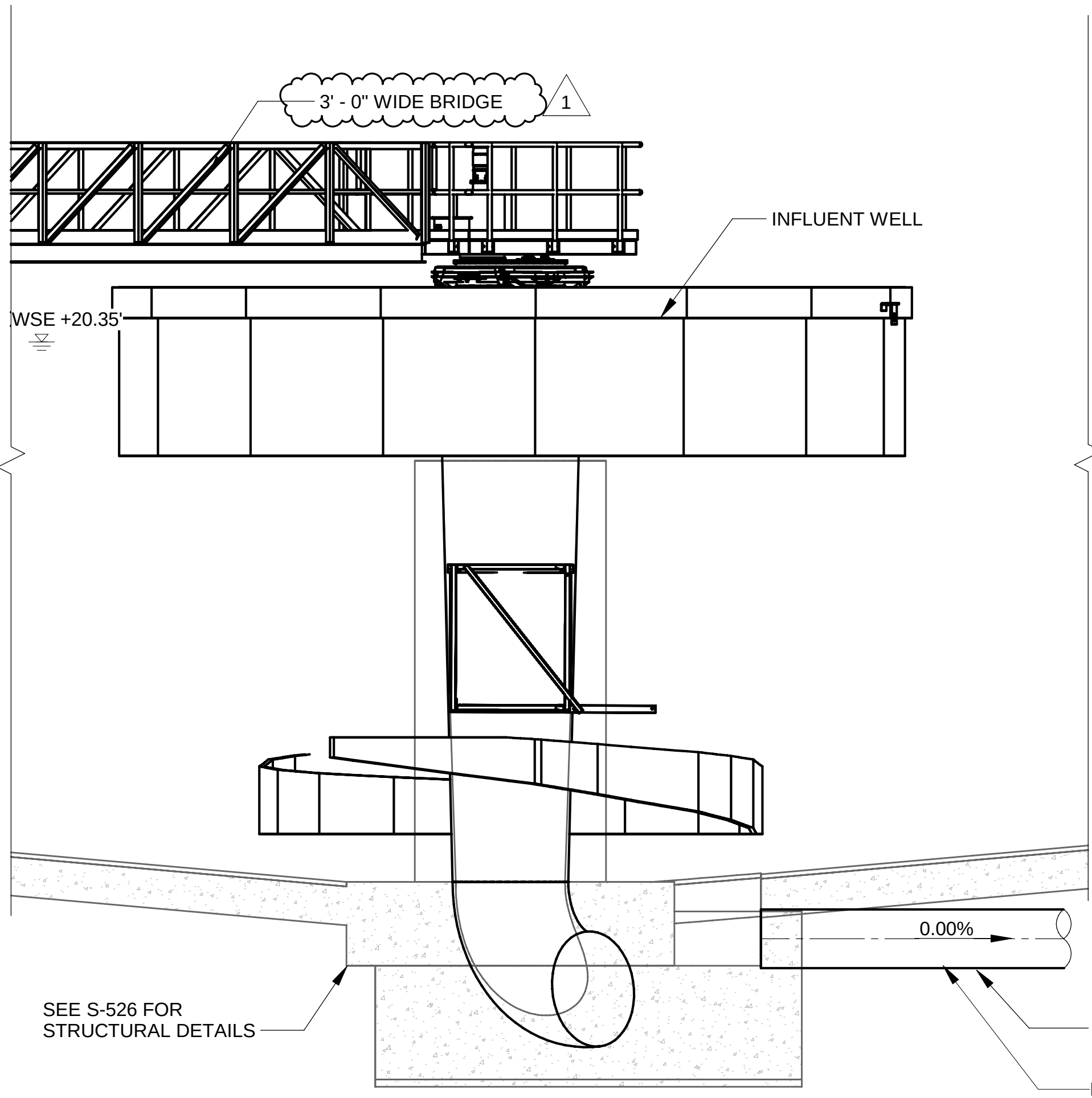
AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY
SLUDGE BOX - 01 - PLAN AND SECTION

Sheet Number:

P-408

Page Number: 302



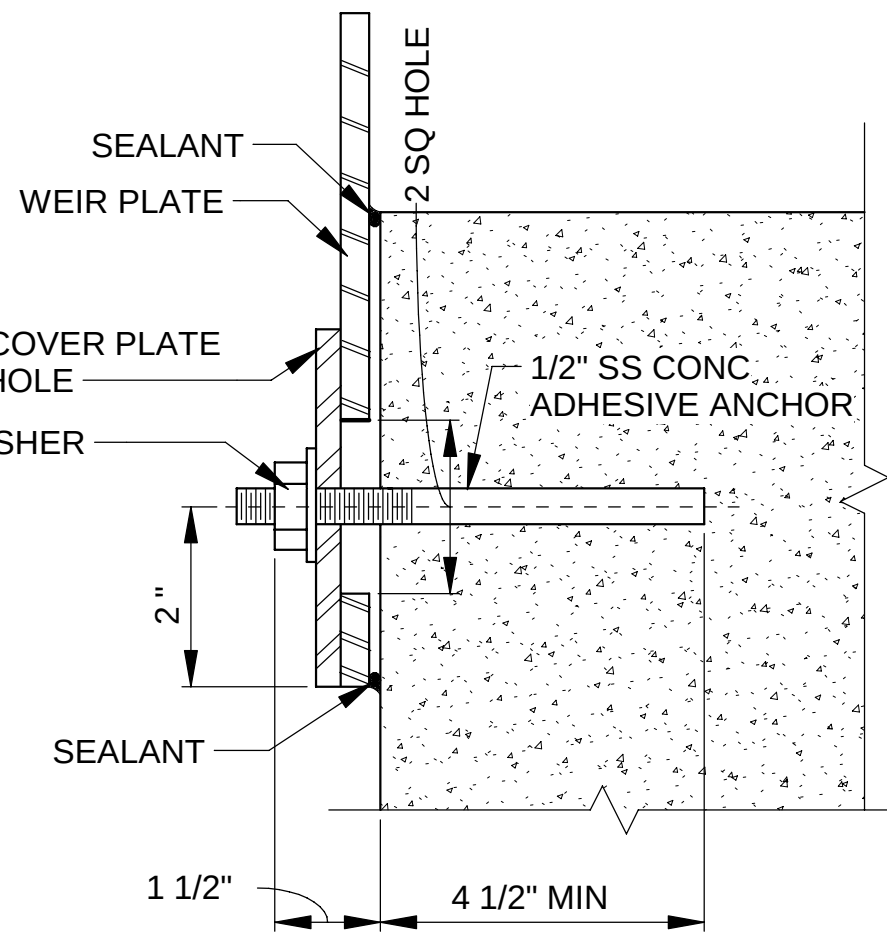
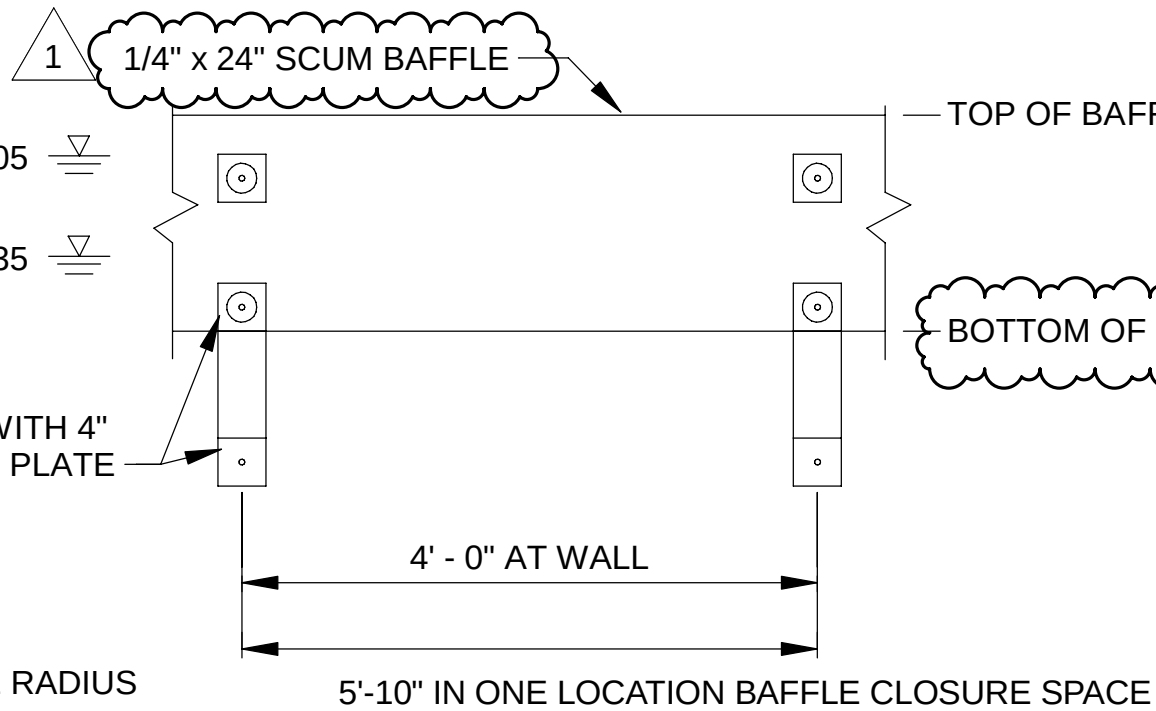
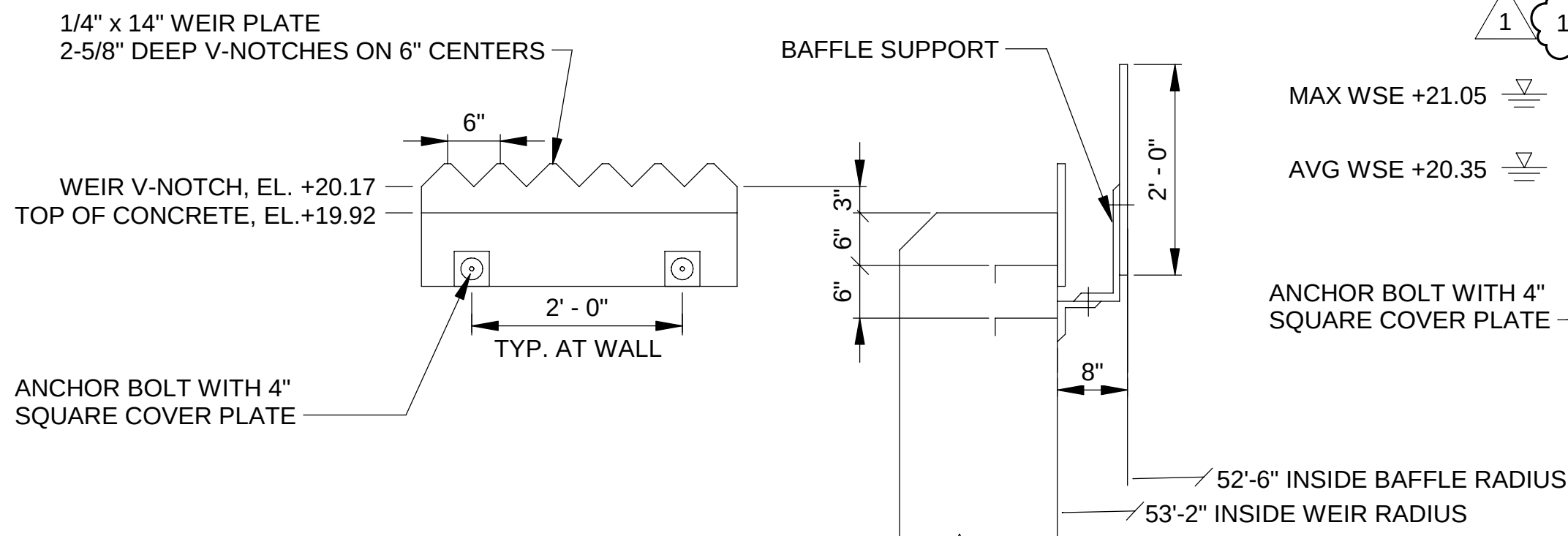
NOTE:

1. DETAIL MAY VARY BASED ON THE SELECTED MANUFACTURER.

A SLS PIPE
P-502 / SCALE: 1/4" = 1'-0"
THRU
P-509

B SCUM TROUGH FOR FSTs 1 TO 4
P-502 / SCALE: 3/8" = 1'-0"
THRU
P-505

C SCUM TROUGH FOR FSTs 5 TO 8
P-506 / SCALE: 3/8" = 1'-0"
THRU
P-509

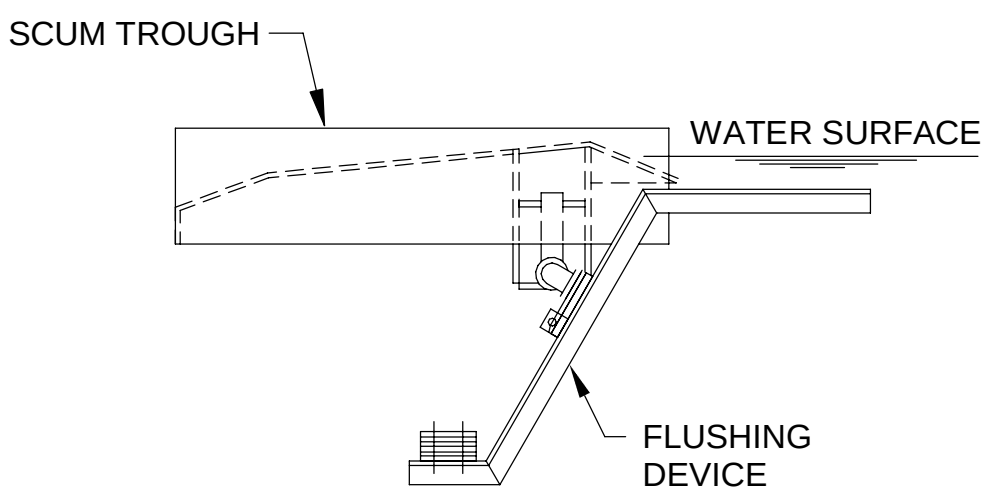
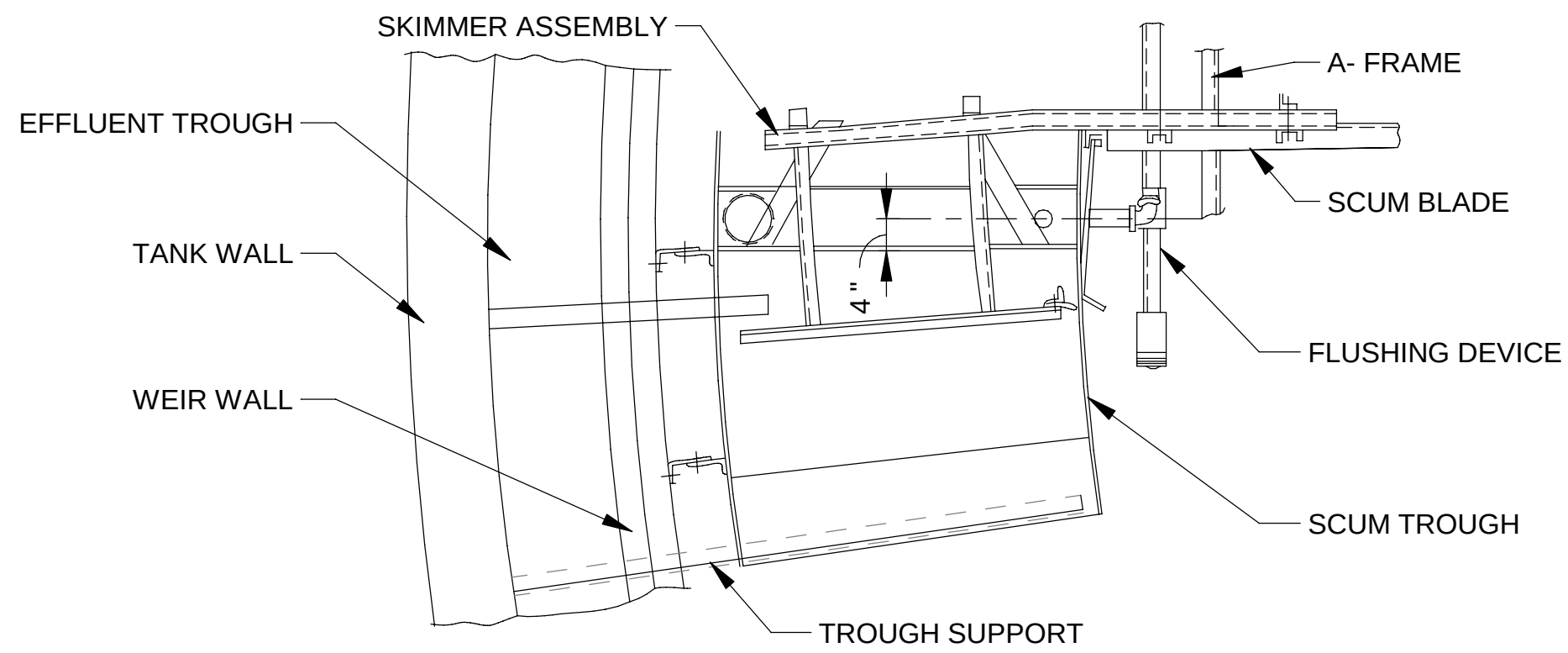


WEIR PLATE

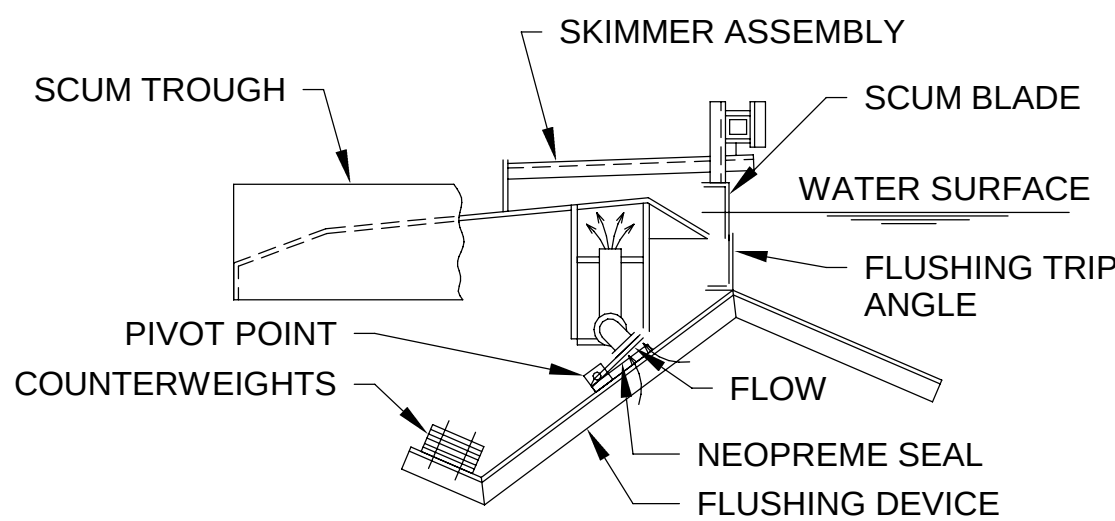
SCUM BAFFLE

1 WEIR PLATE AND SCUM BAFFLE DETAIL
NOT TO SCALE

ANCHOR BOLT



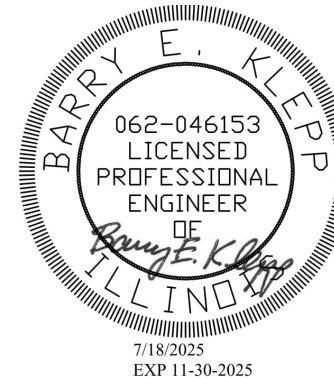
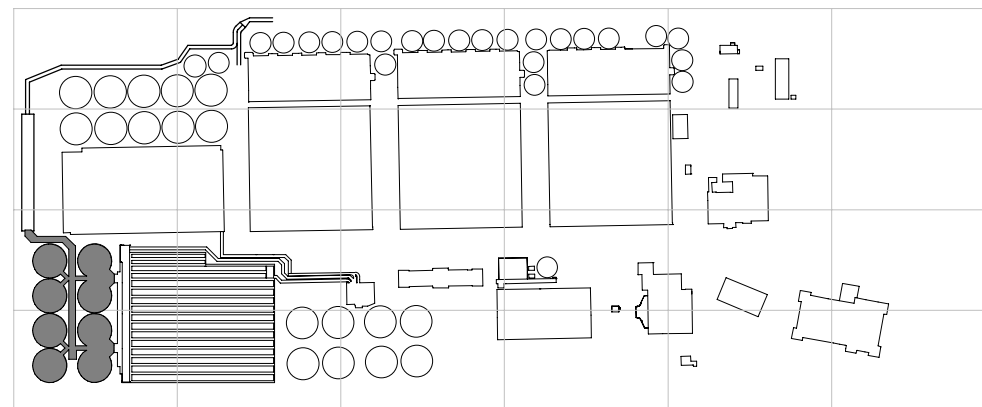
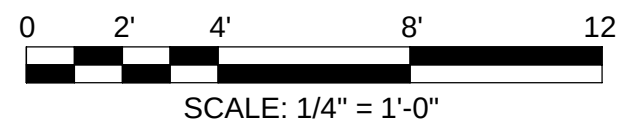
FLUSHING-CLOSED POSITION



FLUSHING ACTIVATED BY SCUM BLADE

NOTES:

1. PROVIDE AUTO FLUSH VALVE ASSEMBLY PER SECTION 11341. FINAL LAYOUT IS DETERMINED BY THE SELECTED MANUFACTURER.
2. FINAL SCUM BAFFLE DETAILS AND DIMENSIONS TO BE DETERMINED BY THE SELECTED MANUFACTURER.



