



Upper Occoquan Service Authority

Leader in Water Reclamation and Reuse

14631 COMPTON ROAD, CENTREVILLE, VIRGINIA 20121-2506
(703) 830-2200

January 18, 2024

VIA Electronic and FEDERAL EXPRESS

**ADDENDUM NO. 2
TO THE CONTRACT DOCUMENTS
for the construction of the
Ozone Biofiltration System
(UOSA Contract OBF)
Upper Occoquan Service Authority**

To: All Official Bidding Document Holders

Attached for your use, please find a copy of Addendum No. 2 for UOSA Contract OBF. The Bid opening date is February 6, 2024 at 2:00 PM.

Sincerely,

A handwritten signature in black ink that reads "Jeff Small".

Jeff Small
Chief Engineer,
Capital Improvements

Attachment: Addendum No. 2

Interpretations and clarifications for questions from Official Bidding
Document Holders



Upper Occoquan Service Authority

Leader in Water Reclamation and Reuse

14631 COMPTON ROAD, CENTREVILLE, VIRGINIA 20121-2506
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ADDENDUM NO. 2
to the
CONTRACT DOCUMENTS
for the construction of
Ozone Biofiltration System
UOSA Contract OBF
Upper Occoquan Service Authority
Centreville, VA

Date: January 18, 2024

To All Official Bidding Document Holders:

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents for the Construction of UOSA Contract OBF for the Upper Occoquan Service Authority, Centreville, Virginia, as fully and completely as if the same were fully set forth therein:

A. BIDDING REQUIREMENTS

1. **INVITATION TO BID.** Page 2. Bids are due by:
REPLACE "January 25" with "February 6".

2. **BID FORM** Section 8 **REPLACE** entirely with:

8. PROCESS INSTRUMENTATION AND CONTROL SYSTEMS SUBCONTRACTORS

Process Control System Supplier (PCSS) Subcontractors named below are specified for use on the Project in accordance with the Specifications, Section 40 61 00, PROCESS CONTROL AND ENTERPRISE MANAGEMENT SYSTEMS GENERAL PROVISIONS. The Bidder shall circle one of the Named PCSS Subcontractors who will then be required to provide the specified PICS for the amount included in the Lump Sum Bid. Should the Bidder fail to indicate the Named PCSS Subcontractor on which its Bid is based, or circle more than one of the Named PCSS Subcontractors, the Bidder if awarded the Contract shall use the first of the Named PCSS Subcontractors listed. If the Bidder desires to propose a substitute for the Named PCSS Subcontractors, it shall circle the Named PCSS Subcontractor it is offering to provide and also shall write in the space provided the name of the offered Substitute PCSS

Subcontractor and provide for such the price deduction resulting to the Owner upon the allowed use of the Substitute PCSS Subcontractor. If a Substitute PCSS Subcontractor is written in by the Bidder, the supporting qualification, experience, and project reference information specified in 1.5 C. 1. of specification Section 40 61 00, PROCESS CONTROL AND ENTERPRISE MANAGMENT SYSTEMS GENERAL PROVISIONS, shall be submitted with the Bid. Failure by the Bidder to submit any of the required information with the Bid shall result in a determination that the proposed Substitute PCSS Subcontractor is "not acceptable." Determination of the low Bidder will be based on the Lump Sum Bid without consideration of any deduct associated with Bidder offered Substitute PCSS Subcontractors.

In the event that the Owner allows the Bidder's proposed Substitute PCSS Subcontractor, the associated "deduct" will be subtracted from the amount of the successful Bidder's Lump Sum Bid to determine the Contract Price. In the event that the Owner determines the proposed Substitute PCSS Subcontractor is "not acceptable," the Bidder if awarded the Contract shall provide the Named PCSS Subcontractor circled by the Bidder for the amount included in the Lump Sum Bid.

PCSS SUBCONTRACTOR

(Circle one of the Named PCSS Subcontractors below.)

Specifications, Section 40 61 00, PROCESS CONTROL AND ENTERPRISE MANAGMENT SYSTEMS GENERAL PROVISIONS

1. S-L Controls, Division of Sherwood- Logan, Annapolis, MD.
2. MC Dean- CIM Automation, Division of MC Dean, Winchester, VA.
3. Systems East, Hampton, VA.
4. Hartwell Engineering, Division of McCrone, Annapolis, MD.

Proposed Substitute PCSS Subcontractor

A deduct of \$ _____ from the Lump Sum Bid is offered for the use of the Proposed Substitute PCSS Subcontractor.

3. **CONTRACT. APPENDIX C. REPLACE** entirely with:

**APPENDIX C
UOSA CONTRACT OBF
NAMED PCSS SUBCONTRACTORS**

N/A - Not applicable, no Substitute proposed

Section 40 61 00 Process Control and Enterprise Management Systems Named PCSS Subcontractors S-L Controls, Division of Sherwood- Logan, Annapolis, MD MC Dean-CIM Automation, Division of MC Dean, Winchester, VA Systems East, Hampton, VA Hartwell Engineering, Division of McCrone, Annapolis, MD	Substitute <div style="background-color: #cccccc; height: 150px; margin-top: 5px;"></div>			
Proposed Substitute PCSS Subcontractor <hr style="border: 0; border-top: 1px solid black; margin-top: 5px;"/>	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%; padding: 5px;">YES</td><td style="width: 33%; padding: 5px;">NO</td><td style="width: 33%; padding: 5px;">N/A</td></tr></table>	YES	NO	N/A
YES	NO	N/A		

Deduct from the Lump Sum Bid for Owner selected Substitute PCSS Subcontractor >>

<\$ _____ >

B. SPECIFICATIONS

1. On page 2 of Specification Section 017900, Demonstration and Training, Paragraph 1.5,B, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".

2. On page 7 of Specification Section 033500, Concrete Finishing, Paragraph 3.6,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".

3. On page 5 of Specification Section 034500, Precast Architectural Concrete, Paragraph 2.1,A, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".

4. On page 3 of Specification Section 055119, Metal Grating Stairs, Paragraph 2.1,A, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
5. On page 4 of Specification Section 133419, Metal Building Systems, Paragraph 2.3,A, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
6. On page 2 of Specification Section 210529, Hangers and Supports for Fire Suppression Piping and Equipment, Paragraph 2.1,A, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
7. On page 3 of Specification Section 211313, Wet-Pipe Sprinkler Systems, Paragraph 2.1,D, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
8. On page 2 of Specification Section 220529, Hangers and Supports for Plumbing Piping and Equipment, Paragraph 2.1,A, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
9. On page 3 of Specification Section 237423.16, Packaged, Indirect-Fired, Outdoor, Heating-Only Makeup Air Units, Paragraph 2.1,E, **REPLACE** "Section 014000 "Quality Requirements,"" with "Section 014516.13 – "Contractor Quality Control,"".
10. On page 4 of Specification Section 310519.13, Geotextiles for Earthwork, Paragraph 3.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
11. On page 9 of Specification Section 400506, Couplings, Adapters, and Specials for Process Piping, Paragraph 2.11,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
12. On page 8 of Specification Section 400522, Stainless Steel Process Pipe and Tubing for Ozone Service, Paragraph 2.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
13. On page 10 of Specification Section 400522, Stainless Steel Process Pipe and Tubing for Ozone Service, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".

14. On page 17 of Specification Section 400523, Stainless Steel Process Pipe and Tubing, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
15. On page 10 of Specification Section 400524, Steel Process Pipe, Paragraph 2.6,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
16. On page 12 of Specification Section 400524, Steel Process Pipe, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
17. On page 4 of Specification Section 400531, Thermoplastic Process Pipe, Paragraph 2.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
18. On page 6 of Specification Section 400531, Thermoplastic Process Pipe, Paragraphs 3.4,A and 3.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
19. On page 6 of Specification Section 400551, Common Requirements for Process Valves, Paragraph 2.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
20. On page 10 of Specification Section 400557, Actuators for Process Valves and Gates, Paragraph 2.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
21. On page 11 of Specification Section 400557, Actuators for Process Valves and Gates, Paragraph 3.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
22. On page 5 of Specification Section 400564, Butterfly Valves, Paragraph 2.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
23. On page 4 of Specification Section 400565.16, Globe Valves, Paragraph 2.3,A, **REPLACE** "Section 014000 - Quality Requirements" with "Section 014516.13 – "Contractor Quality Control"".