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by: WWJFK
Checked by: RK
Drawn by: AT
Reviewed by: BK
Date: 7/1/2025
Scale: As indicated

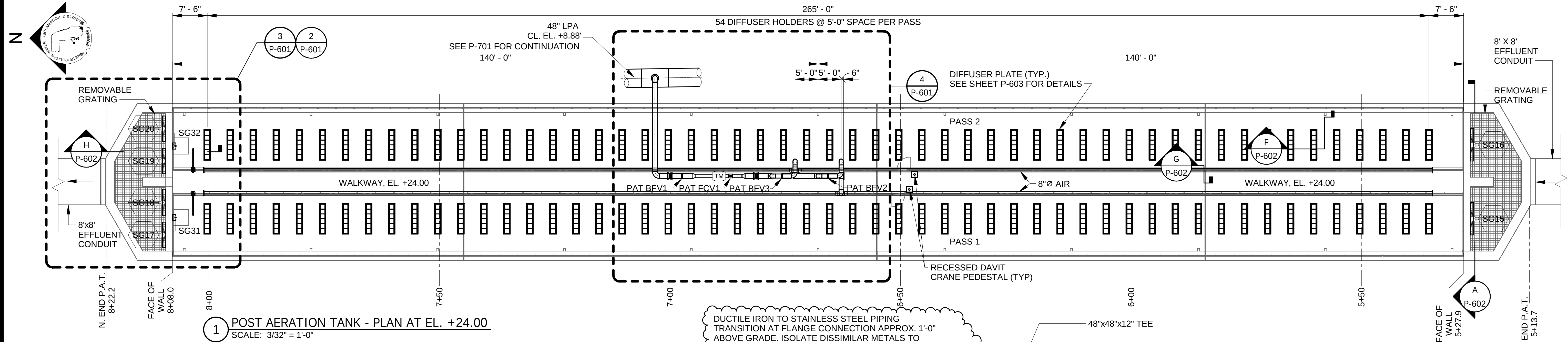
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
FINAL SETTLING TANKS & EFFLUENT CONDUIT

SECTIONS AND DETAILS

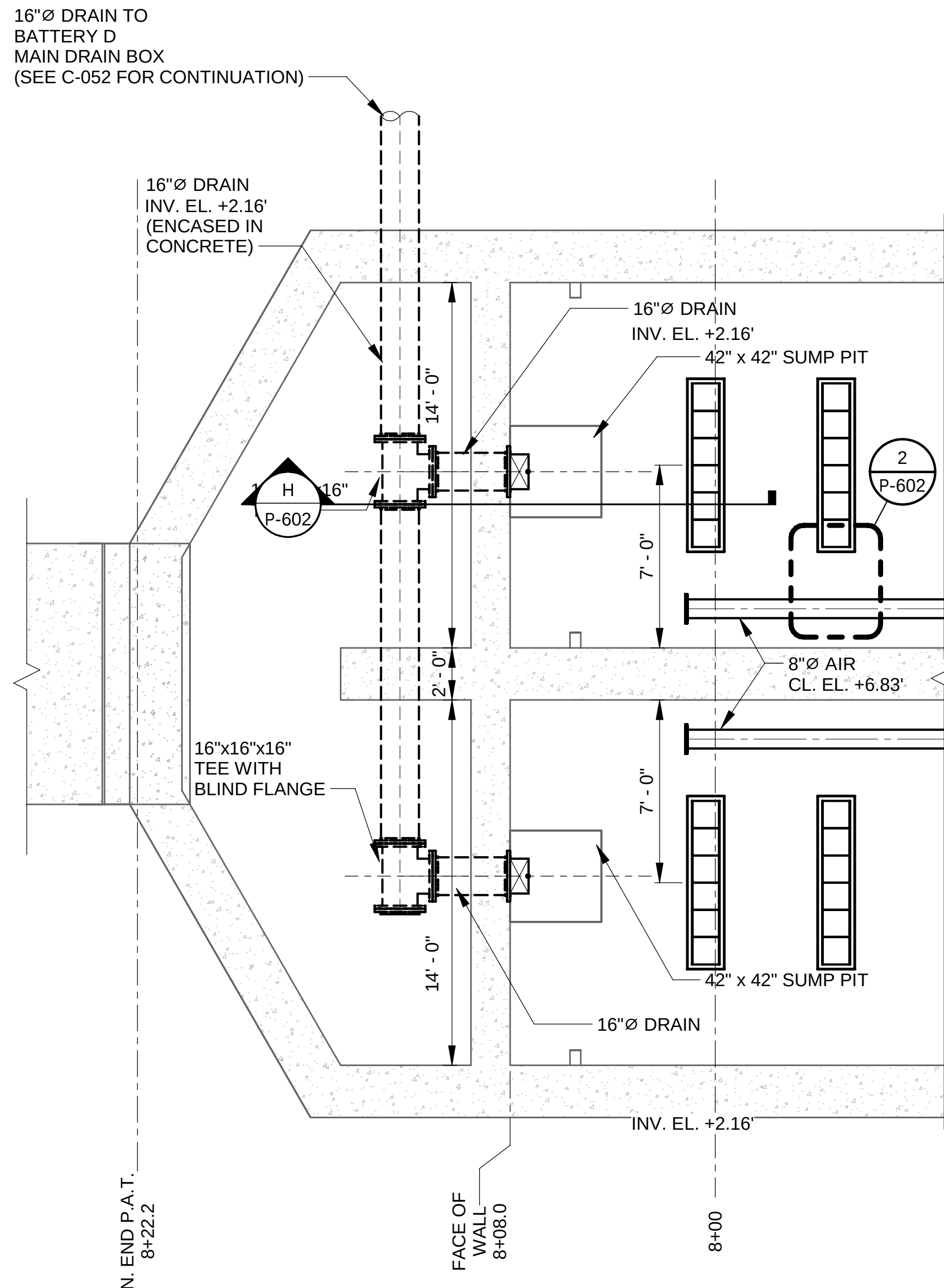
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P-511

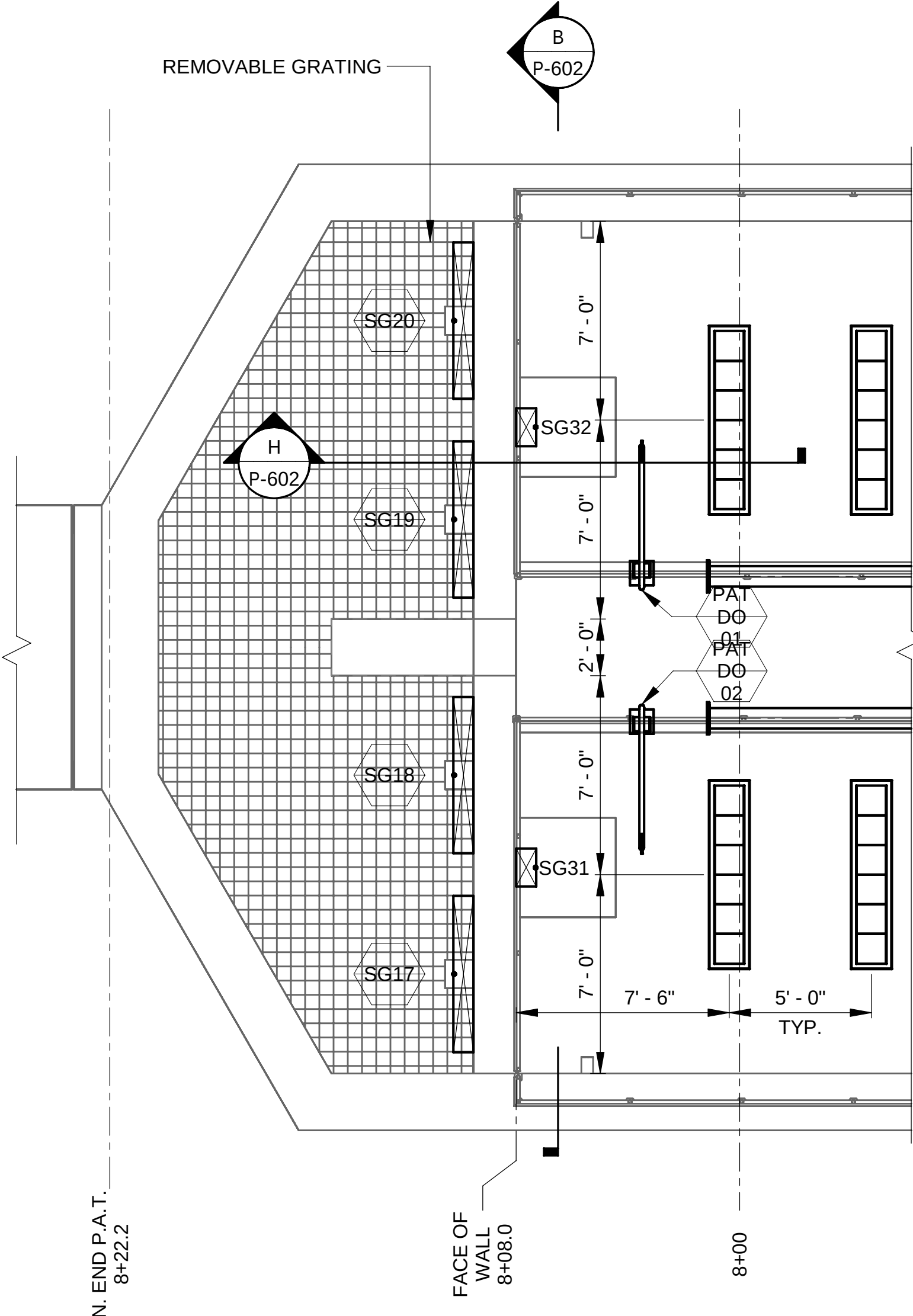
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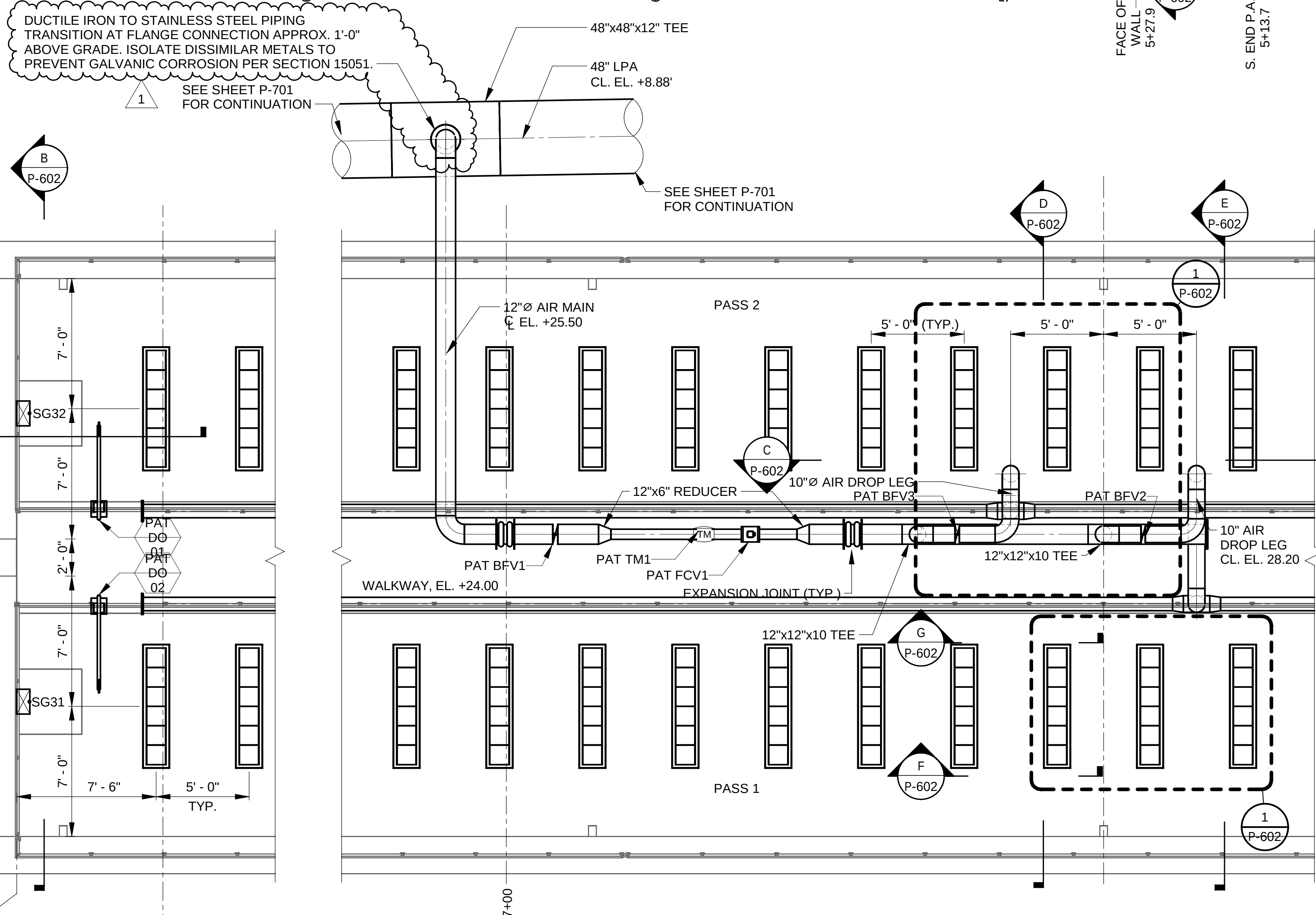
1 POST AERATION TANK - PLAN AT EL. +24.00
SCALE: 3/32" = 1'-0"



2 POST AERATION TANK - PLAN AT EL. +6.17 ENLARGED
SCALE: 1/4" = 1'-0"



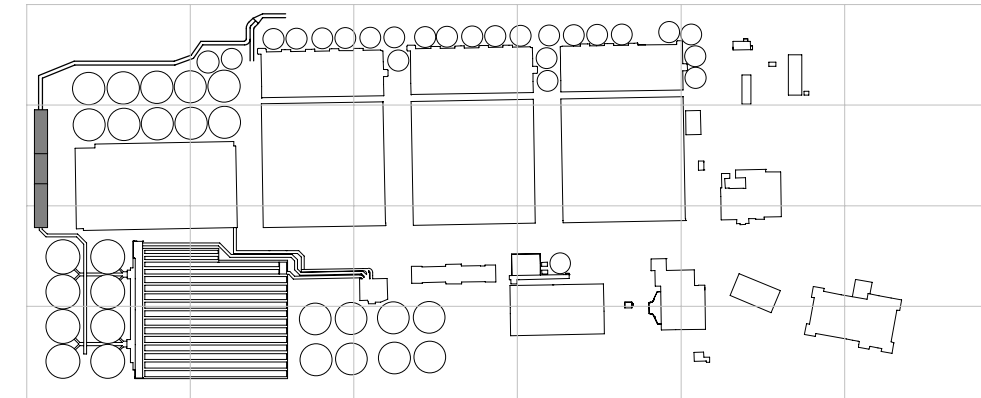
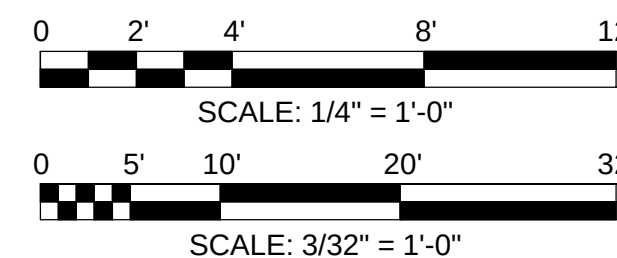
3 POST AERATION TANK - PLAN AT EL. +24.00 - ENLARGED
SCALE: 1/4" = 1'-0"



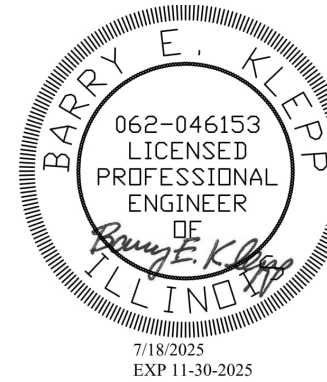
4 POST AERATION TANK - PLAN AT EL. +24.00 - ENLARGED
SCALE: 1/4" = 1'-0"

NOTES:

1. AIR MAIN SUPPORTS TO BE DELEGATED DESIGN. SEE 6/S-706 FOR DESIGN LOADINGS.



OVERALL KEYPLAN



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by: WW/FRK
Checked by: RK
Drawn by: AT
Reviewed by: BK
Date: 7/1/2025
Scale: AS SHOWN

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
POST AERATION TANK & EFFLUENT CONDUIT

PLANS

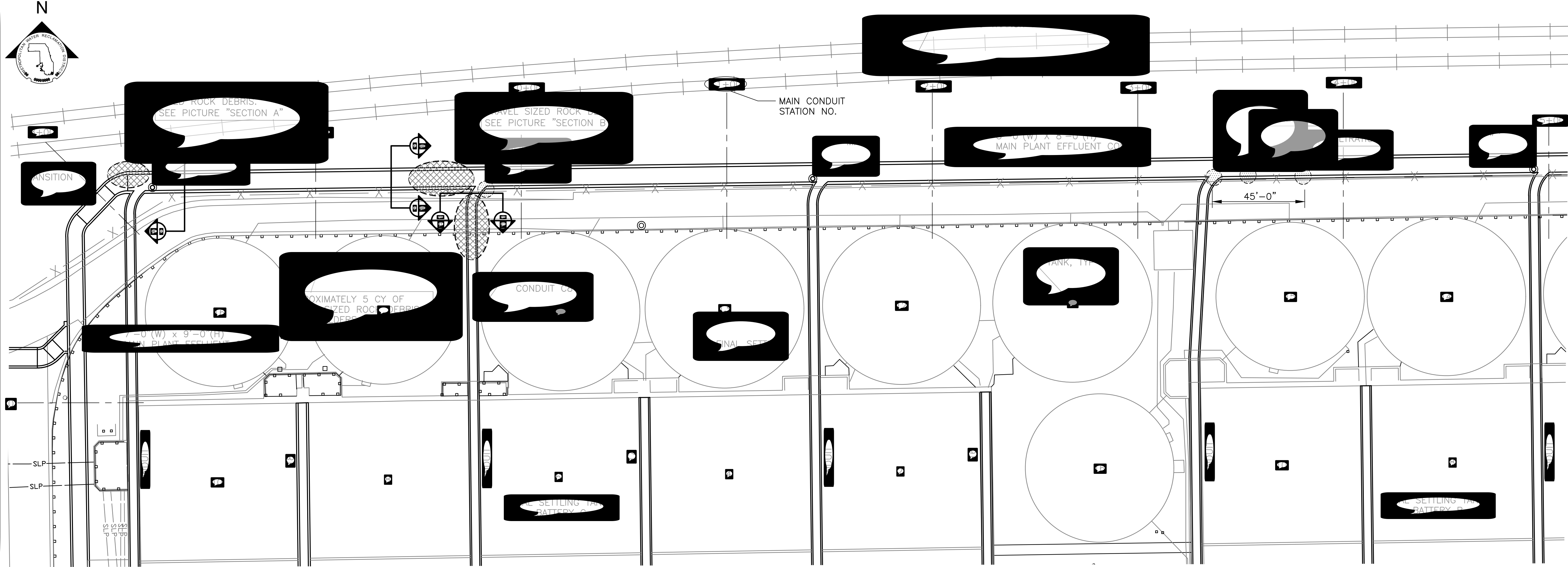
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P-601