24. On page 6 of Specification Section 400565.26, Check Valves, Paragraph 2.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
25. On page 7 of Specification Section 400565.26, Check Valves, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
26. On page 11 of Specification Section 400567.36, Pressure-Regulating Valves, Paragraph 2.8,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
27. On page 12 of Specification Section 400567.36, Pressure-Regulating Valves, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
28. On page 4 of Specification Section 400578.21, Air Release Valves for Wastewater Service, Paragraph 2.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
29. On page 5 of Specification Section 400578.21, Air Release Valves for Wastewater Service, Paragraph 3.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
30. On page 8 of Specification Section 400593.23, Low-Voltage Motor Requirements for Process Equipment, Paragraph 2.7,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
31. On page 10 of Specification Section 406343, Programmable Logic Controllers, Paragraph 2.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
32. On page 2 of Specification Section 407113, Magnetic Flow Meters, Paragraph 1.7,B, **REPLACE** "Section 014000 "Quality Requirements."" with "Section 014516.13 – "Contractor Quality Control"".
33. On page 5 of Specification Section 407113, Magnetic Flow Meters, Paragraph 2.4,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".

34. On page 3 of Specification Section 407143, Variable Area Flow Meters, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
35. On page 4 of Specification Section 407176, Thermal Flow Meter, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
36. On page 3 of Specification Section 407223, Radar Level Meters, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
37. On page 4 of Specification Section 407233, Capacitance (RF Admittance) Type Level Meters (Continuous and Point Type), Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
38. On page 3 of Specification Section 407243, Pressure and Differential Pressure Type Level Meters, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
39. On page 4 of Specification Section 407313, Pressure and Differential Pressure Gauges, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
40. On page 4 of Specification Section 407326, Gauge-Pressure Transmitters, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
41. On page 3 of Specification Section 407363, Diaphragm Seals, Paragraph 2.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
42. On page 9 of Specification Section 463153.04, Ozone Destruct Equipment, Paragraph 2.7,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
43. On page 9 of Specification Section 463153.04, Ozone Destruct Equipment, Paragraph 3.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".

44. On page 7 of Specification Section 463156, Liquid Oxygen Storage and Feed Equipment, Paragraph 2.5,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
45. On page 8 of Specification Section 463156, Liquid Oxygen Storage and Feed Equipment, Paragraph 3.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
46. On page 10 of Specification Section 463342, Diaphragm-Type Metering Pumps, Paragraph 3.2,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
47. On page 4 of Specification Section 464117, Inline Static Mixers, Paragraph 2.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
48. On page 5 of Specification Section 464117, Inline Static Mixers, Paragraph 3.3,A, **REPLACE** "Section 014000 "Quality Requirements"" with "Section 014516.13 – "Contractor Quality Control"".
49. On page 6 of Specification Section 407000, Instrumentation for Process Systems, **REMOVE** LOX Gas Filter Outlet Pressure (PIT-54-044). On page 18 of Specification Section 406196, Process Control Descriptions, **REMOVE** the entirety of Loop 54-044.
50. On page 15 of Specification Section 407000, Instrumentation for Process Systems, **REMOVE** L/2 Area Ambient Ozone (AE/AIT-54-801). On page 113 of Specification Section 406196, Process Control Descriptions, **REMOVE** the entirety of Loop 54-801.
51. On page 15 of Specification Section 407000, Instrumentation for Process Systems, **REMOVE** L/2 Sidestream Injection Room Ambient Ozone (AE/AIT-54-401). On page 73 of Specification Section 406196, Process Control Descriptions, **REMOVE** the entirety of Loop 54-400, 54-401. **ADD** the following:

**LOOP 54-400 OZONE CONTACTOR SIDESTREAM INJECTION ROOM AMBIENT
OZONE MONITORING**

General: An ozone analyzer (AIT) will be installed in the Ozone Contactor Sidestream Injection Room and will automatically shut down the system in the event of an ozone leak. The AIT measurement will be monitored locally and remotely at the MOCP OIT and PICS. The high ambient ozone concentration alarm (selected by the OSS) will be displayed remotely at the MOCP OIT and PICS.

P&ID: I-14

Control:

Local: None

Remote: None

Software Interlocks:

High-high ambient Ozone is used to shutdown of ozone generators.

High-high ambient Ozone is used in Loop 54-026.

MOCP HMI:

Manual: None

Auto: None

PICS PLC/OWS:

Manual: None

Auto: None

Alarms / Monitoring:

Local:

Ambient Ozone Concentration

MOCP HMI:

Ambient Ozone 1 Concentration

Ambient Ozone 1 High Concentration Alarm

Ambient Ozone 1 High-High Concentration Alarm

PICS PLC/OWS:

Ambient Ozone 1 Concentration

Ambient Ozone 1 High Concentration Alarm

Ambient Ozone 1 High-High Concentration Alarm

52. On Page 4 of Specification Section 000100, Table of Contents, **REMOVE** "Section 104416 Fire Extinguishers". **REMOVE** Section 104416, Fire Extinguishers, in its entirety.
53. On page 4 of Specification Section 133419, Metal Building Systems, **ADD** the following Paragraph 2.1,B:
- "B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Butler Manufacturing Company; a division of BlueScope Buildings North America, Inc.
 2. Ceco Building Systems; part of the Cornerstone Building Brands.
 3. Varco-Pruden Buildings; a division of BlueScope Buildings North America, Inc.
 4. Or equal."
54. On page 1 of Specification Section 014516.13, Contractor Quality Control, **REMOVE** Paragraph 1.2,B in its entirety.
55. On page 3 of Specification Section 400515, Process Pipe Schedule (Insulation Required and Specification Reference), **REPLACE** "15082, Type I-11" with "Yes, 404213" for GOX-Oxygen gas (LOX tank vaporizer line). On page 3 of Specification Section 400515, Process Pipe Schedule (Insulation Required and Specification Reference), **ADD** "Yes, if Outdoors, 404213" for GOX – Oxygen gas (high pressure side of pressure regulating valve). On page 3 of Specification Section 400515, Process Pipe Schedule (Insulation Required and Specification Reference), **REPLACE** "15082 Type I-3 or I-12" with "Yes, 404213" for 1W – Plant Water.
56. On page 14 of Specification Section 40 70 00, Instrumentation for Process Systems, **REMOVE** Priming Valve No. 1 Level (LSH-54-847).
57. On page 14 of Specification Section 40 70 00, Instrumentation for Process Systems, **REMOVE** Priming Valve No. 2 Level (LSH-54-848).
58. On page 19 of Specification Section 40 70 00, Instrumentation for Process Systems, **REMOVE** Quench Chemical Feed Pump No. 1 Suction Pressure (PI-54-703).
59. On page 20 of Specification Section 40 70 00, Instrumentation for Process Systems, **REMOVE** Quench Chemical Feed Pump No. 2 Suction Pressure (PI-54-723).