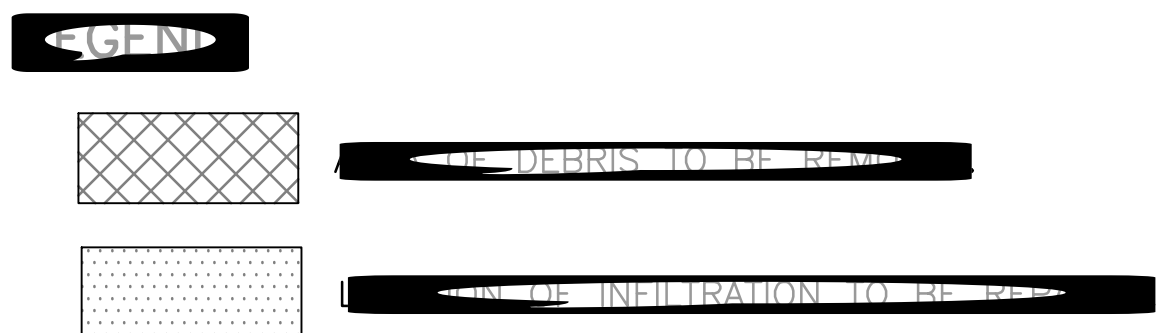
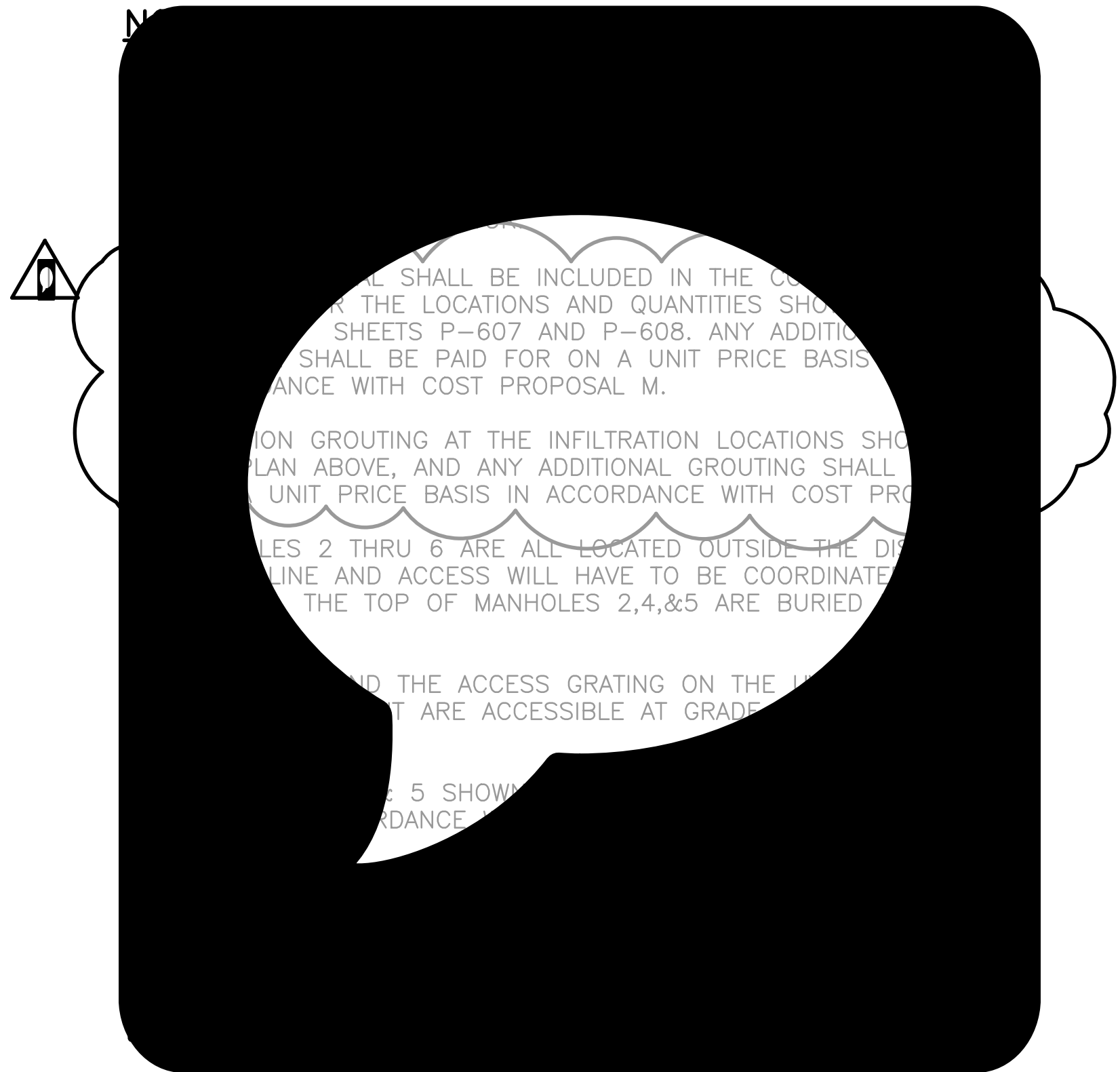
Page Number: 318

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA



1 BATTERY B & C - CONDUIT AND TUNNEL PLAN



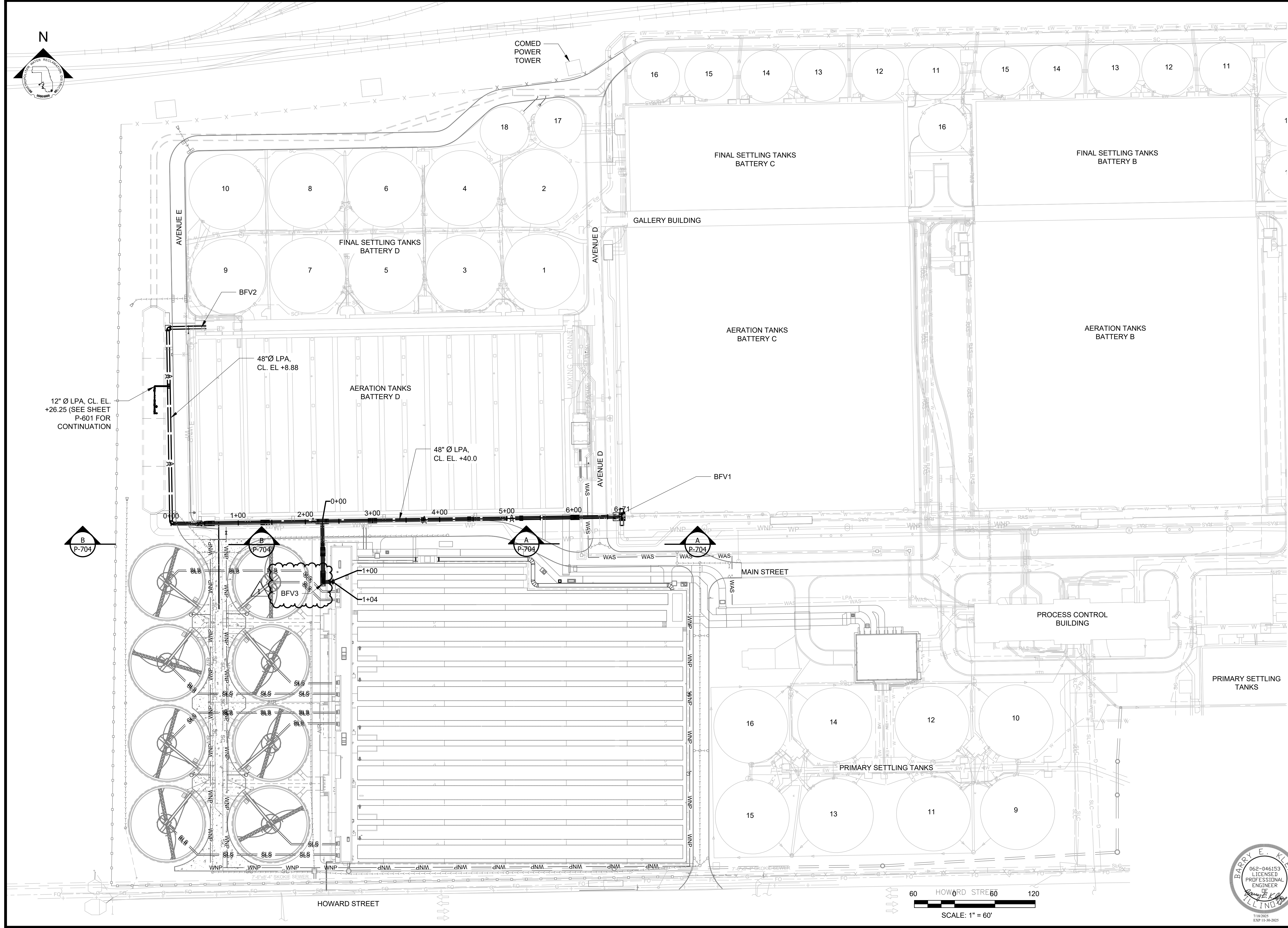
METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Rev.	Description	Appr.	Date
1	1		

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Sheet Number:



Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

AECOM
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by:
RJK

Checked by:
BP

Drawn by:
LK

Reviewed by:
BP

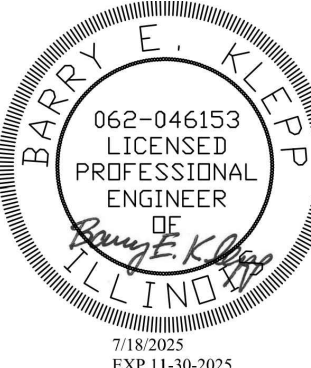
Date:
JULY 2025

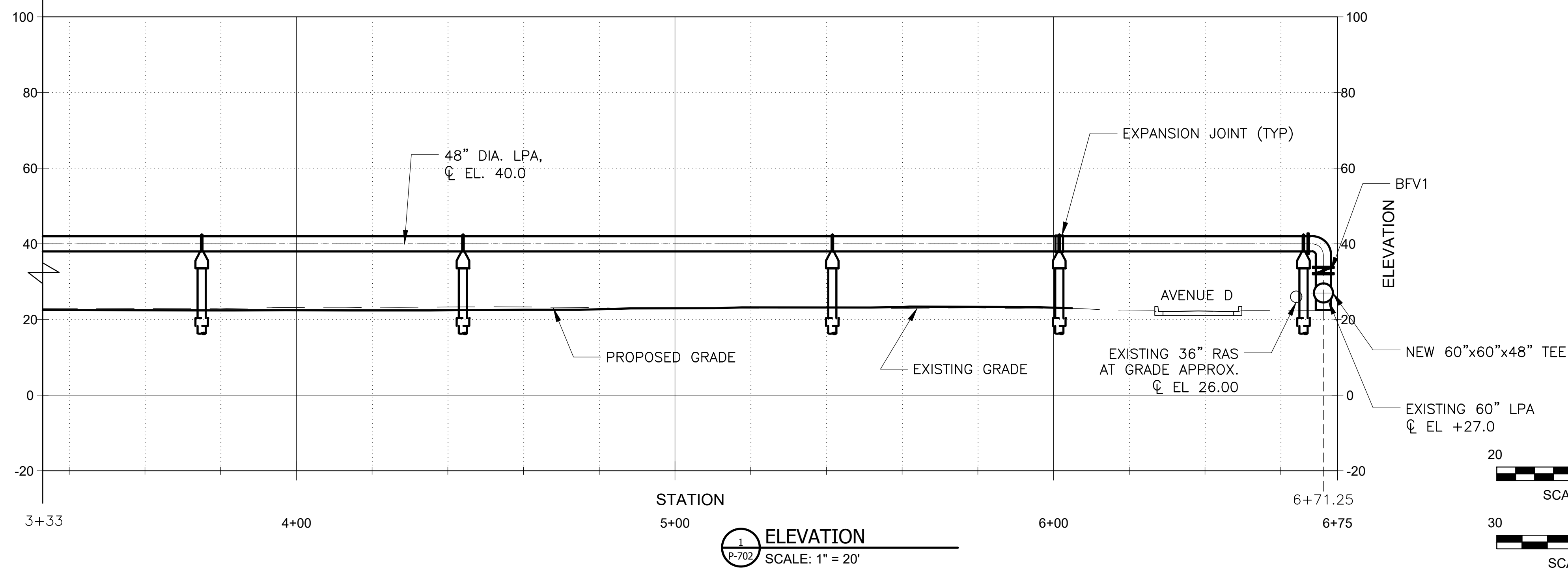
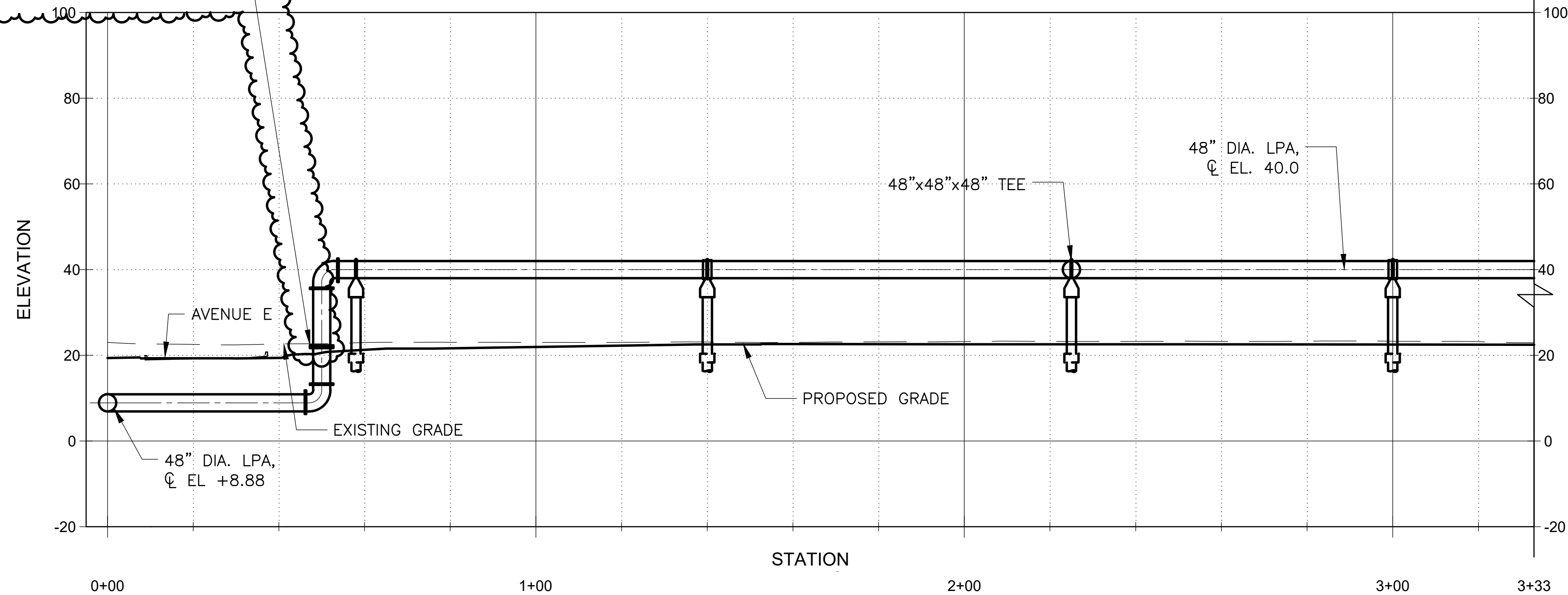
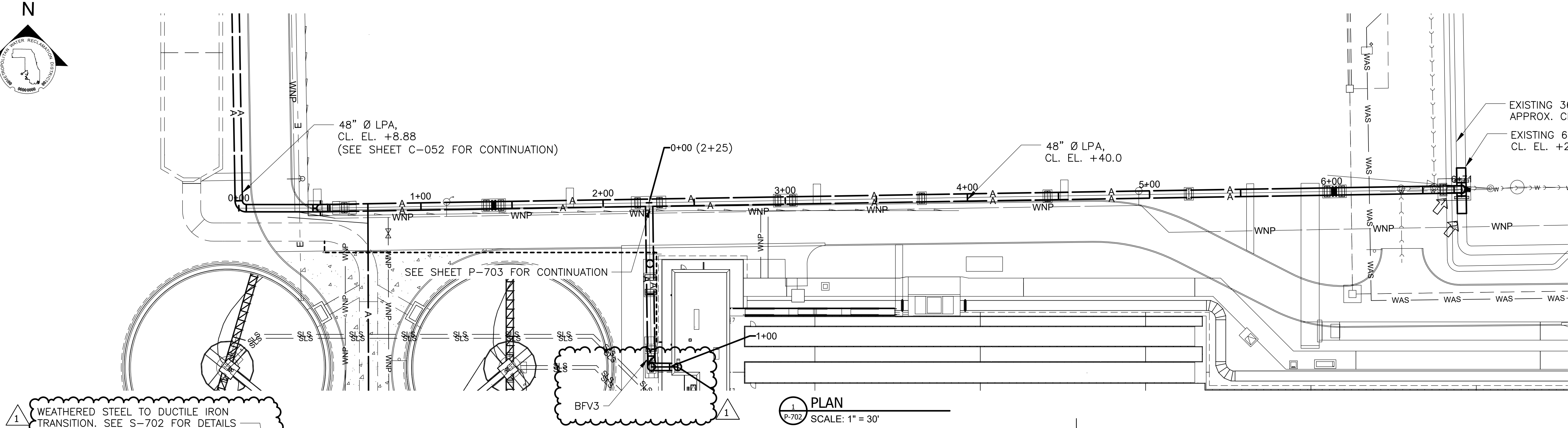
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**CONTRACT 22-RFP-06
OBRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY
AIRMAN CONNECTION
OVERALL PLAN**

Sheet Number:
P-701

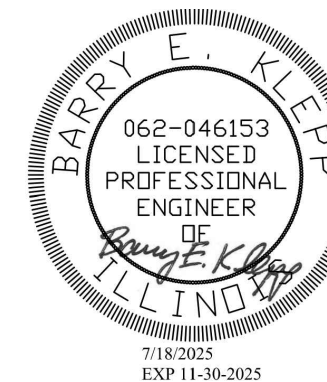
Page Number: 326





GENERAL NOTES:

- SEE S-700 SERIES SHEETS FOR AIR MAIN SUPPORT DETAILS.
- ARROW INDICATE SITE PHOTO DIRECTION, SEE SHEET P-705.



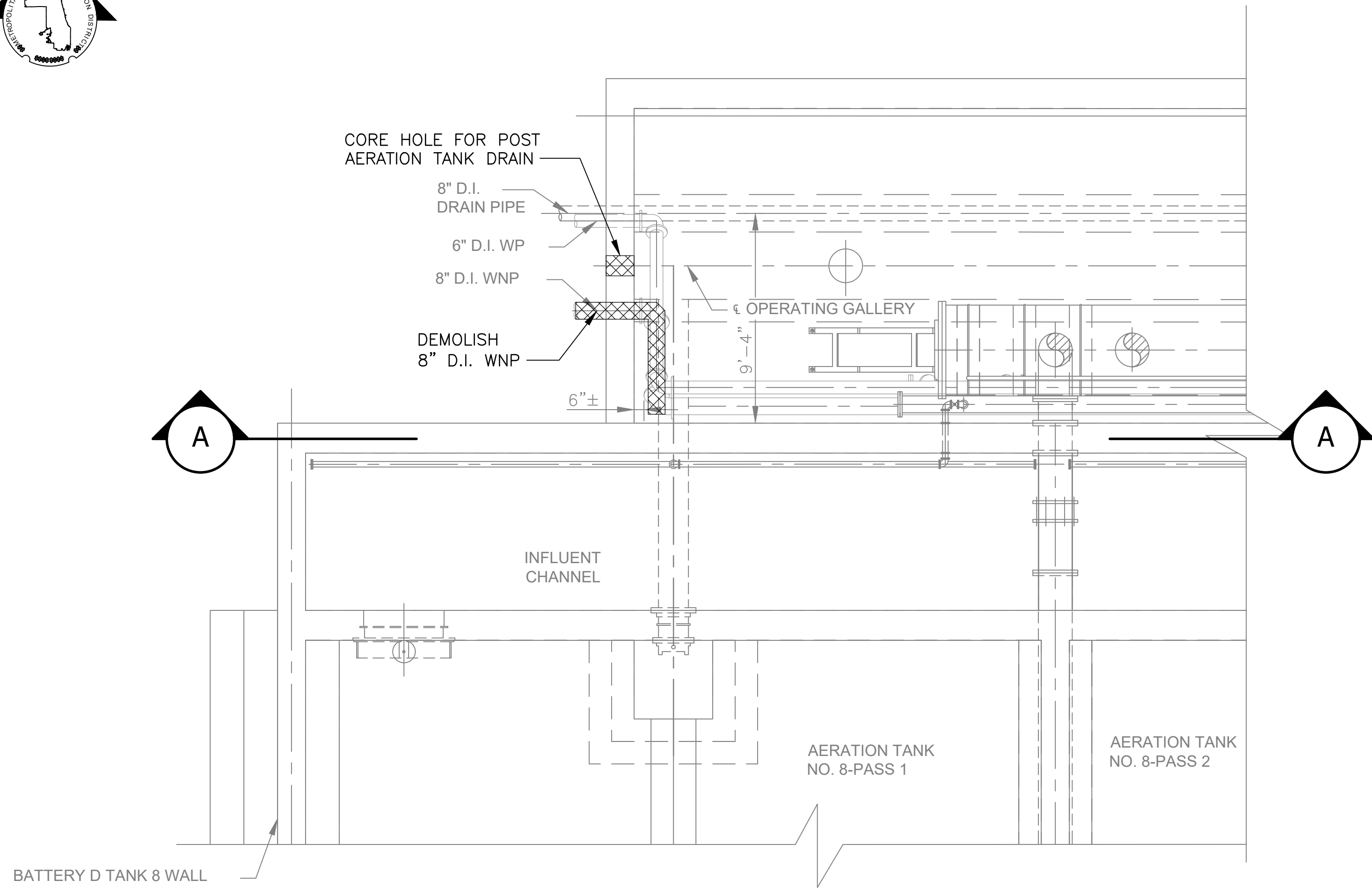
**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

Designed by:	Checked by:
RJK	BP
Drawn by:	Reviewed by:
LK	BP
Date:	Scale:
JULY 2025	AS SHOWN

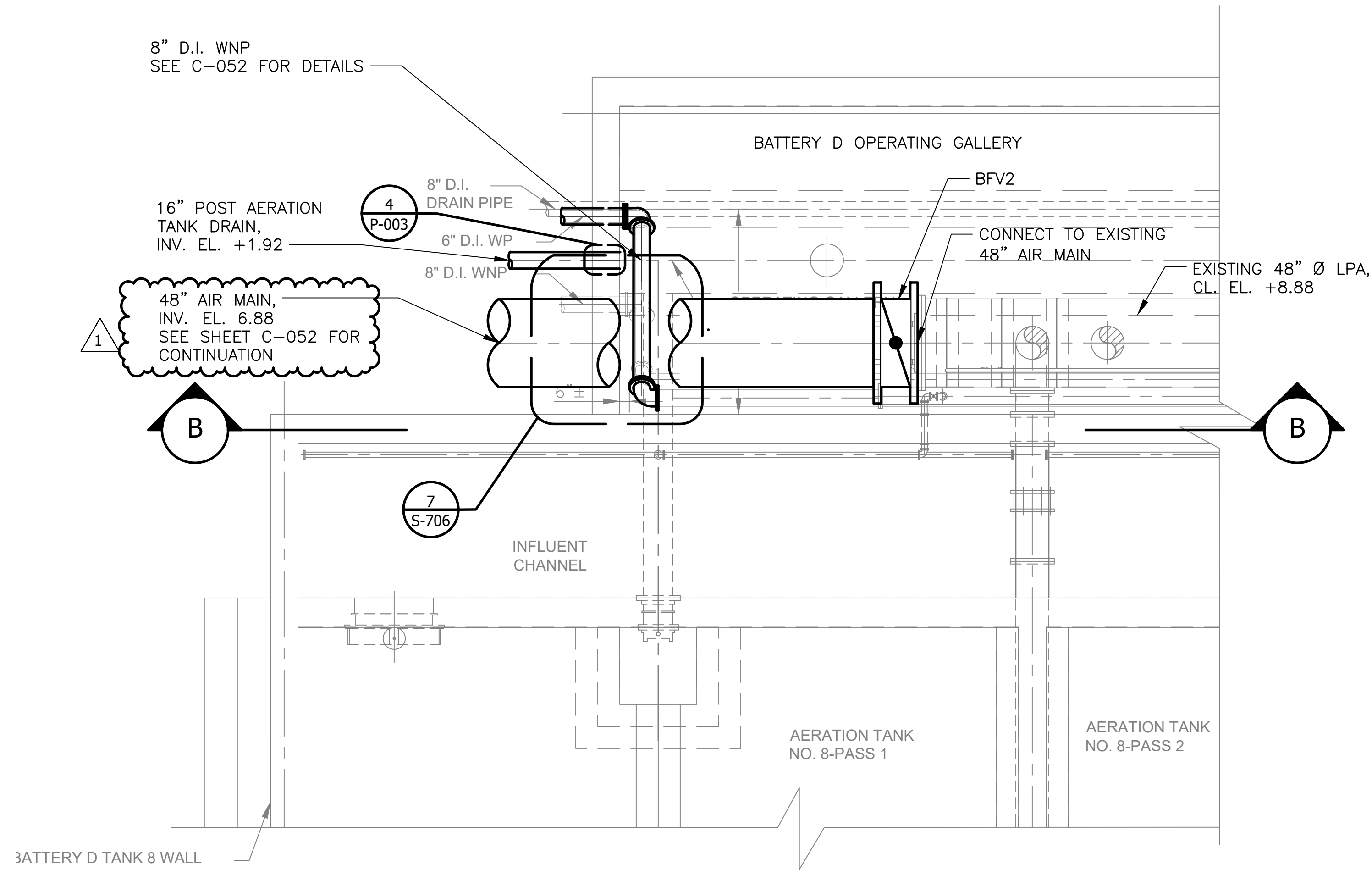
CONTRACT 22-RFP-06
OBRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY
AIRMAIN CONNECTION

PLAN AND PROFILE

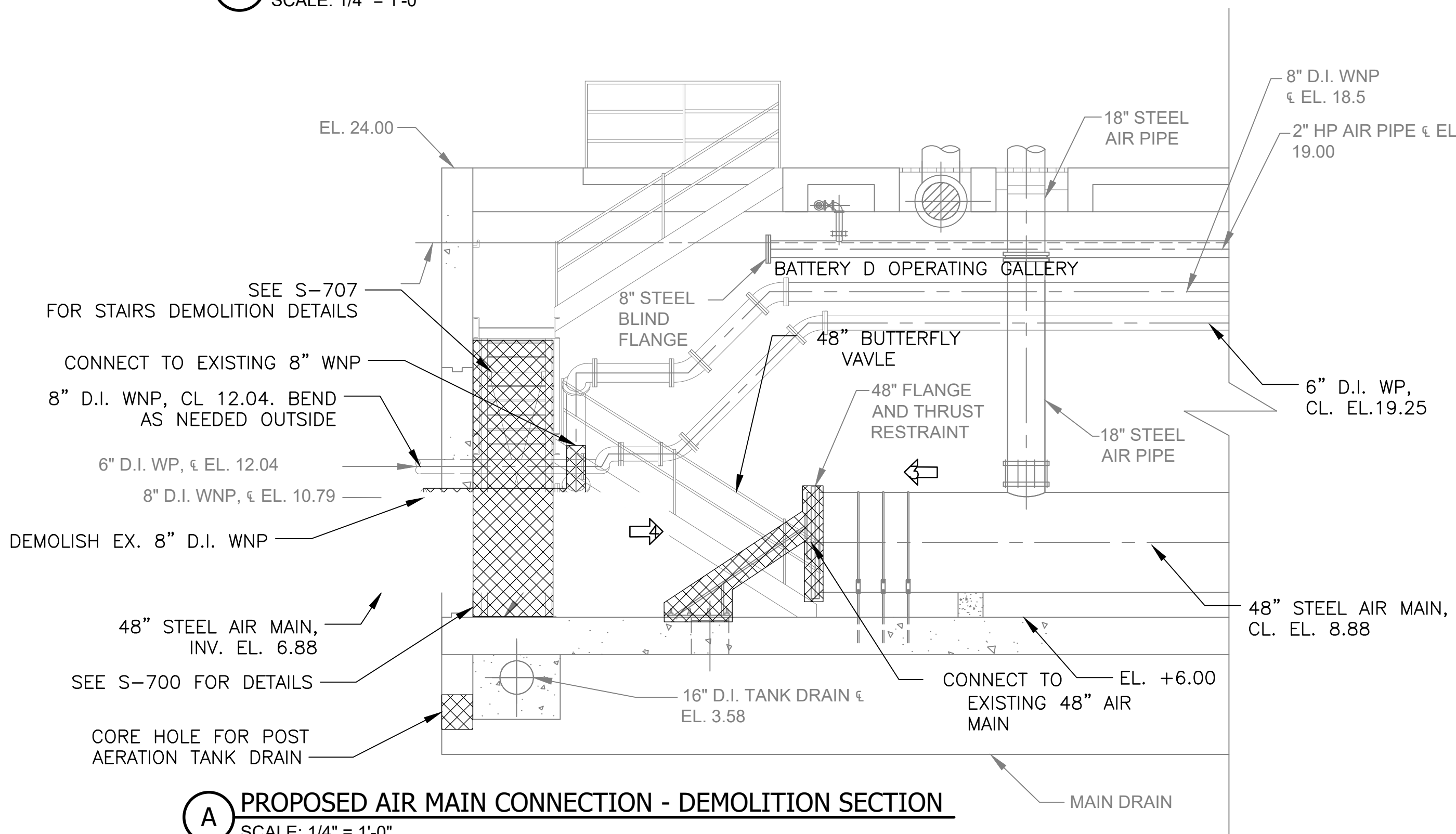
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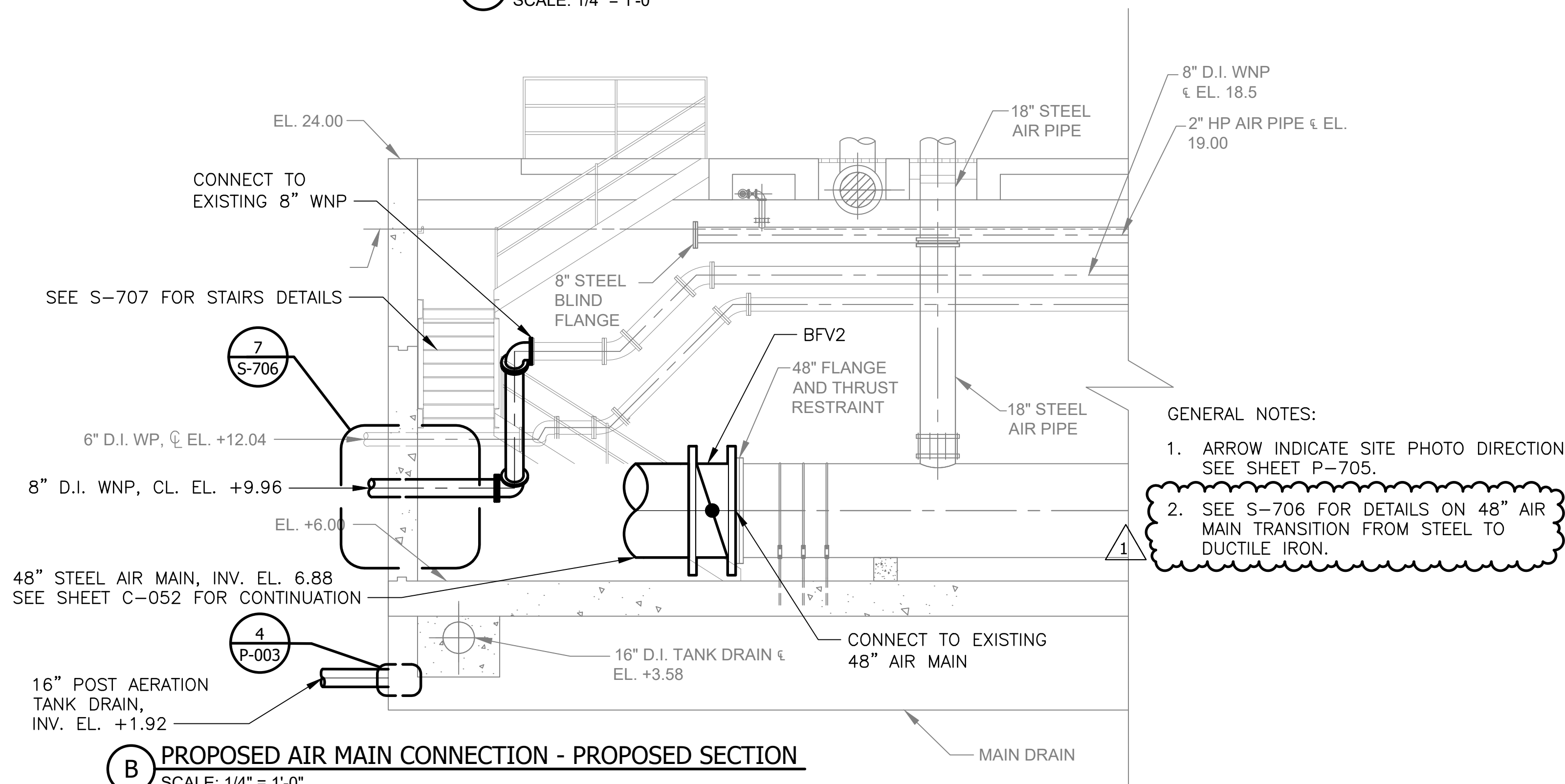
1 PROPOSED AIR MAIN CONNECTION - DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



2 PROPOSED AIR MAIN CONNECTION - PLAN
SCALE: 1/4" = 1'-0"



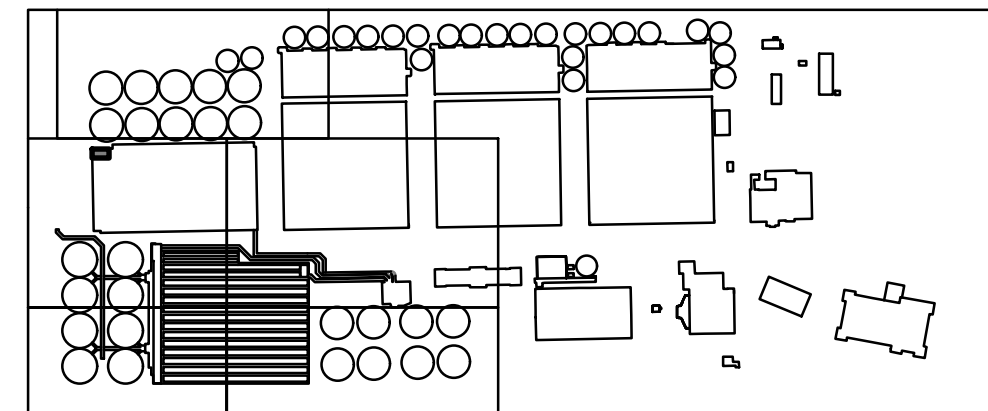
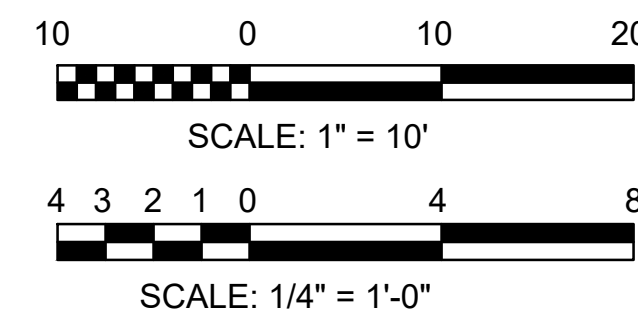
A PROPOSED AIR MAIN CONNECTION - DEMOLITION SECTION
SCALE: 1/4" = 1'-0"



B PROPOSED AIR MAIN CONNECTION - PROPOSED SECTION
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. ARROW INDICATE SITE PHOTO DIRECTION, SEE SHEET P-705.
2. SEE S-706 FOR DETAILS ON 48" AIR MAIN TRANSITION FROM STEEL TO DUCTILE IRON.



KEYPLAN



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

AECOM

PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by:	Checked by:
WWFK	RK
Drawn by:	Reviewed by:
AT	BK
Date:	Scale:
JULY 2025	AS SHOWN

CONTRACT 22-RFP-06
O'BRIEN WATER RECLAMATION PLANT
NEW ACTIVATED SLUDGE BATTERY

AIR MAIN CONNECTION
BATTERY D LOWER LEVEL - AIR MAIN
CONNECTION - PLAN AND SECTION

Sheet Number:

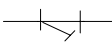
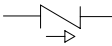
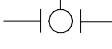
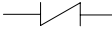
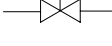
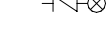
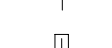
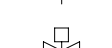
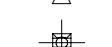
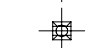
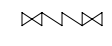
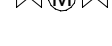
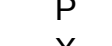
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GENERAL PLUMBING NOTES:

ALL THE FOLLOWING NOTES APPLIES TO ALL PLUMBING DRAWINGS.