60. On page 10 of Specification Section 400551, Common Requirements for Process Valves, **REMOVE** LL-V-835 and LL-V-814 from the valve schedule.
61. On the Process Pipe Schedule of Specification Section 400515, do the following:
- 1) On page 2 **REPLACE** "400524" with "400523" in "Specification Section" column for AIR, Backwash air row.
 - 2) On page 2 **REPLACE** "400524" with "400523" in "Specification Section" column, and **REPLACE** "Cooling water return" with "Closed loop cooling water" in the "Description" column for CWRCL and CWSCL row.
 - 3) On page 2 **REPLACE** "Cooling water supply" with "Open loop cooling water" in the "Description" column for CWROL and CWSOL row.
 - 4) On page 4 **REMOVE** PW, Plant water larger than 4" row in its entirety.
62. On page 6 of Specification Section 407000, Instrumentation for Process Systems, **REPLACE** PDI-54-040 provided by "40" with "46". On page 7 of Specification Section 407000, Instrumentation for Process Systems, **REPLACE** AE/AIT-54-045 provided by "40" with "46". On page 7 of Specification Section 407000, Instrumentation for Process Systems, **REPLACE** TE/TIT-54-046 provided by "40" with "46".
63. On page 7 of Specification Section 407000, Instrumentation for Process Systems, **REPLACE** PI-54-051 provided by "46" with "40". On page 7 of Specification Section 407000, Instrumentation for Process Systems, **REPLACE** TSL-54-052 provided by "46" with "40".
64. On page 3 of Specification Section 463150, Ozone System General, **REPLACE** Paragraph 1.2,C,4,d, with "Coordination with AECS of overall control of each ozone subsystem through communications to the Plant's SCADA System including: (1) the Ozone Generation System PLCs, Ozone Destruction System PLCs and Ozone Mass Flow Control System furnished by the OSS".
65. On page 5 of Specification Section 463150, Ozone System General, Paragraph 1.2,E,1,c **REMOVE** "sidestream injection system". On page 5 of Specification Section 463150, Ozone System General, Paragraph 1.2,E,1,b **ADD** "sidestream injection system".
66. On page 7 of Specification Section 463150, Ozone System General, Paragraphs 1.5,B,1 and 2, **REPLACE** "60 days" with "70 days".

67. On page 12 of Specification Section 463150, Ozone System General, Paragraph 1.8,A,1 **REPLACE** "SUEZ Water Technologies - Elmwood Park, New Jersey" with "Veolia Water Technologies Treatment Solution USA, Inc. - Leonia, NJ".
68. On page 13 and 14 of Specification Section 463150, Ozone System General, Paragraphs 1.10,C,3 and 4, **REPLACE** the last sentence in each paragraph with "Warranty covers all parts provided by OSS."
69. On page 17 of Specification Section 463150, Ozone System General, Paragraph 2.1,F,2,a, **REMOVE** "and software configurations".
70. On page 17 of Specification Section 463150, Ozone System General, Paragraph 2.1,F,2,d, **REPLACE** the second sentence of the paragraph with "Each LCP to be skid mounted NEMA 4X type with PLC processor, PLC power supply, analog and discrete I/O cards, relays, terminals, surge protection devices (required only for the discrete and analog signals originating outside the building), power supply, Ethernet switch, communication devices and software configurations associated with the ozone destruct system."
71. On page 18 of Specification Section 463150, Ozone System General, Paragraph 2.1,F,2,f, **REPLACE** the fourth sentence of the paragraph with "Free-standing panel NEMA 12 type with Ethernet/IP based distributed I/O comprised of modular analog and discrete I/O modules, power supply, Ethernet communication modules, relays, terminals, surge protection devices (required only for the discrete and analog signals originating outside the building), power supply, Ethernet switch, communication devices and software configurations associated with the nitrogen system."
72. On page 1 of Specification Section 407579, Total Organics Analyzers, Paragraph 1.2,A **REPLACE** "oxygen gas" with "total organics / UVT254". On page 2 of Specification Section 407579, Total Organics Analyzers, Paragraph 2.1 **REPLACE** "AMBIENT OXYGEN DETECTOR" with "TOTAL ORGANICS DETECTOR".
73. On page 22 of Specification Section 463150, Ozone System General, Paragraph 2.2,G **ADD** "8. Ozone Generator Cooling Panel No. 1". On page 22 of Specification Section 463150, Ozone System General, Paragraph 2.2,G **ADD** "9. Ozone Generator Cooling Panel No. 2".
74. On page 23 of Specification Section 463150, Ozone System General, Paragraph 2.2,J **ADD** "4. Quenching Chemical System OIT-86".

75. On page 4 of Specification Section 406100, Process Control and Enterprise Management Systems General Provisions, Paragraph 1.5,D,3,j,(2), **REMOVE** "Deliver early development system to the AESS: 60 calendar days after Contract Award." On page 5 of Specification Section 406100, Process Control and Enterprise Management Systems General Provisions, Paragraph 1.5,D,3,j,(4), **REPLACE** "PCSS" with "OSS" (2 locations). On page 5 of Specification Section 406100, Process Control and Enterprise Management Systems General Provisions, Paragraph 1.5,D,3,j,(5-7), **REPLACE** "PCSS" with "Contractor" (3 locations).

On page 27 of Specification Section 463150, Ozone System General, Paragraph 2.7,K, **REPLACE** paragraph letter 'B' with 'K' and **REPLACE** subsequent subparagraphs 2 and 3 on page 28 with the following:

"2. FACTORY TESTING - UNWITNESSED FACTORY TEST (UFT)

- a. Purpose of the UFT is for the OSS to check the hardware portion of the system prior to the AESS arriving to begin their software portion of the Factory test. This type of testing is part of any quality firm's internal QA/QC procedures.
- b. Temporary network connections will be required to confirm the network configuration. Temporary wiring of primary elements, final control elements, and field-mounted transmitters is not required.
- c. Hardware to be tested includes all control system devices shown on the System Architecture drawings and provided by the OSS.
- d. Tests to be performed include, but are not limited to, the following.
Address each of these tests in the Test Procedure submittal.
 - i. All panels and enclosures being provided to undergo a thorough inspection to verify integrity of cabinet enclosures, frame structures, paint work and finish, etc. Review panel drawings to ensure they accurately reflect panel layout and wiring.
 - ii. Perform a system audit to verify all components have been staged for the test and have been documented properly with correct model numbers, serial numbers, etc. Provide the following documentation of the audit at factory test and submitted as part of O&M Manual Documentation:
 1. For each workstation and server, list of all software installed (including the operating system), with software revision number, software improvement modules or patches installed, license number and owner registration information, warranty period, vendor and local distributor names and contacts.

2. For each microprocessor-based component connected to the control communication backbone in the system (PLCs, managed switches, protocol converters, communication cards on final field devices, radios, etc.), list the firmware revision, vendor and local distributor information, and system, warranty information, configuration parameters (e.g., communication settings, fail position settings, etc.)
- iii. Perform panel wire pull tests to ensure all wiring has been connected with the appropriate torque to prevent wires from coming loose.
- iv. Test UPS to verify the UPS switch power correctly while keeping all UPS powered loads online. During field testing, perform UPS testing to determine if they have been sized correctly to maintain the specified run time.
- v. Power up control panels and perform a 100 percent I/O point checkout from the control panel terminals to the I/O registers in the PLC modules to verify proper control panel wiring and PLC I/O module set-up. OSS can load a "dummy" PLC configuration and programming, using their own PLC configuration software, to enable test through to I/O register. At a minimum, I/O checkout consists of four steps.
 1. Jumper discrete input signals at field terminal blocks in control panels to verify proper status at I/O register.
 2. Connect analog input signals to a signal generator at field terminal blocks in control panels to verify proper status at I/O register signals. Simulate at zero percent, 50 percent, and 100 percent of full scale.
 3. Test discrete output signals by forcing the output on in output register, then verifying output is on by connecting a digital multimeter to measure continuity at terminations.
 4. Test analog output signals by entering values in output register to force output to zero percent, 50 percent, and 100 percent of full scale, then verifying output by utilizing a digital multimeter to measure current or voltage generated at termination points.
- vi. For each hardware enclosure, inspect cabinet enclosures, frame structure, paint work and finish, dimensions, and hardware operability (i.e., fans, door hinges, keylocks, etc.).
- vii. For each subpanel, inspect I/O subsystem physical layout, power supply sizing and mounting, cable routing, wire runs across hinges properly installed, fans and blowers unobstructed and mounted

to maximize air flow, power conditioning correctly installed, and overall layout and installation of components meets manufacturer's recommendations and standard industry accepted practices.

- vii. All other control panel circuitry.
- e. Upon successful completion of UFT, OSS to submit a record copy of test results as specified in PART 1. As part of this test results submittal, notify AESS and Engineer in writing that the system is ready for SIT. No other notice of Factory test will be accepted. AESS to schedule SIT within 30 days of receipt of this submittal.

3. FACTORY TESTING - SYSTEM INTEGRATION TEST (SIT)

- a. Purpose of SIT is to allow OSS and AESS to jointly to test entire hardware and software system as a complete integrated system prior to the test being witnessed by Owner. SIT to be run by AESS, with assistance from OSS as specified below and as needed and be conducted at OSS's facility.
- b. Required Documents for Test:
 - i. Clean set of approved panel drawings and wiring diagrams.
 - ii. Set of Contract Documents - all drawings and specifications.
 - iii. All design-change related documentation.
 - iv. Master copy of the OSS developed factory testing signoff forms.
- c. AESS will load application software on PLCs, SCADA servers, and historian. Entire system will then be tested with OSS assisting AESS in this testing.
- d. Minimum testing to be performed during SIT include, but are not limited to, the following:
 - i. Repeat of all Verification of proper scanning, communication, and complete data acquisition of the entire system.
 - ii. Verification of all redundant functionality of components.
 - iii. Verification of proper power failure recovery.
 - iv. Verification of proper indication for communication error issues.
 - v. Perform a complete I/O point checkout to verify proper operation of each input/output point. OSS to assist in this testing. I/O checkout consists of four steps.
 - 1. Jumper discrete input signals at field terminal blocks in control panels to verify proper status in HMI and OIT nodes.
 - 2. Connect analog input signals to a signal generator at field terminal blocks in control panels to verify proper status in HMI and OIT nodes. Simulate signals at zero percent, 50 percent, and 100 percent of full scale.
 - 3. Test discrete output signals by switching equipment to manual control at HMI and OIT nodes and turning the

output on or other means to turn output on. Then verify output is on by connecting a digital multimeter to measure continuity at terminations, thus verifying command from PLC has properly executed the contact closure.

4. Test analog output signals by switching equipment to manual control at HMI and OIT nodes and turning output on or other means to turn output on. Then verify output by utilizing a digital multimeter to measure current or voltage generated at termination points.

- vi. Simulate all process control strategies to ensure proper operation. OSS to support AESS as needed.
- vii. Upon successful completion of SIT, OSS to submit a record copy of test results to Owner and Engineer as specified in "Informational Submittals" and request scheduling of JWFT.

4. FACTORY TESTING – JOINT WITNESSED FACTORY TEST (JWFT)

- a. Purpose of JWFT is to allow Engineer or Owner representatives to witness the functionality, performance, and stability of entire hardware and software system as a complete integrated system. JWFT to be run by AESS and to be conducted at OSS's facility. OSS to support AESS as needed.
- b. Required Documents for Test:
 - i. Same as SIT documents.
- c. Operate system continuously throughout JWFT without failure, except where initiated per established test procedures. Unanticipated failures may, at Owner or Engineer's option, result in overall JWFT being deemed unsuccessful. Correct and re-test all deficiencies identified during these tests prior to completing JWFT or shipment of panels to jobsite as determined by Owner/Engineer.
- d. Tests to be performed during JWFT include, but are not limited to, the following:
 - i. A repeat of all tests specified in SIT.
 - ii. Perform an I/O test, a representative sampling of 5% of each type of I/O point to demonstrate the I/O functionality. Repeat or add to number of points tested to satisfy Owner and/or Engineer.
- e. Following is the daily schedule during these tests:
 - i. Morning meeting to review the day's test schedule.
 - ii. Scheduled tests and sign-offs.
 - iii. End-of-day meeting to review day's test results and to review or revise next day's test schedule.
 - iv. Unstructured testing period by the witnesses.

- c. Upon successful completion of JWFT, OSS to submit a record copy of test results as specified in PART 1."
76. On page 2 of Specification Section 407233, Capacitance (RF Admittance) Type Level Meters (Continuous and Point Type), Paragraph 2.1,A,2,d **REPLACE** "Substitutions: Or equal" with "Endress and Hauser model FTI51". **ADD** new Paragraph 2.1,A,2,e as follows "e. Substitutions: Or equal."
77. On page 2 of Specification Section 407326, Gauge-Pressure Transmitters, Paragraph 2.1,A,1,g **REPLACE** "Substitutions: Or equal" with "Endress and Hauser model PMP71B". **ADD** new Paragraph 2.1,A,1,h as follows: "h. Substitutions: Or equal."
78. On page 2 of Specification Section 407463, Temperature Transmitters, Paragraph 2.1,A,1,f **REPLACE** "Substitutions: Or equal" with "Endress and Hauser model T13". **ADD** new Paragraph 2.1,A,1,g as follows: "g. Substitutions: Or equal."
79. On page 2 of Specification Section 407513, pH/ORP Analyzers, Paragraph 2.1,A,1,f **REPLACE** "Substitutions: Or equal" with "Endress and Hauser model CM442/CPF82E". **ADD** new Paragraph 2.1,A,1,g as follows: "g. Substitutions: Or equal."
80. On page 2 of Specification Section 407579, Total Organics Analyzers, Paragraph 2.1,A,1,b **REPLACE** "Substitutions: Or equal" with "Endress and Hauser model CM442/CAS51D". **ADD** new Paragraph 2.1,A,1,c as follows: "c. Substitutions: Or equal."
81. On page 16 of Specification Section 463150, Ozone System General, Paragraph 2.1,C,4 **REPLACE** "89°F" with "84°F". On page 20 of Specification Section 463150, Ozone System General, Paragraph 2.2,A,2 **REPLACE** "89°F" with "84°F". On page 10 of Specification Section 463153, Ozone Generation Equipment, Paragraph 2.1,M,7 **REPLACE** "89°F" with "84°F". On page 13 of Specification Section 463153, Ozone Generation Equipment, Paragraph 2.3,D,1 **REPLACE** "89 degrees F" with "84 degrees F". On page 18 of Specification Section 463153, Ozone Generation Equipment, Paragraph 2.4,B,3,b,1) **REPLACE** "89" with "84".
82. On page 8 of Specification Section 463342, Diaphragm-Type Metering Pumps, Paragraph 2.2,F,3 **REPLACE** "LCP Furnished by Pump Supplier:" with "Integral LCP Furnished by Pump Supplier:". On page 8 of Specification Section 463342, Diaphragm-Type Metering Pumps, Paragraph 2.2,F,3,e **REMOVE** sentence "e. Mounting: Skid mounted".

On page 9 of Specification Section 463342, Diaphragm-Type Metering Pumps, Paragraph 2.5 **ADD** Paragraph 2.5,D through 2.5,F as follows:

"D. Pressure Gauge and Assemblies: Pressure gauges and pressure sensors shall be provided on an assembly as detailed on the Drawings comprising of plastometer pressure isolators with a CPVC isolation ball valve.

1. Furnished on discharge side of pumps indicating pump discharge pressure.
2. Pressure gauge: Furnish as part of complete factory assembly, including gauge, snubber, diaphragm seal with flush/vent valve, liquid fill, and interconnecting piping.
 - a. Casing: 300 series stainless steel with Type 316 stainless steel Bourdon tube and 300 series stainless steel movement.
 - b. Dial Face: White background with black markings, sealed to prevent entrance of moist air.
 - c. Liquid filled with glycerin with filler/breather cap.
 - d. Socket: Type 316 stainless steel with bottom connection.
3. Pressure switches shall be furnished by the pump supplier.