- EACH TRADE CONTRACTOR SHALL VISIT CONSTRUCTION SITE PRIOR TO BIDDING, EXAMINE SCOPE AND CONDITIONS OF OTHER CONTRACT WORK, EXAMINE EXISTING CONDITIONS AND ALL INTERFERENCES AND REQUIRED COORDINATION IN ORDER TO INCLUDE EFFECT OF SAID CONDITIONS IN THEIR BID. BID DRAWINGS ARE DIAGRAMMATIC AND DO NOT INDICATE ALL REQUIRED RELOCATIONS, OFFSETS, CHANGE IN ASPECT RATIOS, OR ROUTING CHANGES REQUIRED TO INTEGRATE WORK WITH ALL OTHER CONDITIONS OR TRADES. WORK INSTALLED BEFORE COORDINATING SO AS TO CAUSE INTERFERENCES WITH OTHER TRADES SHALL BE REMOVED AND REWORKED WITHOUT COST TO DISTRICT. COST OF PROVIDING SUCH RELOCATIONS, OFFSETS, SIZE, CHANGES, REROUTING, ETC. SHALL BE INCLUDED IN BID. CODE CONFORMING SCALED (1/4") COORDINATED DRAWINGS SHALL BE PREPARED BY EACH TRADE TO FACILITATE AND VERIFY FIT AND CONGRUENCE OF THEIR INSTALLATION WITH OTHER TRADES.
2. THIS CONTRACTOR SHALL FURNISH, INSTALL AND CONNECT ALL EQUIPMENT IN ACCORDANCE WITH THE CHICAGO BUILDING CODE AND INTERNATIONAL PLUMBING CODE. AFTER EACH WORK DAY, CONTRACTOR SHALL CLEAN ALL WORK AREAS AND REMOVE ALL DEBRIS.
3. THIS CONTRACTOR SHALL PAY ALL PERMIT FEES, PLAN REVIEW FEES, LICENSE FEES, INSPECTIONS FEES AND TAXES APPLICABLE TO THEIR DIVISION AND SHALL BE INCLUDED IN THE BASE BID AS PART OF THEIR CONTRACT.
4. CONTRACTOR SHALL SUBMIT SCALED, LAYOUT DRAWINGS (SHOP DRAWINGS) OF PIPE AND FITTINGS INCLUDING (BUT NOT LIMITED TO) PIPE SIZES, LOCATIONS, ELEVATIONS AND SLOPES OF HORIZONTAL RUNS, WALL AND FLOOR PENETRATIONS AND CONNECTIONS. IN ADDITION, SHOP DRAWINGS SHALL INDICATE THE INTERFACE AND SPATIAL RELATIONSHIPS BETWEEN PIPING AND APPROXIMATE EQUIPMENT.
5. THIS CONTRACTOR SHALL FURNISH AS-BUILT CONTRACT DOCUMENTS TO THE DISTRICT/ ENGINEER BEFORE FINAL PAYMENT WILL BE ISSUED. THE CONTRACT RECORD DOCUMENTS SHALL BE SUBMITTED IN AUTOCAD DRAWINGS FORM.
6. THIS CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIAL FOR ONE YEAR AFTER COMPLETION AGAINST ALL DEFECTS OF MATERIAL, EQUIPMENT AND WORKMANSHIP.
7. THIS CONTRACTOR SHALL PROVIDE ALL MINOR ITEMS WHICH ARE OBVIOUSLY AND REASONABLY NECESSARY TO COMPLETE THE INSTALLATION AND USUALLY INCLUDED IN SIMILAR WORK EVEN THOUGH NOT NECESSARILY MENTIONED IN THE CONTRACT DOCUMENTS. SUCH ITEMS INCLUDE NUTS AND BOLTS, ANCHORS, HANGERS, BRACKET SLEEVES, MINOR OFFSETS IN PIPING BECAUSE OF UNFORESEEN CONDITIONS, ETC.
8. CONTRACTOR SHALL PROVIDE A WRITTEN "REQUEST FOR INFORMATION" TO THE ARCHITECT AND/OR ENGINEER TO ALLOW FOR CLARIFICATION OF ANY INCONSISTENCIES THAT MAY APPEAR ON THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
9. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CHICAGO CODE REQUIREMENTS 9. AND INTERNATIONAL PLUMBING CODE.
10. PLUMBING CONTRACTOR SHALL CONFER AND COORDINATE CLEARANCES, CHASES, RECESSES AND OPENINGS WITH OTHER TRADES FOR THIS WORK.
11. DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS UNLESS SPECIFICALLY DIMENSIONED. COORDINATE THE WORK WITH ALL TRADES TO AVOID INTERFERENCE. PLUMBING WORK THAT IS INSTALLED WHICH INTERFERES WITH THE WORK OF OTHER TRADES OR DEVIATES FROM THE SPACE PROVIDED BY THE ARCHITECT DUE TO THE LACK OF COORDINATION SHALL BE CHANGED AT NO ADDITIONAL COST TO THE DISTRICT.
12. PROVIDE BACK FLOW PREVENTERS AND TEST IN ALL LOCATIONS REQUIRED BY CODE.
13. PROVIDE MAXIMUM HEADROOM IN ALL PIPED LOCATIONS.
14. PROVIDE ISOLATION VALVES FOR COLD, HOT, AND HOT WATER RETURN SYSTEMS AT EACH FIXTURE, FIXTURE GROUP AND SYSTEM COMPONENTS TO ALLOW FOR PROPER MAINTENANCE.
15. INSTALL EQUIPMENT PER MANUFACTURERS INSTRUCTIONS AND ALL APPLICABLE CODES. PROVIDE PANS AND DRAIN LINES.
16. INSULATE ALL PIPES RACKED TO OUTSIDE WALLS SUBJECT TO FREEZING. AS SPECIFIED IN SECTION 15083.
17. PROVIDE ALL PROPER BUILDING PENETRATIONS TO MEET ALL MANUFACTURERS INSTRUCTIONS AND ALL APPLICABLE CODES.
18. INSULATE ALL HOT, COLD AND RETURN WATER LINES. INSULATE ALL STORM PIPING. AS SPECIFIED IN SECTION 15083.
19. PROVIDE AT EACH FIXTURE SUPPLY CONNECTION, BOTH HOT AND COLD WATER, AN AIR CHAMBER NOT LESS THAN 12" LONG, ONE SIZE LARGER THAN THE FIXTURE SUPPLY.
20. PROVIDE LOCAL STOPS OR VALVES AT ALL WATER CONNECTIONS TO PLUMBING FIXTURES. ISOLATE RISERS AT CONNECTIONS TO MAINS WITH SHUT-OFF VALVES. PROVIDE DRAIN COCKS TO FACILITATE SERVICING.
21. DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC ACTION. DI-ELECTRIC UNIONS ARE TO BE USED AT ALL SUCH CONNECTIONS.
22. INSTALL ALL PIPING TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING. WATER AND DRAIN LINES ARE NOT PERMITTED OVER OR UNDER ELECTRICAL PANELS OR DEDICATED ELECTRICAL SPACES.
23. THE CONTRACTOR SHALL PROVIDE AND INSTALL FAUCETS, TRAPS, STOPS, GATE VALVES, WATER HAMMER ARRESTERS AND CLEAN OUT COVERS. FURNISH AND INSTALL ALL NECESSARY TRIM FOR A COMPLETE CONNECTED PLUMBING SYSTEM READY FOR OPERATION.
24. PROVIDE CLEANOUTS AT BASE OF RISERS AND ON RISER STACKS. PROVIDE CLEANOUTS IN ACCESSIBLE LOCATIONS, TYP ALL.
25. ALL PENETRATIONS THROUGH FIRE-RATED WALLS AND FLOORS SHALL BE MADE FIRE SAFE IN COMPLIANCE WITH THE CITY OF CHICAGO BUILDING CODE. RATING SHALL MEET OR EXCEED RATING OF WALL OR FLOOR. ALL HOLES THROUGH FLOORS SHALL BE CAULKED AND SEALED AIR AND WATERTIGHT TO RESTRICT THE PASSAGE OF SMOKE, SOUND OR FLAMES.
26. ALL SANITARY, STORM AND VENT LINES SHALL BE PITCHED AS FOLLOWS:
3" AND SMALLER - 1/4" PER 1'-0"
4" AND LARGER - 1/8" PER 1'-0"
27. PROVIDE ACCESS PANELS IN CEILINGS AND AT WALLS FOR EQUIPMENT OR DEVICE REQUIRING REGULAR ACCESS, MAINTENANCE OR TESTING INSTALLED AT INACCESSIBLE LOCATIONS. ALL ACCESS PANELS ARE TO BE COORDINATED WITH THE ARCHITECT AND REVIEWED PRIOR TO INSTALLATION. MIN. ALLOWABLE ACCESS PANEL SIZE IS 12X12.

PLUMBING SYMBOLS	
UNDERGROUND	SUSPENDED
----- DOMESTIC COLD WATER	----- DOMESTIC COLD WATER
----- DOMESTIC HOT WATER	----- DOMESTIC HOT WATER
----- DOMESTIC HOT WATER RETURN	----- DOMESTIC HOT WATER RETURN
----- TEMPERED HOT WATER	----- TEMPERED HOT WATER
----- SANITARY SEWER	----- SANITARY SEWER
----- STORM SEWER	----- STORM SEWER
— — — — — VENT	— — — — — VENT
ABBREVIATIONS	SYMBOLS
AFF ABOVE FINISHED FLOOR	 STRAINER
AP ACCESS PANEL	 CHECK VALVE
BOP BOTTOM OF PIPE	 BALL VALVE
CA COMPRESSED AIR	 GATE VALVE
CO CLEANOUT	 PRESSURE REGULATING VALVE
CTE CONNECT TO EXISTING	 CIRCUIT SETTER
CW/CWSCOLD WATER SERVICE	 BALANCING VALVE
DN DOWN	 PRESSURE GAUGE
DS DOWNSPOUT	 TEMPERATURE GAUGE
ETR EXISTING TO REMAIN	 THERMOSTATIC MIXING VALVE
EX/EXTO EXISTING	 FLOOR DRAIN
FCO FLOOR CLEANOUT	 ROOF DRAIN / OVERFLOW DRAIN
HP HORSEPOWER	 BACKFLOW PREVENTER / RPZ
HW/HWSHOT WATER SERVICE	 WATER METER
HR/HWR HOT WATER RETURN	 HOSE BIBB / WALL HYDRANT
MECH MECHANICAL	 PUMP
N/A NON APPLICABLE	 DEMO / TO BE REMOVED
NPW NON POTABLE WATER	 NEW CONNECTION
OSD OPEN SITE DRAIN	P PLUMBING RISER DESIGNATION
PD PUMP DISCHARGE	X
PSI POUNDS PER SQUARE INCH	# KEYNOTE TAG
S/SAN SANITARY	
ST STORM	
THW TEMPERED HOT WATER	
TMV THERMOSTATIC MIXING VALVE	
TYP TYPICAL	
UG UNDERGROUND	
V VENT	
VB VACUUM BREAKER	
VTR VENT THROUGH ROOF	
WCO WALL CLEANOUT	
WH WATER HEATER	
YCO YARD CLEANOUT	

28. EACH GROUP OF FIXTURES SUPPLIED WITH A BRANCH FROM THE MAIN SHALL HAVE AN ACCESSIBLE ISOLATION VALVE NEAR THE POINT OF CONNECTION TO THE MAIN.
29. CATCHBASINS AND MANHOLES ARE THE RESPONSIBILITY OF THE SITE CONTRACTOR.
30. OFFSET VENTS WHERE REQUIRED SO THAT NO VTR IS CLOSER THAN 15'0" FROM ANY OUTSIDE AIR INTAKE. REFER TO APPROVED MECHANICAL DRAWINGS FOR EXACT OAI LOCATIONS.
31. FINISHED PIPING SHALL BE TESTED PER SKOKIE PLUMBING CODE SECTION 890.1920 AND INTERNATIONAL PLUMBING CODE, FLUSHED AND CHLORINATED PER CODE 18-29-610.1.
32. PRIOR TO FINAL ACCEPTANCE BY DISTRICT, CONTRACTOR SHALL CLEAN ALL FIXTURES AND REMOVE ALL LABELS. CONTRACTOR SHALL ALSO ROD ALL FLOOR DRAINS TO CATCHBASIN AND REMOVE ALL DEBRIS FROM CATCHBASIN.

PIPING							SYSTEM DESIGN CONDITIONS				REMARKS
LEGEND	SERVICE	DIAMETER RANGE (INCH)	MATERIAL	LOCATION	COATING		JOINT TYPE	MIN/MAX TEMP (F)	MAX WORKING PRESSURE (PSI)	PIPE TESTING	
					INTERIOR	EXTERIOR					
WNP	WATER NON-POTABLE	4	HDPE	BURIED	-	-	HEAT FUSION	40/75	100	HYDROSTATIC	TEST AT 150PSI.
W	WATER POTABLE	3<	GALVANIZED STEEL - SCHEDULE 40	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	100	HYDROSTATIC	TEST AT 150PSI.
W	WATER POTABLE	<2	GALVANIZED STEEL - SCHEDULE 40	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	100	HYDROSTATIC	TEST AT 150PSI.
SAN	SANITARY	4,6	HUB & SPIGOT DUCTILE IRON PIPE	UNDERGROUND	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
V	VENT	3	HUB & SPIGOT CAST IRON SOIL PIPE	UNDERGROUND	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
SAN	SANITARY	3<	HUB & SPIGOT CAST IRON SOIL PIPE	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
V	VENT	3<	HUB & SPIGOT CAST IRON SOIL PIPE	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
SAN	SANITARY	<2	GALVANIZED STEEL - SCHEDULE 40	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
V	VENT	<2	GALVANIZED STEEL - SCHEDULE 40	SUSPENDED	-	PAINTED/-	SEE PIPING AND INSULATION APPLICATIONS TABLE	40/75	10	LOW PRESSURE AIR	TEST AT 50 PSI.
HPA	COMPRESSED AIR PIPING	3<	GALVANIZED STEEL	INDOOR	-	GALVANIZED	GROOVED MECHANICAL COUPLINGS	40/120	100	HIGH PRESSURE AIR	TEST AT 150PSI.
HPA	COMPRESSED AIR PIPING	<2	GALVANIZED STEEL	INDOOR	-	GALVANIZED	THREATED FITTINGS	40/120	100	HIGH PRESSURE AIR	TEST AT 150PSI.

NOTES:

1. SEE TABLE 1 IN GSPC FOR PIPING COLOR CODING SCHEDULE.
2. SEE PIPING AND INSULATION APPLICATIONS TABLE ON SHEET PB-001.

FIXTURE CONNECTION MATRIX								
TAG	FIXTURE / EQUIPMENT	FIXTURE ROUGH-IN & FINAL CONNECTION (MIN.)						SPECIAL REQUIREMENTS
		AIR CHAMBER	CWS	HWS	VENT	WASTE	P-TRAP	
DF EWC	DRINKING FOUNTAIN ELEC WATER COOLER	1/2"	1/2"	-	1-1/4"	1-1/4"	INTEG.	PROVIDE STOP VALVE AT CWS ROUGH IN.
HB	HOSE BIB	3/4"	3/4"	-	-	-	-	PROVIDE CHICAGO APPROVED TESTABLE BACKFLOW PREVENTER.
L	LAVATORY	1/2"	1/2"	1/2"	1-1/2"	2"	1-1/2"	PROVIDE STOP VALVES AT CWS AND HWS ROUGH IN. PROVIDE POWERS MODEL# LM490 THERMOSTATIC MIXING VALVE.
MB	MOP BASIN	3/4"	3/4"	3/4"	2"	3"	3"	MOUNT VACUUM BREAKER AT 7'-6" AFF.
SK	SINK	3/4"	1/2"	1/2"	1-1/2"	2"	1-1/2"	PROVIDE STOP VALVES AT CWS AND HWS ROUGH IN.
UR	URINAL	1"	1"	-	1-1/2"	2"	INTEG.	
WC	WATER CLOSET (FLUSH VALVE)	1-1/4"	1"	-	2"	4"	INTEG.	
FD	FLOOR DRAIN	-	-	-	2"	2"	2"	

NOTE: PROVIDE WATER HAMMER ARRESTORS ON ALL PLUMBING SUPPLY PIPING.

[illegible]

Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

Designed by: RG	Checked by: JM	 CCJM Engineers, Ltd. Engineering Infrastructure Solutions 303 East Wacker Drive, Suite 303 Chicago, Illinois 60601-3007 312.669.0609 • 312.669.0525 Fax e-mail: chicago@ccjm.com
Drawn by: RG	Reviewed by: MS	
Date: 7/1/2025	Scale: As indicated	
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PRUDENTIAL PLAZA ONE 130 E RANDOLPH STREET SUITE 2400 CHICAGO, IL 60601, USA		

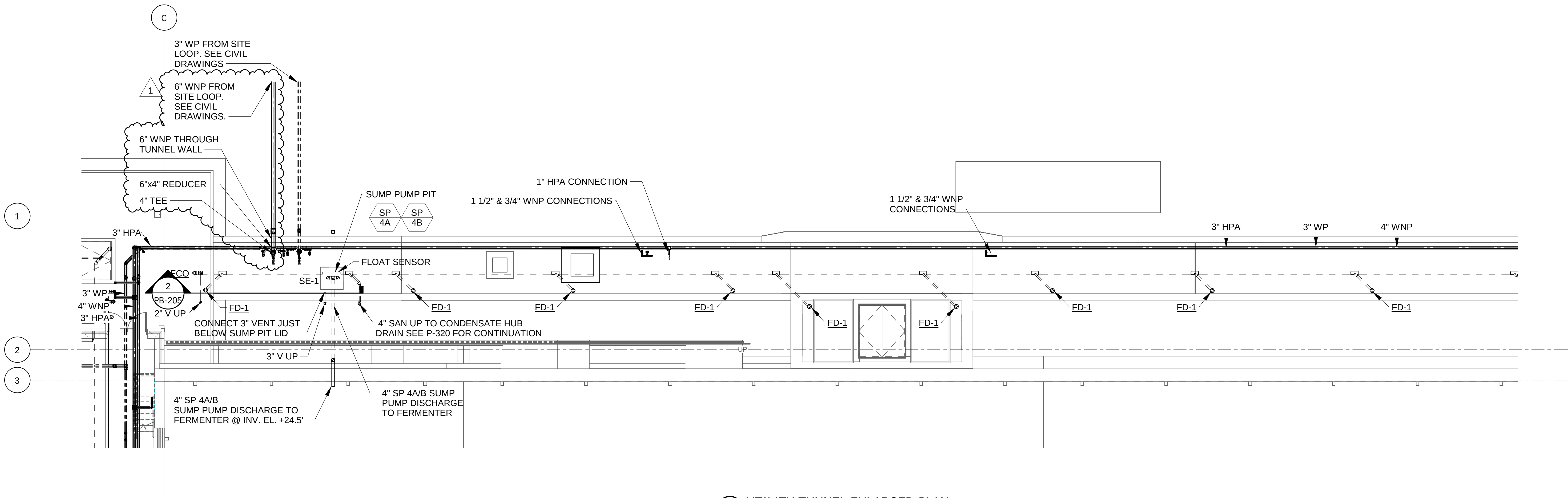
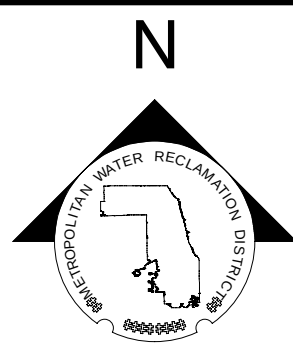
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

PLUMBING NOTES, SYMBOLS, AND
ABBREVIATIONS

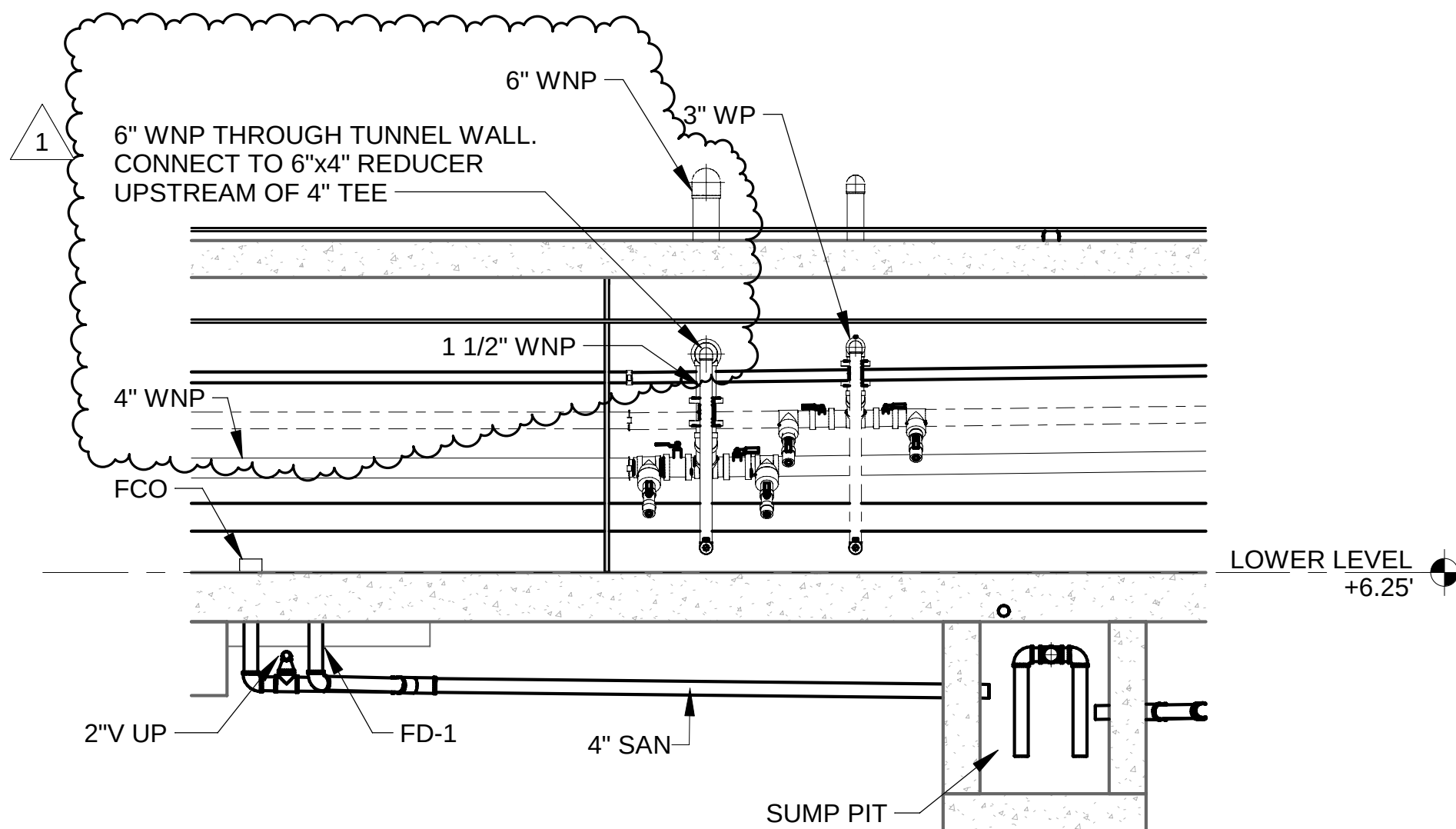
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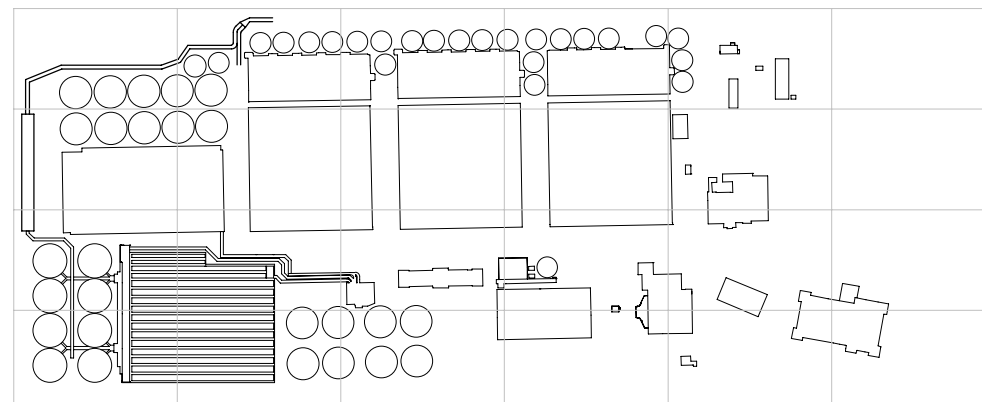
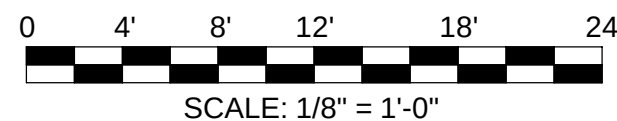




1 UTILITY TUNNEL ENLARGED PLAN
SCALE: 1/8" = 1'-0"



2 BATTERY E TUNNEL SOUTH SECTION
SCALE: 1/4" = 1'-0"



OVERALL KEYPLAN



EXP: 11/30/2025

METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

Designed by:	Checked by:
RG	JM
Drawn by:	Reviewed by:
RG	MS
Date:	Scale:
7/1/2025	As indicated

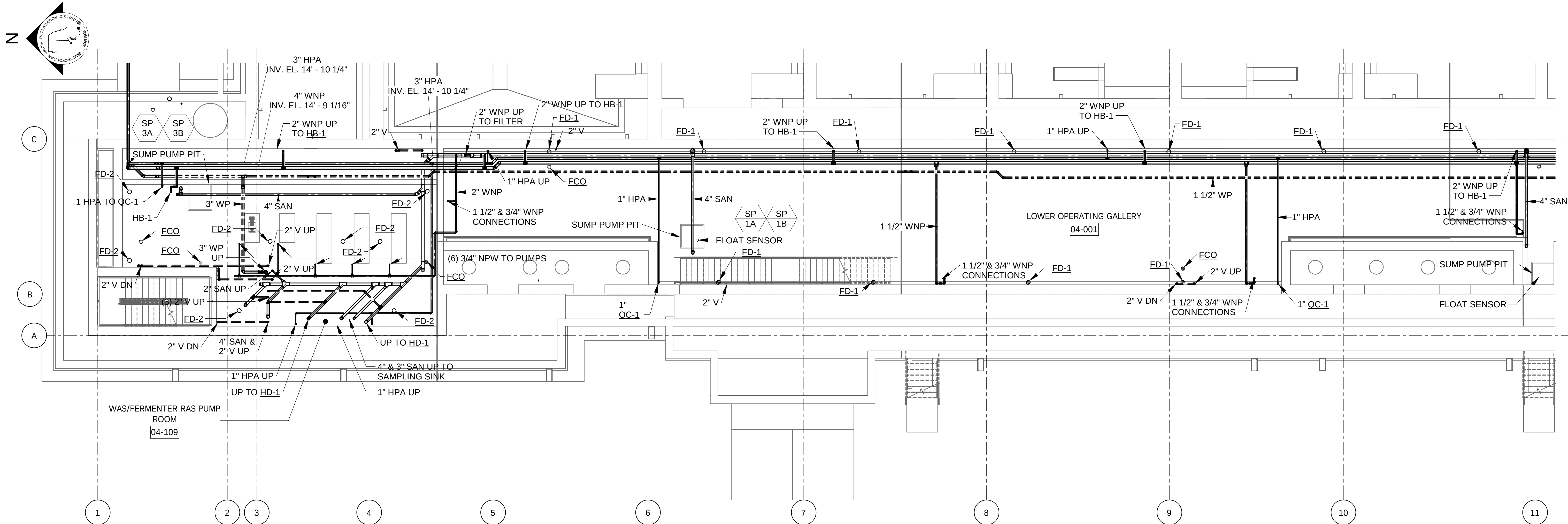
CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
UTILITY TUNNEL & INFLUENT CONDUITS
ENLARGED PLAN

Sheet Number:
PB-205
Page Number: 357

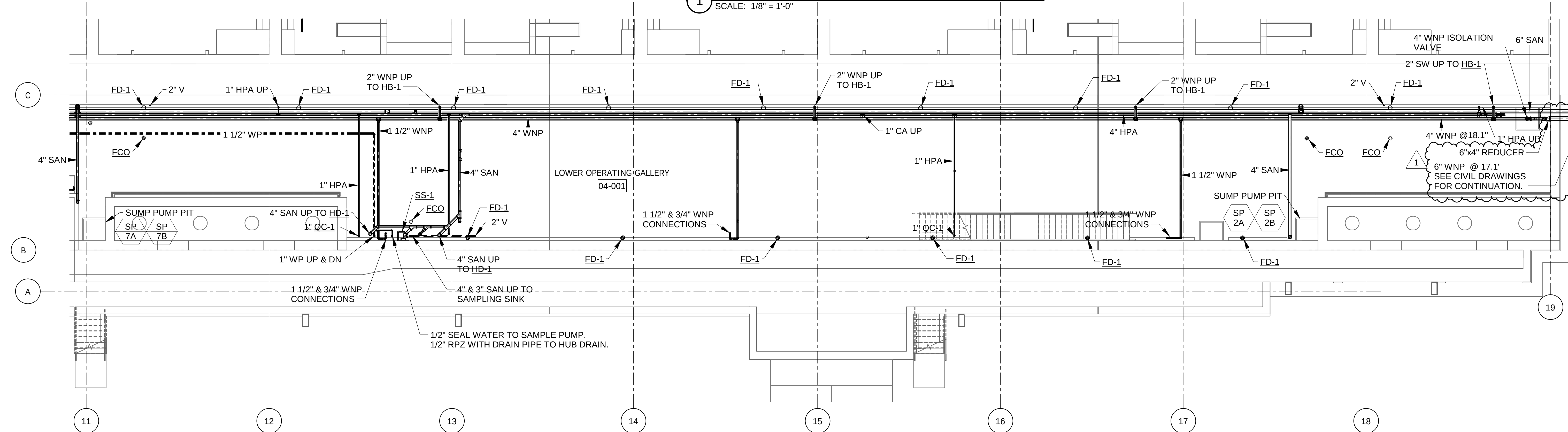
Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

AECOM

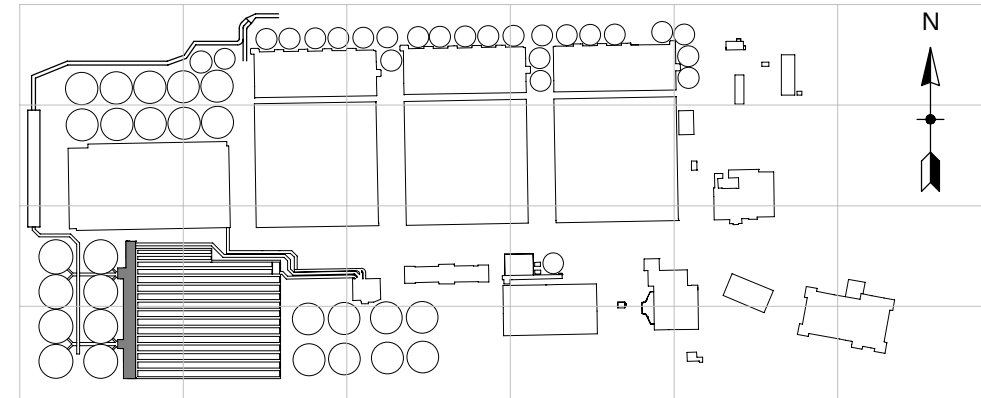
PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA



1 LOWER OPERATING GALLERY ENLARGED PLAN (NORTH)
SCALE: 1/8" = 1'-0"



2 LOWER OPERATING GALLERY ENLARGED PLAN (SOUTH)
SCALE: 1/8" = 1'-0"



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
OPERATING GALLERY
LOWER OPERATING GALLERY ENLARGED PLANS

Sheet Number:
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Page Number: 361

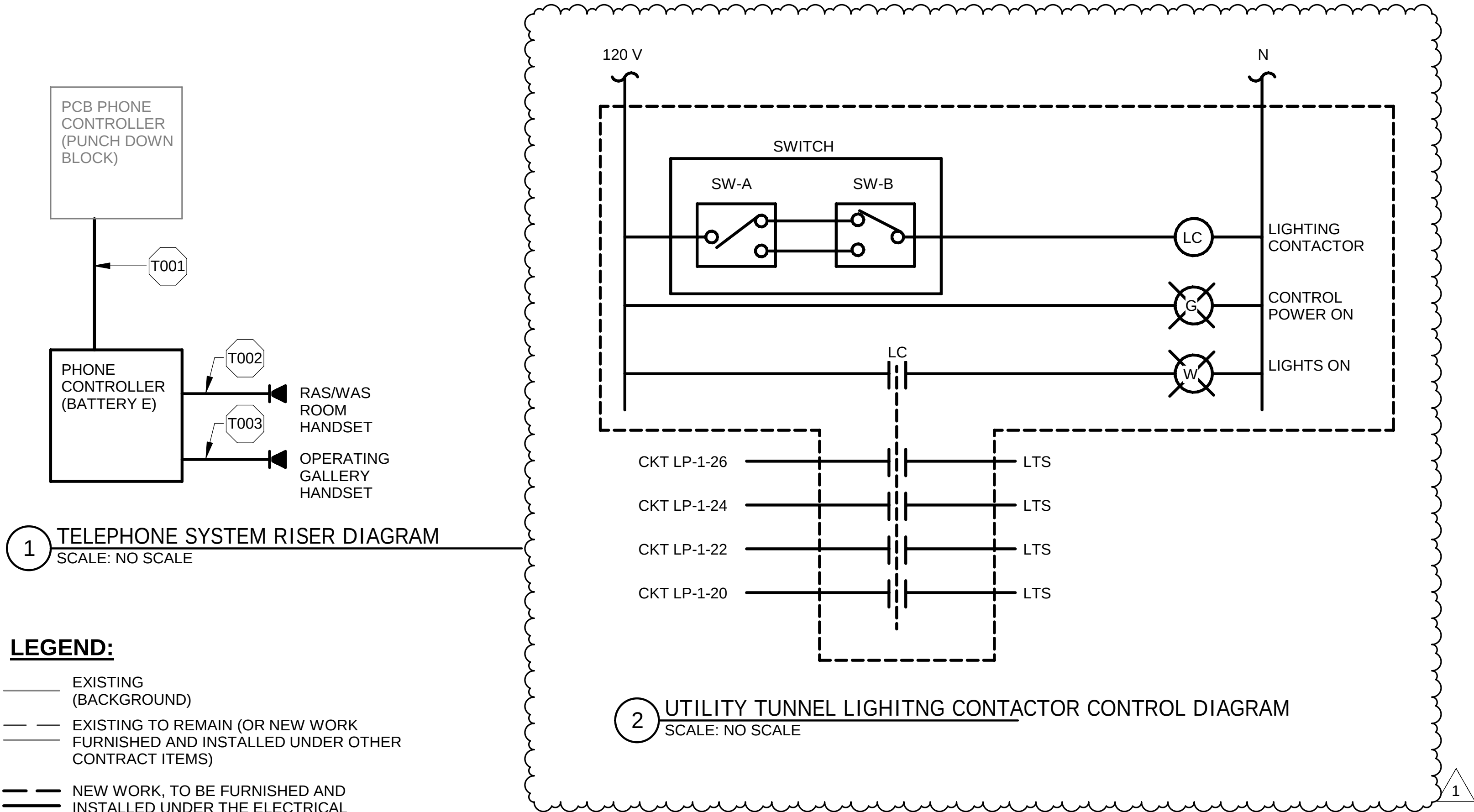
Designed by: RG
Checked by: JM
Drawn by: RG
Reviewed by: MS
Date: 7/1/2025
Scale: 1/8" = 1'-0"

AECOM
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Rev.	Description	Appr.	Date
1	ADDENDUM NO. 5	GD	11/19/25

LIGHTING FIXTURE SCHEDULE							
TYPE	MANUFACTURER	MODEL NUMBER	DESCRIPTION	LAMP	INPUT WATTS	VOLTAGE	REMARKS
A	HOLOPHANE	PXLW 10000LM LND 120 40K 70CRI PM SENSOR: SBOR10 HL 3V	INDUSTRIAL, WET-LOCATION, LOW-BAY LED LUMINAIRE, 10000LM, 4000K CCT, 70 CRI, TYPE I DISTRIBUTION, PENDANT MOUNT W/ 3/4" NPT	LED	93 VA	120 V	MOUNT 10'AFF PROVIDE MOTION SENSOR
	CROUSE-HINDS	PVML-11-N-2A-R1-UNV1 SENSOR: ORDC/UNV1, ORDC PKIT					
B	HOLOPHANE	EMS L48 6000LM LPPFL MD MVOLT GZ10 40K 80CRI SENSOR: SBOR10 D 3V	INDUSTRIAL DAMP LOCATION, LINEAR 4' LED LUMINAIRE, CORROSION-RESISTANT HOUSING, FROSTED POLYCAROBNATE LENS, 5000LM, 4000K CCT, 80 CRI	4000K LED	45 VA	120 V	MOUNT SURFACE ON CEILING. PROVIDE MOTION SENSOR
	CROUSE-HINDS	SV4-039-39W-P-RF-40-CMB-OS-PIR-SSL SENSOR: LB-MRMS360					
B2	HOLOPHANE	EMS L48 6000LM LPPFL MD MVOLT GZ10 40K 80CRI ANGBKT SENSOR: SBOR10 HL 3V	INDUSTRIAL DAMP LOCATION, LINEAR 4' LED LUMINAIRE, CORROSION-RESISTANT HOUSING, FROSTED POLYCAROBNATE LENS, 5000LM, 4000K CCT, 80 CRI	4000K LED	45 VA	120 V	MOUNT WITH WALL MOUNT ANGLE BRACKET. PROVIDE MOTION SENSOR
	SOLAS RAY	SV4-039-39W-P-RF-40-MB45-OS-PIR-SSL SENSOR: LB-MRMS360					
B3	HOLOPHANE	EMS L48 6000LM LPPFL MD MVOLT GZ10 40K 80CRI	INDUSTRIAL DAMP LOCATION, LINEAR 4' LED LUMINAIRE, CORROSION-RESISTANT HOUSING, FROSTED POLYCAROBNATE LENS, 5000LM, 4000K CCT, 80 CRI	4000K LED	45 VA	120 V	MOUNT SURFACE ON CEILING
	CROUSE-HINDS	SV4-039-39W-P-RF-40-CMB-SSL					
C	CROUSE-HINDS	VMVL-11-N-2A-UNV1-S831	XP LED LOWBAY LUMINAIRE, COPPER-FREE ALUMINUM HOUSING WITH EPOXY POWDER COAT, 4000K, 11000 LUMENS, CLASS I DIV 2, IP66, SUITABLE FOR WET LOCATIONS	LED	92 VA	120 V	MOUNT 15'AFF
	SOLAS RAY LIGHTING	HJCR1L-080-40-U-120-HJPP					
EM1	HOLOPHANE	DM30 WL LED	INDUSTRIAL EMERGENCY LED LUMINAIRE, WATERTIGHT GASKETED THERMOPLASTIC HOUSING WITH CORROSION RESISTANCE, TWO ADJUSTABLE HEADS, NICKEL CADMIUM BATTERY, SUITABLE FOR WET LOCATIONS	LED	5 VA	120 V	
	SURE-LITES	SELIN25 R10 SD					
EM2	CROUSE-HINDS	ELPSM2 2	CLASS 1 DIV 2 EMERGENCY LED LUMINAIRE, ALUMINUM BODY WITH STAINLESS STEEL HARDWARE. NICKEL CADMIUM BATTERY, 2 HEADS.	LED	50 VA	120 V	
	SOLAS RAY	CTL U 2 W					
EX1	HOLOPHANE	DLTL W 1R EL SD	INDUSTRIAL LED EXIT SIGN, CAST ALUMINUM OR THERMOPLASTIC HOUSING, RED LETTERING, NICKEL CADMIUM BATTERY BACKUP, SUITABLE FOR WET LOCATIONS	LED	5 VA	120 V	
	SURE-LITES	UX7 1 WH SD					
EX2	CROUSE-HINDS	EX-LITE ZE	INDUSTRIAL CLASS 1 DIV 2 EXIT SIGN, CAST ALUMINUM HOUSING, RED LETTERING, BATTERY BACKUP.	LED	5 VA	120 V	
	SOLAS RAY	HJJES-005-R-U-FG					
P1	ACUITY	DSX0	POLE MOUNT AREA LUMINAIRE, ALUMINUM HOUSING WITH POWDER COAT FINISH, 4000K, 4800 LUMENS, IP66, SUITABLE FOR WET LOCATIONS	LED	33 VA	120 V	POLE MOUNT 10'AFF, PROVIDE INTEGRAL PHOTOCELL
	MCGRAW EDISON	LED-P1-40K-70CRI-T5M-120-PER-BAA-DBLXD-DLL127F 1.5 JU					
		BAA-GALN-SA-1-A-740-120-5MQ-BK-BPC					
S1	HOLOPHANE OR EQUAL	W4GLED 10C1000 40K T3M 120 PCB LWG BKSDP	EXTERIOR WALL PACK WITH WIRE GUARD	4000K LED	40 VA	120 V	UL LISTED FOR WET LOCATION. FIXTURES SHALL BE CONTROLLED VIA INTEGRAL/PHOTOCELL OPERATION.
S2	HOLOPHANE	EMS L24 3000LM LPPFL MD MVOLT GZ10 40K 80CRI SENSOR: SBOR10 HL 3V	INDUSTRIAL DAMP LOCATION, LINEAR 2' LED LUMINAIRE, CORROSION-RESISTANT HOUSING, FROSTED POLYCAROBNATE LENS, 2500LM, 4000K CCT, 80 CRI	4000K LED	16 VA	120 V	MOUNT WITH WALL MOUNT ANGLE BRACKET. PROVIDE MOTION SENSOR
	CROUSE-HINDS	SV2-016-16W-P-RF-40-CMB-OS-PIR-SSL SENSOR: LB-MRMS360					

NOTES:
(1) REFER TO SPECIFICATIONS FOR ADDITIONAL LUMINAIRE REQUIREMENTS.
(2) REFER TO ARCHITECTURAL PLANS FOR MOUNTING HEIGHT/ORIENTATION. CEILING TYPES, AND OTHER SURFACE CONSTRUCTION MATERIALS.
(3) ALL LUMINAIRES SHALL BE UL LISTED. ALL DAMP AND WET LOCATION UL REQUIREMENTS ARE LISTED IN THE LUMINAIRE DESCRIPTION.