E. Pulsation Dampeners: Pump inlet and outlet pulsation dampeners shall be furnished as detailed on the Drawings.

1. The wetted side and diaphragm materials shall be compatible with the chemical being pumped.
2. Connections: 1-1/4" minimum NPT flanged connections
3. Chambers:
 - a. Upper Pressure Chamber: Charged with compressed air to pump manufacturer's recommended charging pressure. Construction to prevent charged air from being dissolved in process fluid.
 - b. Lower Process Fluid Chamber: Inert plastic material to prevent corrosion by process fluid. Use materials suitable for intended services.
- C. Chambers are separated by flexible, elastomeric bladder, PTFE bellow or diaphragm.
4. Minimum Safety Margin: Burst pressure to maximum working pressure of 4:1.
5. Capable of handling pump's maximum stroke volume.

F. Strainers:

1. Strainer Material: CPVC
2. Size: sized to match the main piping to the pump
3. Connection: standard flanged connections".

83. On page 2 of Specification Section 400515, Process Pipe Schedule, **REMOVE** "Yes, if Outdoors. 404213" in the PVC drain (row 4) under the column entitled "Insulation Required and Specification Reference".

84. On page 4 of Specification Section 404213, Process Piping Insulation, **ADD** Paragraph 2.3,B as follows:

“B. PVC Plastic Pipe Jacket: One-piece, molded type fitting covers and sheet material.

1. Color: Off-white
2. Comply with ASTM D1785
3. Thickness: 15 mils
4. Connections: Brush-on welding adhesive per PVC jacket manufacturer's recommendations.”

85. Specification Section 400561.43, Knife Gate Valves, **REMOVE** Paragraphs 2.2 and 2.3 in their entirety.

86. On page 31 of Specification Section 463150, Ozone System General, Paragraph 3.3,A,1,a, **REPLACE** sentence with "OSS Site representative to support on-site OCS activities".

87. On page 1 of Specification Section 406121.01, Process Control System Testing, Paragraph 1.3,A, **ADD** the following after the last sentence: "The PCSS shall coordinate Work with the AESS. The Contractor shall coordinate Work with subcontractors, equipment vendors (LOX, LIN, ozone dissolution equipment, chemical metering pumps, air scour blower if provided), and the OSS to provide support to the AESS to achieve a fully integrated and operational control system."

88. On page 31 of Specification Section 463150, Ozone System General, Paragraph 3.3,A,4,c, **REMOVE** second sentence.

89. On page 1 of Specification Section 014516.13, Contractor Quality Control, **REMOVE** Paragraph 1.2,B in its entirety.

90. On page 25 of Specification Section 406196, Process Control Descriptions, Paragraph 3.3,C, **REPLACE** "Specification Section 13290 – Ozone Generators" with "Specification Section 463153 – Ozone Generation Equipment".

91. On page 8 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-108, **REPLACE** "loop powered" with "120VAC".

92. On page 10 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-138, **REPLACE** "loop powered" with "120VAC".

93. On page 10 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-146, **REPLACE** "loop powered" with "120VAC".
94. On page 11 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-147, **REPLACE** "loop powered" with "120VAC".
95. On page 14 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-816, **REPLACE** "loop powered" with "120VAC".
96. On page 14 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-885, **REPLACE** "loop powered" with "120VAC".
97. On page 14 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-800, **REPLACE** "loop powered" with "120VAC".
98. On page 15 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-400, **REPLACE** "loop powered" with "120VAC".
99. On page 17 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-555, **REPLACE** "loop powered" with "120VAC".
100. On page 17 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-560, **REPLACE** "loop powered" with "120VAC".
101. On page 17 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-575, **REPLACE** "loop powered" with "120VAC".
102. On page 17 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-600, **REPLACE** "loop powered" with "120VAC".
103. On page 18 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-635, **REPLACE** "loop powered" with "120VAC".
104. On page 18 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-650, **REPLACE** "loop powered" with "120VAC".
105. On page 19 of Specification Section 407000 Appendix A, Field Instrument Schedule, Item AE/AIT-54-685, **REPLACE** "loop powered" with "120VAC".

106. On page 20 of Specification Section 407000 Appendix A, Field Instrument Schedule, **ADD** "I-8, AE/AIT-54-148, Ozone Analyzer, 0-10 ppm, PPM, Ozone Generation Building Ambient Ozone, 40, 407616, L, 120VAC."
107. On page 6 of Specification Section 263353, Static Uninterruptible Power Supply, Paragraph 2.3,A, **DELETE** "three-phase".
108. Specification Section 46 31 50:
- 1.10 B. 3. **REPLACE** entirely with "OSS agrees to compensate the Owner for the cost of excess electricity that will be incurred by UOSA a sum calculated at the rate of \$122,000.00 per kilowatt-hour per pound of ozone produced by which the "Total Measured and Weighted Specific Energy Consumption" per pound of Ozone Produced for the generators exceeds the "Total Guaranteed Weighted Specific Energy Consumption". This compensation shall be assessed based on the generator/PSU with the highest measured specific energy consumption value that exceeds the maximum allowable value."
- 3.3 B. 8. **REPLACE** "Liquidated Damages:" with "Compensation:".
- 3.3 B. 8. a. **REPLACE** "Liquidated Damages" with "Compensation for noncompliance".
- 3.3 B. 8. b. **REPLACE** "Liquidated Damages" with "Compensation".
- 3.3 B. 8. c. **REPLACE** "Liquidated Damages" with "Compensation".
- 3.3 B. 8. f. **REPLACE** entirely with "OSS agrees to compensate the Owner a sum calculated at the rate of \$122,000.00 per kilowatt-hour per pound of ozone produced by which the "Total Measured and Weighted Specific Energy Consumption" per pound of Ozone Produced for the generators exceeds the "Total Guaranteed Weighted Specific Energy Consumption". This compensation shall be assessed based on the generator/PSU with the highest measured specific energy consumption value that exceeds the maximum allowable value."
- 3.3 B. 8. g. In the last sentence **REPLACE** "liquidated damages" with "compensation to the Owner".
- Specification Section 46 31 53.01:
- 3.4 D. **REPLACE** "Calculation of Liquidated Damages" with "Calculation of Compensation to Owner for Noncompliance".

3.4 D.1. **REPLACE** “Liquidated Damages” with “Compensation for noncompliance”.

109. On page 3 of Specification Section 406100, Process Control and Enterprise Management Systems General Provisions, Paragraph 1.5.C.1. **REPLACE** “For non-listed PCSS’, submit, within 30 calendar days after Notice to Proceed, detailed information on staff and organization to indicate compliance with the Quality Assurance requirements of this Section” with “For non-listed PCSS’, submit, with the Bid, detailed information on staff and organization to indicate compliance with the Quality Assurance requirements of this Section”.

110. On page 14 of Specification Section 406100, Process Control and Enterprise Management Systems General Provisions, **REMOVE** Paragraph 1.9.E. in its entirety and ADD new Paragraph 1.9.E. as follows “E. Refer to the Bid Form for listed PCSS suppliers.”

111. On page 1 of Specification Section 406121.01, Process Control System Testing, **REPLACE** Paragraph 1.2 D and E with the following:

D. A third party, referred to as Applications Engineering Systems Supplier (AESS), has been pre-selected to perform Applications Engineering.

1. CDM Smith has been contracted by the Owner to serve as the AESS.

E. Provide support services to AESS as defined herein.

C. DRAWINGS

1. **REPLACE** Sheet C-16 with attached revised Sheet C-16.

2. **REPLACE** Sheet C-45 with attached revised Sheet C-45.

3. **REPLACE** Sheet C-49 with attached revised Sheet C-49.

4. **REPLACE** Sheet S-7 with attached revised Sheet S-7.

5. **REPLACE** Sheet M-9 with attached revised Sheet M-9.

6. **REPLACE** Sheet M-11 with attached revised Sheet M-11.

7. **REPLACE** Sheet M-12 with attached revised Sheet M-12.