LIGHTING CONTROLS MATRIX		
TYPE	ROOM TYPE	SEQUENCE OF OPERATIONS
A	OPERATING GALLERY BASEMENT LEVEL	OCCUPANCY SENSOR INTEGRAL TO LUMINAIRES TO AUTOMATICALLY TURN LIGHTS 'ON' TO 100% UPON PRESENCE DETECTION, AND DIM LIGHTING TO THE LUMINAIRE'S LOWEST SETTING OR 10% (WHICHEVER IS HIGHER) AFTER 20 MINUTES OF NO PRESENCE DETECTED. LOCAL OVERRIDE SWITCHES TO TURN LIGHTS 'OFF'. SPACE IS INTENDED FOR 24/7 OPERATION.
B	OPERATING GALLERY TOP LEVEL	OCCUPANCY SENSOR INTEGRAL TO LUMINAIRES TO AUTOMATICALLY TURN LIGHTS 'ON' TO 100% UPON PRESENCE DETECTION, AND DIM LIGHTING TO THE LUMINAIRE'S LOWEST SETTING OR 10% (WHICHEVER IS HIGHER) AFTER 20 MINUTES OF NO PRESENCE DETECTED. LOCAL OVERRIDE SWITCHES TO TURN LIGHTS 'OFF'. SPACE IS INTENDED FOR 24/7 OPERATION.
C	WAS/FERMENTER RAS PUMP ROOM	MANUAL TOGGLE SWITCH LOCATED IN REMOTE LOCATION OUTSIDE OF SPACE. SPACE IS CLASS 1, DIV 2 LISTED, MANUAL ONLY CONTROLS WITH NO AUTOMATIC SHUTOFF FOR SAFETY
D	STAIR	OCCUPANCY SENSOR INTEGRAL TO LUMINAIRES TO AUTOMATICALLY TURN LIGHTS 'ON' TO 100% UPON PRESENCE DETECTION, AND DIM LIGHTING TO THE LUMINAIRE'S LOWEST SETTING OR 10% (WHICHEVER IS HIGHER) AFTER 20 MINUTES OF NO PRESENCE DETECTED.
E	TOILET	WALL MOUNTED LOW VOLTAGE DUAL-TECH OCCUPANCY SENSOR W/BUILT-IN SWITCH. LIGHTS TO AUTOMATICALLY TURN 'ON' TO FULL BRIGHTNESS UPON ENTRY. OCCUPANT CAN MANUALLY TURN LIGHTS 'OFF' UPON EXIT. LIGHTS WILL AUTOMATICALLY TURN 'OFF' AFTER 20 MINUTES IF NO PRESENCE IS DETECTED.
F	TUNNEL	OCCUPANCY SENSOR INTEGRAL TO LUMINAIRES TO AUTOMATICALLY TURN LIGHTS 'ON' TO 100% UPON PRESENCE DETECTION, AND DIM LIGHTING TO THE LUMINAIRE'S LOWEST SETTING OR 10% (WHICHEVER IS HIGHER) AFTER 20 MINUTES OF NO PRESENCE DETECTED. SPACE IS INTENDED FOR 24/7 OPERATION.



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

DESIGNED BY: AR

CHECKED BY: DES

DRAWN BY: BM

REVIEWED BY: CA

DATE: 7/1/2025

SCALE: NONE

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CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

LIGHTING FIXTURE SCHEDULES & TELEPHONE
SYSTEM RISER DIAGRAM

Sheet Number:
E-016

Page Number: 379

I&C CONDUIT AND CABLE SCHEDULE							
CONDUIT	SIZE/TYPE	WIRE/CABLE	FUNCTION	FROM	TO	SHEET REFERENCE	REMARKS
C181	3/4" RGPVC	(8)#14	CONTROL FOR THE FOLLOWING: (2)#14 FOR SV-422 (2)#14 FOR TS-422 (2)#14 FOR PS-422A (2)#14 FOR PS-422B	WAS-P02 LCS	SV-422	E-407	
C182	3/4" RGPVC	(2)#14	CONTROL FOR TS-422	SV-422	TS-422	E-407	
C183	3/4" RGPVC	(2)#14	CONTROL FOR PS-422A	SV-422	PS-422A	E-407	
C184	3/4" RGPVC	(2)#14	CONTROL FOR PS-422B	SV-422	PS-422B	E-407	
C185	3/4" RGPVC	(10)#14	CONTROL FOR THE FOLLOWING: (2)#14 FOR WAS-P01 LCS (2)#14 FOR SV-421 (2)#14 FOR TS-421 (2)#14 FOR PS-421A (2)#14 FOR PS-421B	WAS-P01 VFD	WAS-P01 LCS	E-407	
C186	3/4" RGPVC	(8)#14	CONTROL FOR THE FOLLOWING: (2)#14 FOR SV-421 (2)#14 FOR TS-421 (2)#14 FOR PS-421A (2)#14 FOR PS-421B	WAS-P01 LCS	SV-421	E-407	
C187	3/4" RGPVC	(2)#14	CONTROL FOR TS-421	SV-421	TS-421	E-407	
C188	3/4" RGPVC	(2)#14	CONTROL FOR PS-421A	SV-421	PS-421A	E-407	
C189	3/4" RGPVC	(2)#14	CONTROL FOR PS-421B	SV-421	PS-421B	E-407	
C190	3/4" RGPVC	(3)#14	CONTROL FOR MAU-4	RIO-1	MAU-4	E-416, E-417	
C191	3/4" RGPVC	(3)#14	CONTROL FOR MAU-1	RIO-1	MAU-1	E-417	
C192	3/4" RGPVC	(3)#14	CONTROL FOR MAU-2	RIO-02	MAU-2	E-418	
C193	3/4" RGPVC	(1) CAT6 ETHERNET	CONTROL FOR AP-M07, AP-M08	AP-M06	AP-M07	E-306	
C194	3/4" RGPVC	(1) CAT6 ETHERNET	CONTROL FOR AP-M08	AP-M07	AP-M08	E-306	
C195	3/4" RGPVC	(5)#14	CONTROL FOR KGV-01	01 KGV	ACP	E-101	
C196	3/4" RGPVC	(5)#14	CONTROL FOR FCV-1073	FVC-1073	ACP	E-101	
C197	3/4" RGPVC	(5)#14	CONTROL FOR FCV-1053	FVC-1053	ACP	E-101	
C198	3/4" RGPVC	(5)#14	CONTROL FOR FCV-1033	FVC-1033	ACP	E-101	
C199	3/4" RGPVC	(5)#14	CONTROL FOR FCV-1013	FVC-1013	ACP	E-101	
C200	1" RGPVC	(24)#14	CONTROL FOR DCU	ACP	DCU	E-101	
C201	3/4" RGPVC	(12)#14	BREAKER MONITORING FOR MDP-E1	MDP-E1	CB-MDP	E-416	
C202	3/4" RGPVC	(12)#14	BREAKER MONITORING FOR MDP-E2	MDP-E2	CB-MDP	E-416	
C203	1" RGPVC	(24)#14	BREAKER MONITORING FOR MDP-E1, MDP-E2	CB-MDP	RIO-01	E-416, E-417	
C204	3/4" RGPVC	(25)#14	CONTROL FOR THE FOLLOWING: (5)#14 FOR 01-KVG (5)#14 FOR FCV-1073 (5)#14 FOR FCV-1053 (5)#14 FOR FCV-1033 (5)#14 FOR FCV-1013	01-KVG	ACP	E-101	
I001	3 1/2" RGPVC	(42) STP (29?)	CONTROL FOR THE FOLLOWING: (1) STP EACH FOR AIT-326C, AIT-326D, AIT-326E (1) STP EACH FOR FIT-324A, FIT-324B, FIT-324C, FIT-324D, FIT-324E, FIT-324F, FIT-324G (2) STP EACH FOR AT2-FCV1, AT2-FCV2, AT2-FCV3, AT2-FCV4, AT2-FCV5, AT2-FCV6, AT2-FCV7 (1) STP EACH FOR AIT-326A, AIT-326B, AIT-326F	RIO-01	CPN-I	E-417	
I002	3 1/2" RGPVC	(41) STP (27?)	CONTROL FOR THE FOLLOWING: (1) STP EACH FOR AIT-326C, AIT-326D, AIT-326E (1) STP EACH FOR FIT-324A, FIT-324B, FIT-324C, FIT-324D, FIT-324E, FIT-324F, FIT-324G (2) STP EACH FOR AT2-FCV1, AT2-FCV2, AT2-FCV3, AT2-FCV4, AT2-FCV5, AT2-FCV6, AT2-FCV7 (1) STP EACH FOR AIT-326A, AIT-326B, AIT-326F	RIO-01	CPN-I	E-417	
I003	2" RGPVC	(12) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR FST2-FCV2B (1) STP FOR FIT-520F (2) STP FOR FST2-FCV2A (1) FIT-520D (2) STP FOR FST1-FCV1B (1) STP FOR FIT-510F (2) STP FOR FST1-FCV1A (1) STP FOR FIT-510D	RIO-01	FST2-FCV2B	E-407, E-408	
I004	3/4" RGPVC	(1) STP	CONTROL FOR FIT-540F	FIT-540F	FST4-FCV4B	E-408	
I005	3/4" RGPVC	(1) STP	CONTROL FOR FIT-540D	FIT-540D	FST4-FCV4A	E-408	
I006	3/4" RGPVC	(1) STP	CONTROL FOR FIT-530F	FIT-530F	FST3-FCV3B	E-408	
I007	3/4" RGPVC	(1) STP	CONTROL FOR FIT-530D	FIT-530D	FST3-FCV3A	E-408	

NOTES:
(1) SEE ELECTRICAL LEGEND ON SHEET E-003 AND GENERAL LEGEND ON SHEET G-002.
(2) RIO-01 CONSISTS OF TWO BAYS, RIO-01L AND RIO-01R. RIO-01L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-01R SHALL BE FOR DIGITAL I/O.
(3) RIO-02 CONSISTS OF TWO BAYS, RIO-02L AND RIO-02R. RIO-02L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-02R SHALL BE FOR DIGITAL I/O.



CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL
CONDUIT AND CABLE SCHEDULE 17 OF 25

Sheet Number:
E-025C
Page Number: 396

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CHECKED BY: DES

DRAWN BY: BM

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**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

Rev.

Description

Appr.

Date

1

ADDENDUM NO. 3

GD

10/15/25

2

ADDENDUM NO. 5

GD

11/19/25

I&C CONDUIT AND CABLE SCHEDULE							
CONDUIT	SIZE/TYPE	WIRE/CABLE	FUNCTION	FROM	TO	SHEET REFERENCE	REMARKS
I169	1" RTRC	(2) STP	CONTROL FOR THE FOLLOWING: (1) STP FOR LIT-570C (1) STP FOR FST-07 PLOW	HH-FSTS-2	LIT-570C	E-410, E-506	VIA IB-FSTS TRANSITION TO RGPVC WITHIN OPERATING GALLERY
I170	1" RTRC	(2) STP	CONTROL FOR THE FOLLOWING: (1) STP FOR LIT-580C (1) STP FOR FST-08 PLOW	HH-FSTS-2	LIT-580C	E-410, E-506	VIA IB-FSTS TRANSITION TO RGPVC WITHIN OPERATING GALLERY
I171	1" RTRC	(3) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR PAT-FCV1 (1) STP FOR FIT-606	PCP-I	PAT-FCV1	E-408, E-503, E-602	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
I172	1" RGPVC	(1) STP	CONTROL FOR FIT-606	PAT-FCV1	FIT-606	E-602	
I173	3/4" RGPVC	(1) STP	CONTROL FOR AIT-608B	AIT-608A	AIT-608B	E-602	
I174	1" RTRC	(2) STP	CONTROL FOR THE FOLLOWING: (1) STP FOR AIT-608A (1) STP FOR AIT-608B	PCP-I	AIT-608A	E-408, E-503, E-602	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
I175	1 1/2" RGPVC	(5) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR PAT-FCV1 (1) STP FOR FIT-606 (1) STP FOR AIT-608A (1) STP FOR AIT-608B	RIO-01	PCP-I	E-408	
I176	3/4" RGPVC	(1) STP	CONTROL FOR FIT-510D	FST1-FCV1A	FIT-510D	E-407	
I177	3/4" RGPVC	(1) STP	CONTROL FOR FIT-510F	FST1-FCV1B	FIT-510F	E-407	
I178	3/4" RGPVC	(1) STP	CONTROL FOR FIT-520D	FST2-FCV2A	FIT-520D	E-407	
I179	3/4" RGPVC	(1) STP	CONTROL FOR FIT-520F	FST2-FCV2B	FIT-520F	E-407	
I180	3/4" RGPVC	(3) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR FST1-FCV1A (1) STP FOR FIT-510D	FST1-FCV1B	FST1-FCV1A	E-407	
I181	1 1/2" RGPVC	(6) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR FST1-FCV1B (1) STP FOR FIT-510F (2) STP FOR FST1-FCV1A (1) STP FOR FIT-510D	FST2-FCV2A	FST1-FCV1B	E-407	
I182	1 1/2" RGPVC	(9) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR FST2-FCV2A (1) FIT-520D (2) STP FOR FST1-FCV1B (1) STP FOR FIT-510F (2) STP FOR FST1-FCV1A (1) STP FOR FIT-510D	FST2-FCV2B	FST2-FCV2A	E-407	
I183	3/4" RGPVC	(2)STP	CONTROL FOR KGV-01	01 KGV	ACP	E-101	
I184	3/4" RGPVC	(2)STP	CONTROL FOR FCV-1073	FVC-1073	ACP	E-101	
I185	3/4" RGPVC	(2)STP	CONTROL FOR FCV-1053	FVC-1053	ACP	E-101	
I186	3/4" RGPVC	(2)STP	CONTROL FOR FCV-1033	FVC-1033	ACP	E-101	
I187	3/4" RGPVC	(2)STP	CONTROL FOR FCV-1013	FVC-1013	ACP	E-101	
I188	3/4" RGPVC	(1)STP	CONTROL FOR KGV-01	01 KGV	ACP	E-101	
I189	3/4" RGPVC	(1)STP	CONTROL FOR FIT-1073	FIT-1073	ACP	E-101	
I190	3/4" RGPVC	(1)STP	CONTROL FOR FIT-1053	FIT-1053	ACP	E-101	
I191	3/4" RGPVC	(1)STP	CONTROL FOR FIT-1033	FIT-1033	ACP	E-101	
I192	3/4" RGPVC	(1)STP	CONTROL FOR FIT-1013	FIT-1013	ACP	E-101	
I193	2" RGPVC	(15) STP	CONTROL FOR ACP	ACP	DCU	E-101	
I194	2" RGPVC	(54) STP	CONTROL FOR THE FOLLOWING: (1) STP FOR AIT-336F (1) STP EACH FOR AIT-336A, AIT-336B (1) STP EACH FOR FIT-334A, FIT-334B, FIT-334C, FIT-334D, FIT-334E, FIT-334F, FIT-334G (2) STP EACH FOR AT3-FCV1, AT3-FCV2, AT3-FCV3, AT3-FCV4, AT3-FCV5, AT3-FCV6, AT3-FCV7 (1) STP EACH FOR AIT-336C, AIT-336D, AIT-336E (1) STP EACH FOR AIT-346C, AIT-346D, AIT-346E (1) STP EACH FOR FIT-344A, FIT-344B, FIT-344C, FIT-344D, FIT-344E, FIT-344F, FIT-344G (2) STP EACH FOR AT4-FCV1, AT4-FCV2, AT4-FCV3, AT4-FCV4, AT4-FCV5, AT4-FCV6, AT4-FCV7 (1) STP EACH FOR AIT-346A, AIT-346B, AIT-346C	RIO-02	CPS-I	E-418	
I195	2" RGPVC	(54) STP	CONTROL FOR THE FOLLOWING: (1) STP FOR AIT-356F (1) STP EACH FOR AIT-356A, AIT-356B (1) STP EACH FOR FIT-354A, FIT-354B, FIT-354C, FIT-354D, FIT-354E, FIT-354F, FIT-354G (2) STP EACH FOR AT5-FCV1, AT5-FCV2, AT5-FCV3, AT5-FCV4, AT5-FCV5, AT5-FCV6, AT5-FCV7 (1) STP EACH FOR AIT-356C, AIT-356D, AIT-356E (1) STP EACH FOR AIT-366C, AIT-366D, AIT-366E (1) STP EACH FOR FIT-364A, FIT-364B, FIT-364C, FIT-364D, FIT-364E, FIT-364F, FIT-364G (2) STP EACH FOR AT6-FCV1, AT6-FCV2, AT6-FCV3, AT6-FCV4, AT6-FCV5, AT6-FCV6, AT6-FCV7 (1) STP EACH FOR AIT-366A, AIT-366B, AIT-366C	RIO-02	CPS-I	E-418	

NOTES:
(1) SEE ELECTRICAL LEGEND ON SHEET E-003 AND GENERAL LEGEND ON SHEET G-002.
(2) RIO-01 CONSISTS OF TWO BAYS, RIO-01L AND RIO-01R. RIO-01L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-01R SHALL BE FOR DIGITAL I/O.
(3) RIO-02 CONSISTS OF TWO BAYS, RIO-02L AND RIO-02R. RIO-02L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-02R SHALL BE FOR DIGITAL I/O.



METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO

DESIGNED BY:
AR

CHECKED BY:
DES

DRAWN BY:
BM

DATE:
7/1/2025

REVIEWED BY:
CA

SCALE:
NONE

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CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL

CONDUIT AND CABLE SCHEDULE 24 OF 25

Sheet Number:
E-025J

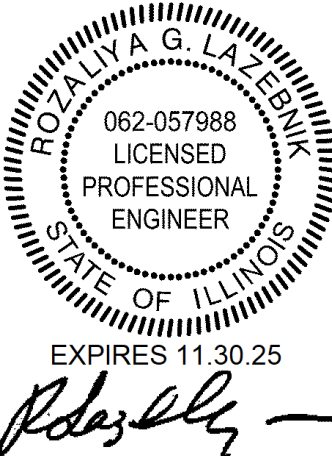
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Rev.	Description	Appr.	Date
1	ADDENDUM NO. 3	GD	10/15/25
2	ADDENDUM NO. 5	GD	11/19/25

I&C CONDUIT AND CABLE SCHEDULE							
CONDUIT	SIZE/TYPE	WIRE/CABLE	FUNCTION	FROM	TO	SHEET REFERENCE	REMARKS
I196	3/4" RGPVC	(1)STP	CONTROL FOR AIT-295	AIT-295	RIO-01	E-209, E-407, E-416, E-417	
I197	3/4" RGPVC	(1)STP	CONTROL FOR AIT-291	AIT-291	RIO-01	E-206,E-207,E-208,E-209,E-407,E-416,E417	<varies>
I200	1" RGPVC	(9) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR 01-KVG (1) STP FOR FIT-01-KVG (2) STP FOR FCV-1073 (2) STP FOR FCV-1053 (1) STP FOR FIT-1073 (1) STP FOR FIT-1053	01-KVG	ACP	E-101	
I201	1" RGPVC	(6) STP	CONTROL FOR THE FOLLOWING: (2) STP FOR FCV-1013 (2) STP FOR FCV-1033 (1) STP FOR FIT-1013 (1) STP FOR FIT-1033	FIT-1033	ACP	E-101	
S001	2" RTRC	EMPTY	SPARE	HH-FSTN-2	FST-01	E-503	
S002	2" RTRC	EMPTY	SPARE	HH-FSTN-2	FST-02	E-503	
S003	2" RTRC	EMPTY	SPARE	HH-FSTN-2	FST-03	E-503	
S004	2" RTRC	EMPTY	SPARE	HH-FSTN-2	FST-04	E-503	
S005	2" RTRC	EMPTY	SPARE	HH-FSTS-2	FST-05	E-506	
S006	2" RTRC	EMPTY	SPARE	HH-FSTS-2	FST-06	E-506	
S007	2" RTRC	EMPTY	SPARE	HH-FSTS-2	FST-07	E-506	
S008	2" RTRC	EMPTY	SPARE	HH-FSTS-2	FST-08	E-506	
S010	2" RTRC	EMPTY	SPARE	FCPN-C	HH-FSTN-2	E-503	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
S011	2" RTRC	EMPTY	SPARE	FCPN-C	HH-FSTN-2	E-503	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
S012	2" RTRC	EMPTY	SPARE	FCPS-C	HH-FSTS-2	E-506	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
S013	2" RTRC	EMPTY	SPARE	FCPS-C	HH-FSTS-2	E-506	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
S014	2" RTRC	EMPTY	SPARE	PCP-I	SG-15	E-408, E-503, E-602	TRANSITION TO RGPVC WITHIN OPERATING GALLERY
S015	1" RGPVC	EMPTY	SPARE	HH-FSTN-2	FST-04	E-503	
S016	1" RGPVC	EMPTY	SPARE	HH-FSTN-2	FST-02	E-503	
S017	1" RGPVC	EMPTY	SPARE	HH-FSTN-2	FST-01	E-503	
S018	1" RGPVC	EMPTY	SPARE	HH-FSTN-2	FST-03	E-503	
S019	1" RGPVC	EMPTY	SPARE	HH-FSTS-2	FST-08	E-506	
S020	1" RGPVC	EMPTY	SPARE	HH-FSTS-2	FST-06	E-506	
S021	1" RGPVC	EMPTY	SPARE	HH-FSTS-2	FST-05	E-506	
S022	1" RGPVC	EMPTY	SPARE	HH-FSTS-2	FST-07	E-506	
T001	1" RGPVC	(1) 24STD FIBER	TELEPHONE	PCB PHONE CONTROLLER	PHONE CONTROLLER (BATTERY E)	E-101, E-102, E-103, E-206, E-207, E-208, E-209, E-407, E-416	PCB PHONE CONTROLLER IS LOCATED IN THE TELEPHONE ROOM AT EL +39.71 AS SHOWN ON E-103
T002	3/4" RGPVC	(1) CAT6 ETHERNET	TELEPHONE		PHONE CONTROLLER (BATTERY E)	E-416, E-417	
T003	3/4" RGPVC	(1) CAT6 ETHERNET	TELEPHONE		PHONE CONTROLLER (BATTERY E)	E-416	
T004	1" RGPVC	(2) CAT6 ETHERNET	POWER MONITORING FOR MDP-E1, MDP-E2		TB-MDP	E-416, E-417	
T005	3/4" RGPVC	(1) CAT6 ETHERNET	POWER MONITORING FOR MDP-E1		MDP-E1	E-416	
T006	3/4" RGPVC	(1) CAT6 ETHERNET	POWER MONITORING FOR MDP-E2		MDP-E2	E-416	

NOTES:
(1) SEE ELECTRICAL LEGEND ON SHEET E-003 AND GENERAL LEGEND ON SHEET G-002.
(2) RIO-01 CONSISTS OF TWO BAYS, RIO-01L AND RIO-01R. RIO-01L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-01R SHALL BE FOR DIGITAL I/O.
(3) RIO-02 CONSISTS OF TWO BAYS, RIO-02L AND RIO-02R. RIO-02L SHALL BE FOR ANALOG I/O AND ETHERNET. RIO-02R SHALL BE FOR DIGITAL I/O.