8. **REPLACE** Sheet M-13 with attached revised Sheet M-13.
9. **REPLACE** Sheet M-14 with attached revised Sheet M-14.
10. **REPLACE** Sheet M-16 with attached revised Sheet M-16.
11. **REPLACE** Sheet M-18 with attached revised Sheet M-18.
12. **REPLACE** Sheet M-19 with attached revised Sheet M-19.
13. **REPLACE** Sheet M-23 with attached revised Sheet M-23.
14. **REPLACE** Sheet M-25 with attached revised Sheet M-25.
15. **REPLACE** Sheet E-18 with attached revised Sheet E-18.
16. **REPLACE** Sheet E-19 with attached revised Sheet E-19.
17. **REPLACE** Sheet E-26 with attached revised Sheet E-26.
18. **REPLACE** Sheet E-27 with attached revised Sheet E-27.
19. **REPLACE** Sheet E-37 with attached revised Sheet E-37.
20. **REPLACE** Sheet E-38 with attached revised Sheet E-38.
21. **REPLACE** Sheet E-42 with attached revised Sheet E-42.
22. **REPLACE** Sheet I-5 with attached revised Sheet I-5.
23. **REPLACE** Sheet I-6 with attached revised Sheet I-6.
24. **REPLACE** Sheet I-13 with attached revised Sheet I-13.
25. **REPLACE** Sheet I-14 with attached revised Sheet I-14.
26. **REPLACE** Sheet I-15 with attached revised Sheet I-15.
27. **REPLACE** Sheet I-16 with attached revised Sheet I-16.

28. **REPLACE** Sheet ID-2 with attached revised Sheet ID-2.
29. **REPLACE** Sheets H-1, H-2, H-3, H-5, and PD-1 with attached revised Sheets H-1, H-2, H-3, H-5, and PD-1. The electronic PE seal was missing from the replaced sheets.
30. **REPLACE** Sheets I-4, I-8, I-9, I-10, I-11, I-12, I-17, and I-18 with attached revised Sheets I-4, I-8, I-9, I-10, I-11, I-12, I-17, and I-18. The title block has been revised on these sheets.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 2 in the Bid Form. Bid Forms submitted without acknowledgement of this Addendum shall be considered non-responsive.

Attachments: Drawings; C-16, C-45, C-49, S-7, M-9, M-11, M-12, M-13, M-14, M-16, M-18, M-19, M-23, M-25, E-18, E-19, E-26, E-27, E-37, E-38, E-42, I-5, I-6, I-13, I-14, I-15, I-16, ID-2, H-1, H-2, H-3, H-5, PD-1, I-4, I-8, I-9, I-10, I-11, I-12, I-17, and I-18.

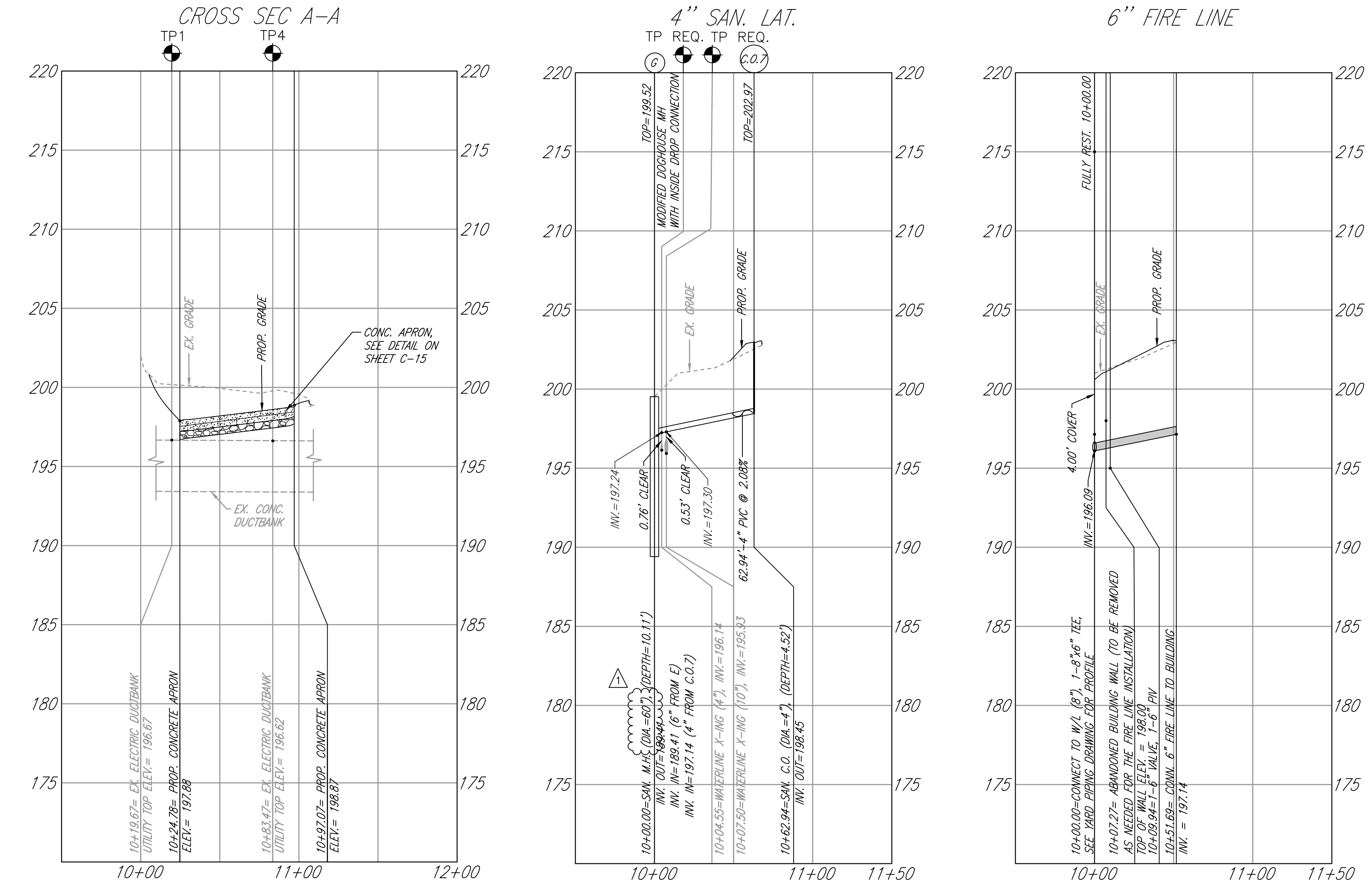
Approved by: Upper Occoquan Service Authority

A handwritten signature in black ink, appearing to read 'RW Angelotti', is written over a horizontal line.

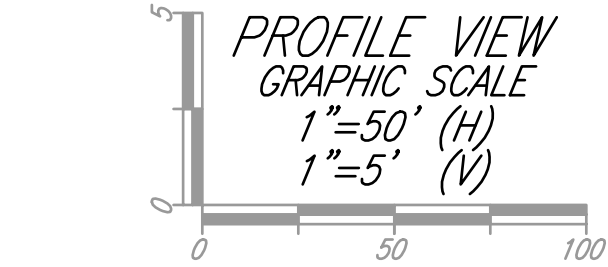
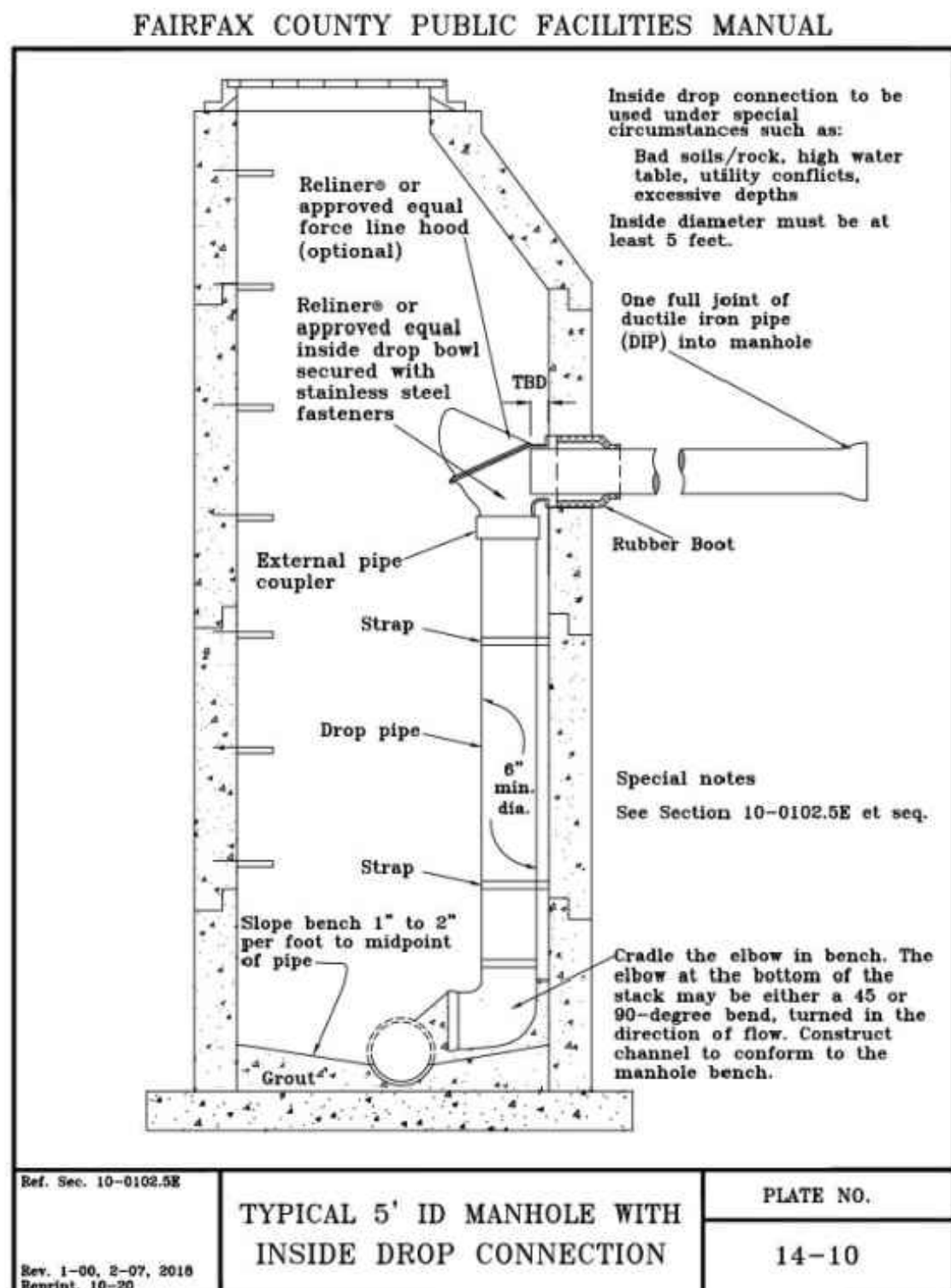
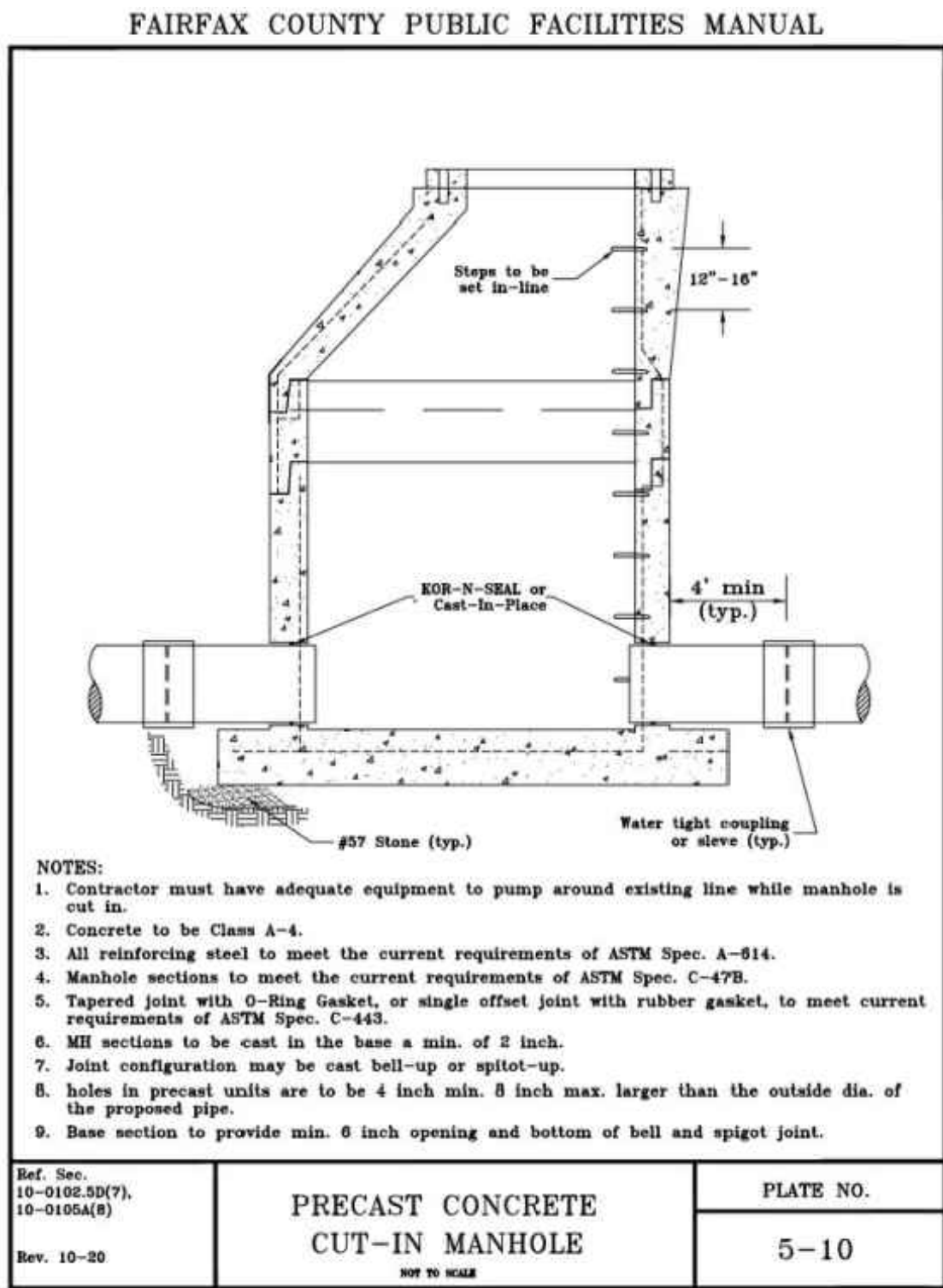
Robert W. Angelotti

Executive Director

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NOTE: ALL UTILITIES AS SHOWN HEREON ARE PRIVATELY OWNED AND MAINTAINED BY UOSA.