NOTES:
(1) SEE ELECTRICAL LEGEND ON SHEET E-003 AND GENERAL LEGEND ON SHEET G-002.



CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
GENERAL
CONDUIT AND CABLE SCHEDULE 25 OF 25

Sheet Number:
E-025K
Page Number: 404

130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

PRUDENTIAL PLAZA ONE

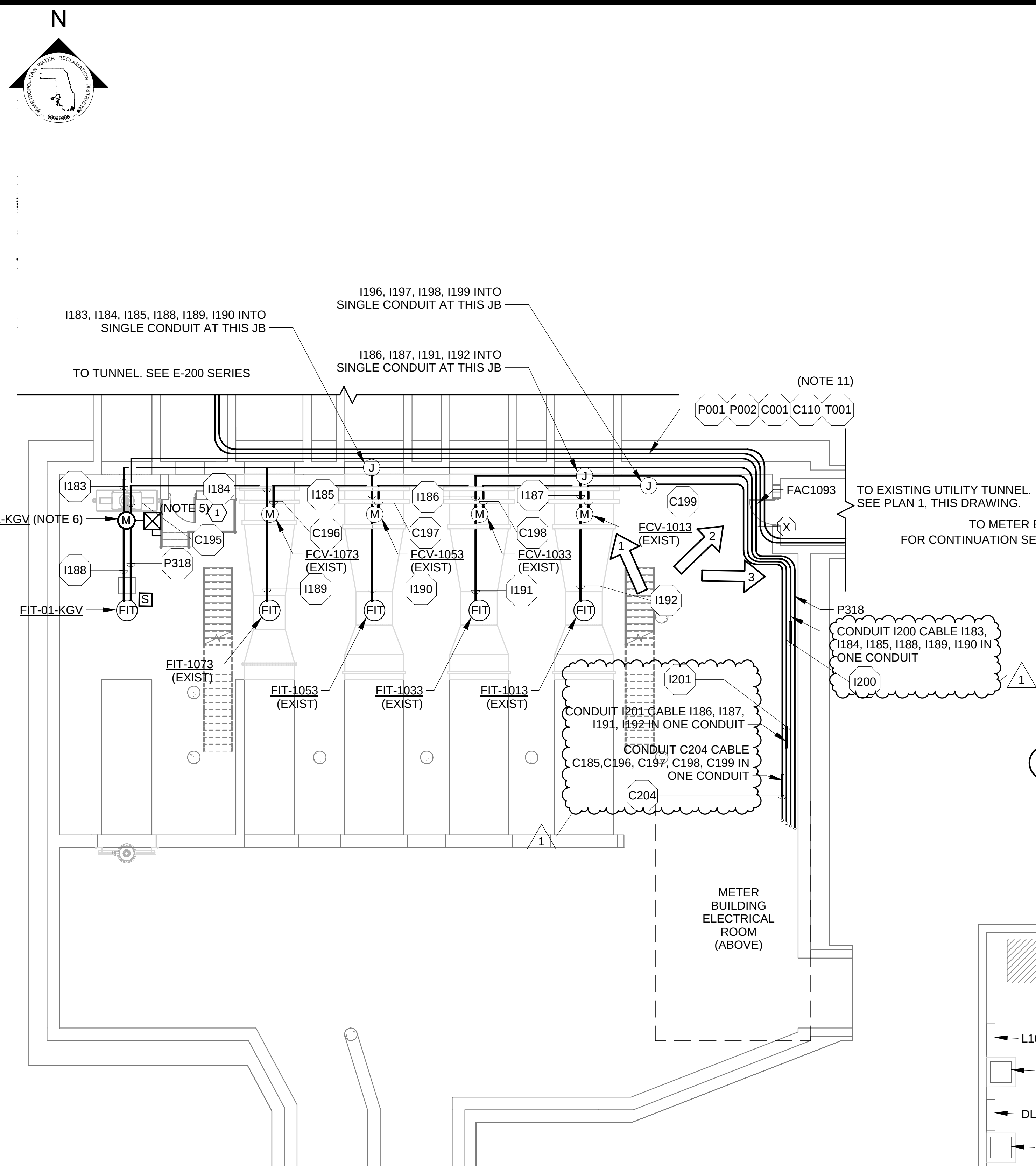
550 W. Jackson Boulevard • Suite 600 • Chicago, Illinois 60661

Primera

DESIGNED BY: AR
CHECKED BY: DES
DRAWN BY: BM
REVIEWED BY: CA
DATE: 7/1/2025
SCALE: NONE

AECOM

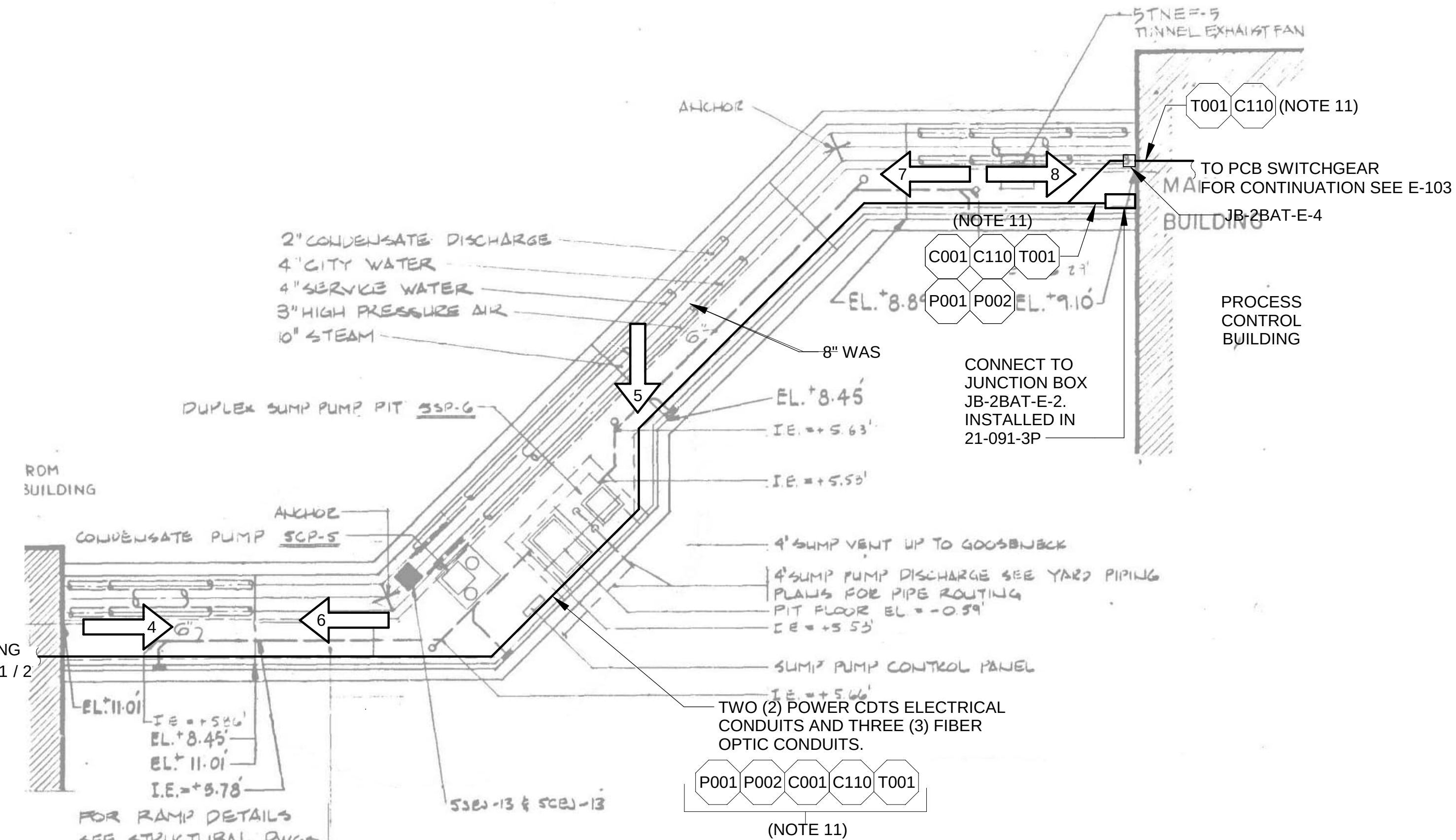
METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO



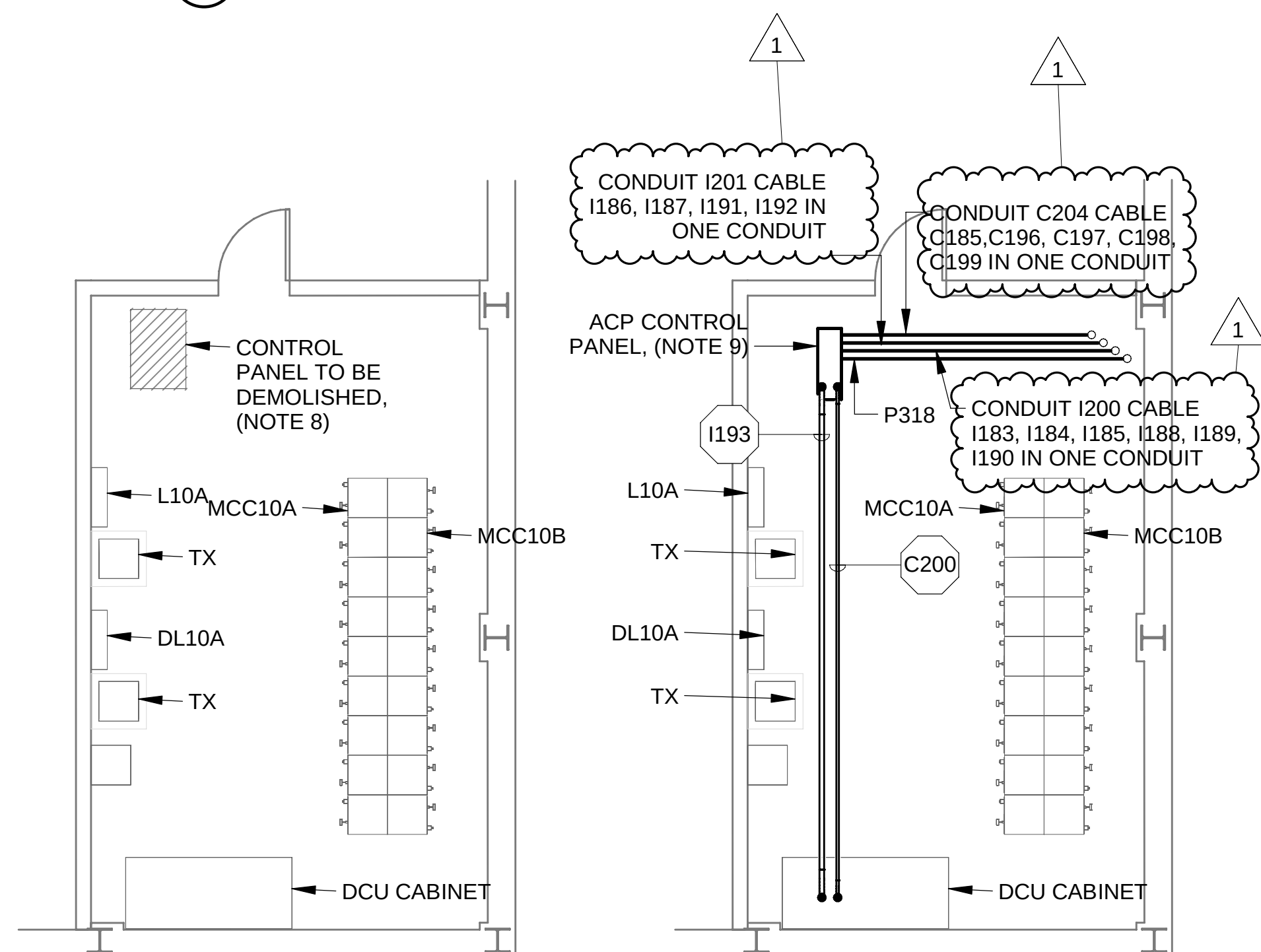
2 METER BUILDING PROPOSED PLAN - ELECTRICAL EL. +11.00
SCALE: 1/8" = 1'-0"

LEGEND:

-  EXISTING (BACKGROUND)
 EXISTING TO REMAIN (OR NEW WORK FURNISHED AND INSTALLED UNDER OTHER CONTRACT ITEMS)
 NEW WORK, TO BE FURNISHED AND INSTALLED UNDER THE ELECTRICAL ITEM.
 MOTOR
 CONDUIT TAG
 COMBINATION MOTOR STARTER/DISCONNECT
 EQUIPMENT IDENTIFICATION TAG
 INSTRUMENTATION POWER ON-OFF SWITCH IN NEMA 4X ENCLOSURE

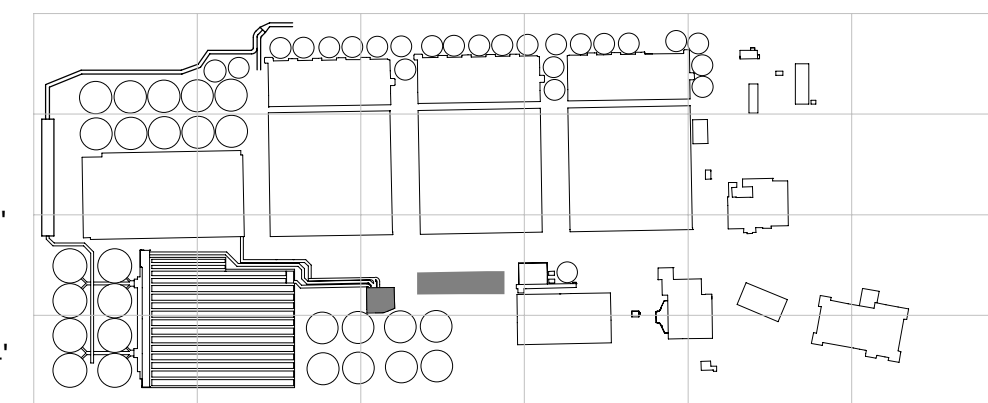
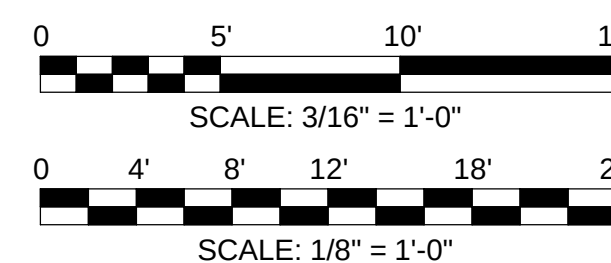


1 EXISTING UTILITY TUNNEL CONDUIT PLAN
SCALE: 1/8" = 1'-0"



METER BUILDING ELECTRICAL ROOM
 DEMO PLAN - ELECTRICAL - EL. +26.00
 SCALE: 3/16" = 1'-0"

METER BUILDING ELECTRICAL ROOM
MOD PLAN - ELECTRICAL - EL. +26.00
SCALE: 3/16" = 1'-0"



OVERALL KEYPLAN

NOTES:

1. ARROWS INDICATE SITE PHOTO DIRECTION, SEE E-102.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS, AND FIELD ROUTE CONDUIT AS NEEDED TO AVOID CONFLICTS.
3. REFER TO SPECIFICATION SECTION 16111, SECTION 2.01 FOR CONDUIT APPLICATION REQUIREMENTS.
4. REFER TO SECTION 16010 GENERAL PROVISIONS FOR ELECTRICAL WORK, SECTION 16111 CONDUIT, SECTION 16130 BOXES, AND SECTION 16190 SUPPORTING DEVICES FOR RACEWAY SYSTEM REQUIREMENTS.
5. NOT ALL PULLBOXES ARE INDICATED ON PLAN. REFER TO SPECIFICATION SECTION 16111, SECTION 3.01 FOR PULLBOX SPACING REQUIREMENTS.
6. DISCONNECT THE EXISTING MOTOR, RETAIN THE EXISTING POWER CONDUIT AND CONDUCTORS THAT FEED IT, RECONNECT NEW MOTOR TO THE EXISTING POWER CONDUIT AND CONDUCTORS.
7. TO ACP LOCATED ABOVE IN THE MAIN CONTROL ELECTRICAL ROOM (EL. +26.00), SEE THIS SHEET FOR LOCATION.
8. DEMOLISH EXISTING ACP CABINET, REMOVE ALL CONDUIT AND CONDUCTORS BACK TO THE NEAREST JUNCTION/PULLBOX. RETAIN THE EXISTING POWER CONDUIT AND CONDUCTORS FEEDING THE ACP CABINET. RETAIN THE EXISTING HOUSEKEEPING PAD.
9. MODIFY THE EXISTING HOUSEKEEPING PAD TO ACCOMMODATE THE NEW ACP CABINET. LEAVE A MIN. OF 1" REVEAL OF THE HOUSEKEEPING PAD BEYOND THE EDGE OF THE NEW ACP CABINET ON ALL SIDES.
10. CONDUIT INSTALLATION SHALL NOT BLOCK ACCESS TO EXISTING EQUIPMENT
11. THESE ARE EXISTING SPARE CONDUITS. ONLY NEW CABLE IS BEING INSTALLED IN THEM.

KEY NOTES:

- 1 REFER TO SECTION 16902 FOR SMOKE DETECTOR REQUIREMENTS. REFER TO DETAIL 3 ON DRAWING E-033 FOR WIRING DIAGRAM. PROVIDE SAMPLING TUBES TO COVER ENTIRE WIDTH OF TUNNEL. COORDINATE WITH LOCATION OF ASSOCIATED HOLD-OPEN DEVICE.

[illegible]

**METROPOLITAN WATER RECLAMATION DISTRICT
OF GREATER CHICAGO**

AECOM

PRUDENTIAL PLAZA ONE
130 E RANDOLPH STREET
SUITE 2400
CHICAGO, IL 60601, USA

Designed by: AR	Checked by: AR
Drawn by: TW	Reviewed by: AR
Date: 7/1/2025	Scale: As indicated

CONTRACT 21-092-3P
O'BRIEN WATER RECLAMATION PLANT
BATTERY E ACTIVATED SLUDGE FACILITY
PROCESS CONTROL BUILDING & METER BUILDING
CONDUIT TO UTILITY TUNNEL PLAN

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