NOTE: SHOP DRAWING IS REQUIRED FOR THE MODIFIED DOGHOUSE MANHOLE WITH INSIDE DROP CONNECTION.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	01/08	TJ	CH	ADDENDUM 2

DESIGNED BY: D. HANA
DRAWN BY: D. HANA
SHEET CHK'D BY: T. JACOBY
CROSS CHK'D BY: C. HENEGAR
APPROVED BY: T. JACOBY
DATE: MARCH 2022

CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

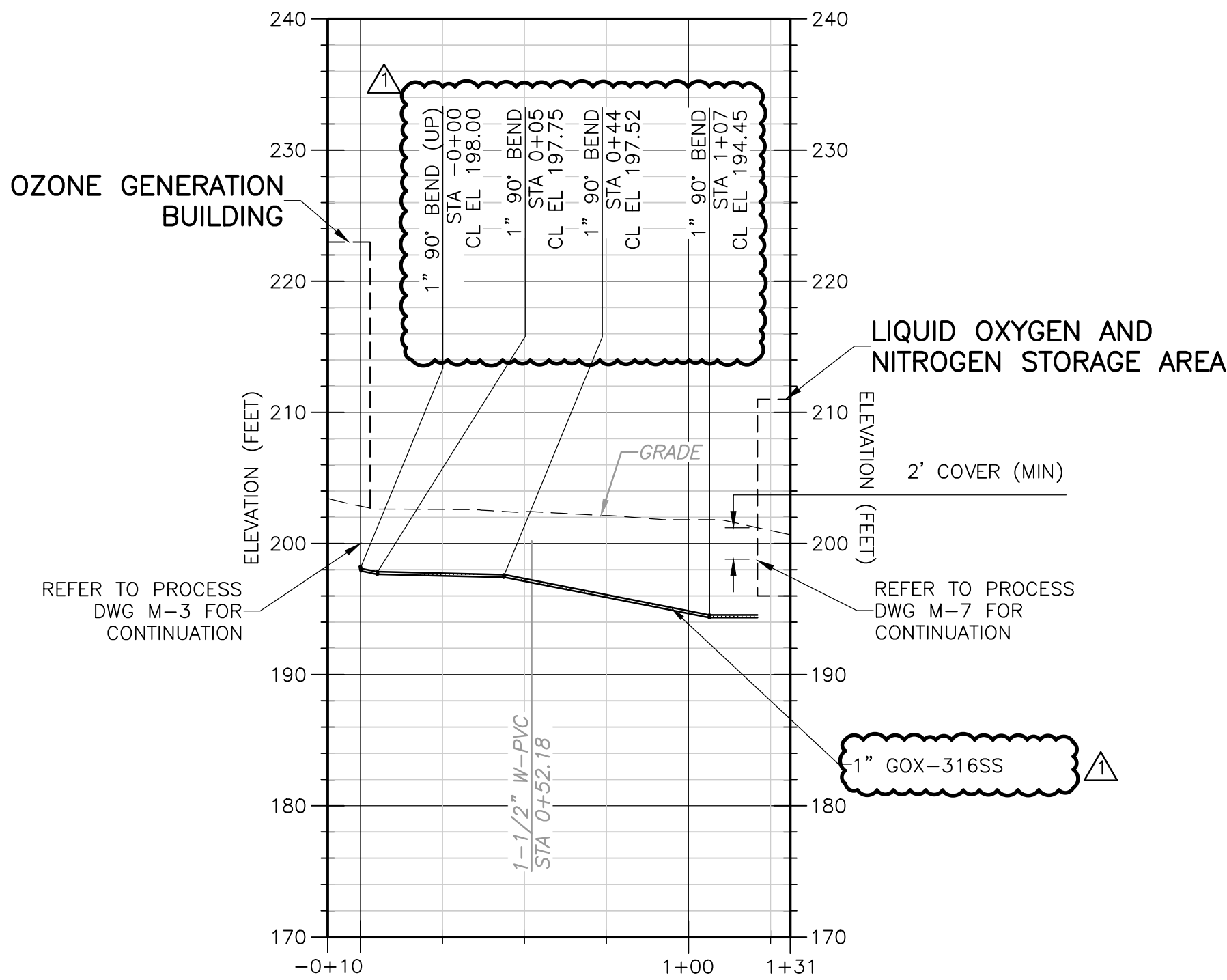
rda
Rinker Design Associates, P.C.
11100 Endeavor Court, Suite 200
Manassas, Virginia 20109
Phone: (703) 368-7373
www.rdaenv.com
"Turning Challenges into Opportunities"

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

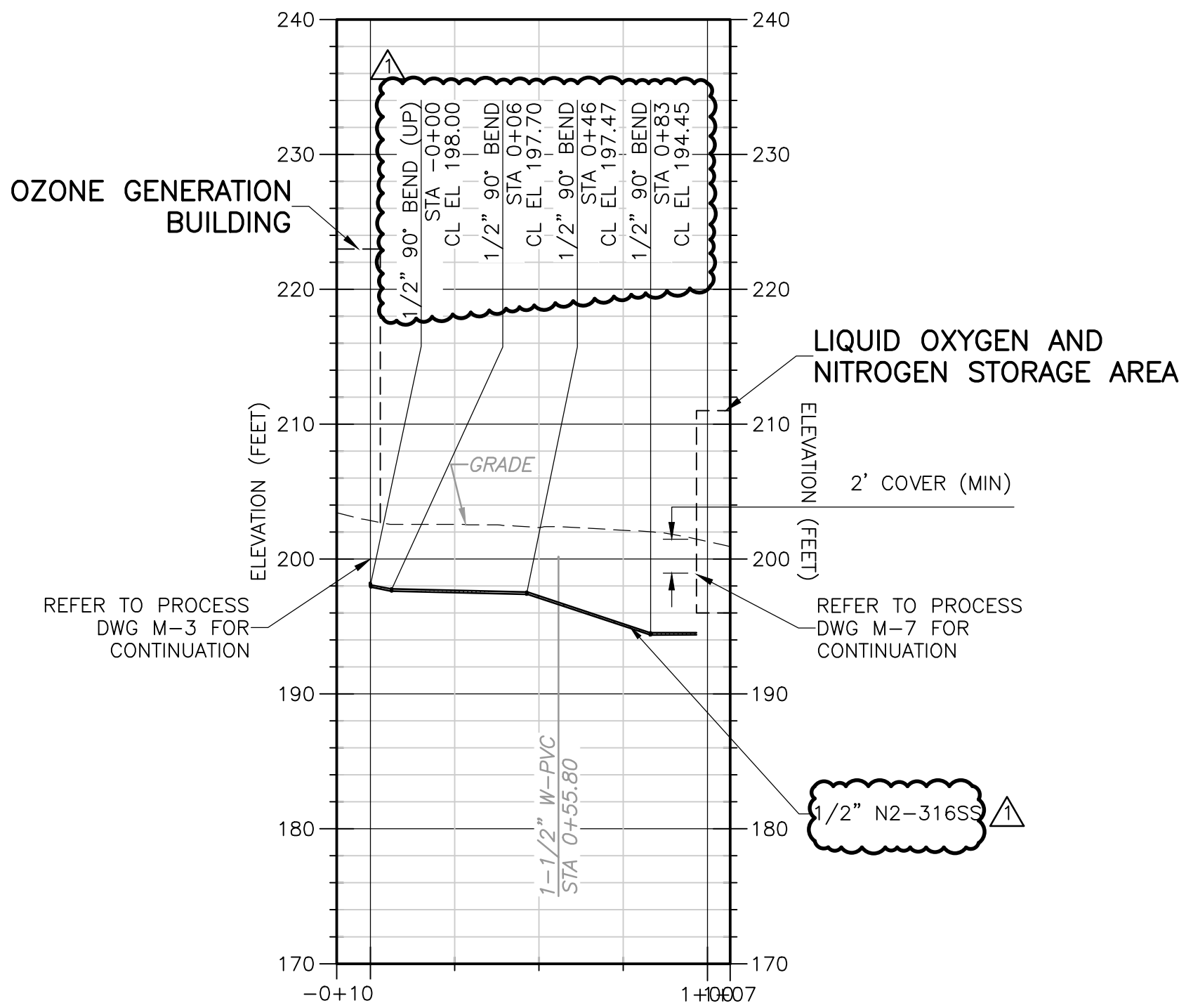
SANITARY SEWER & WATERLINE PROFILES

PROJECT NO. 20885-242778
FILE NAME: UTILITIES
SHEET NO. C-16

XREFs: [CDMS_2234, SW200008-Civil] Images: []
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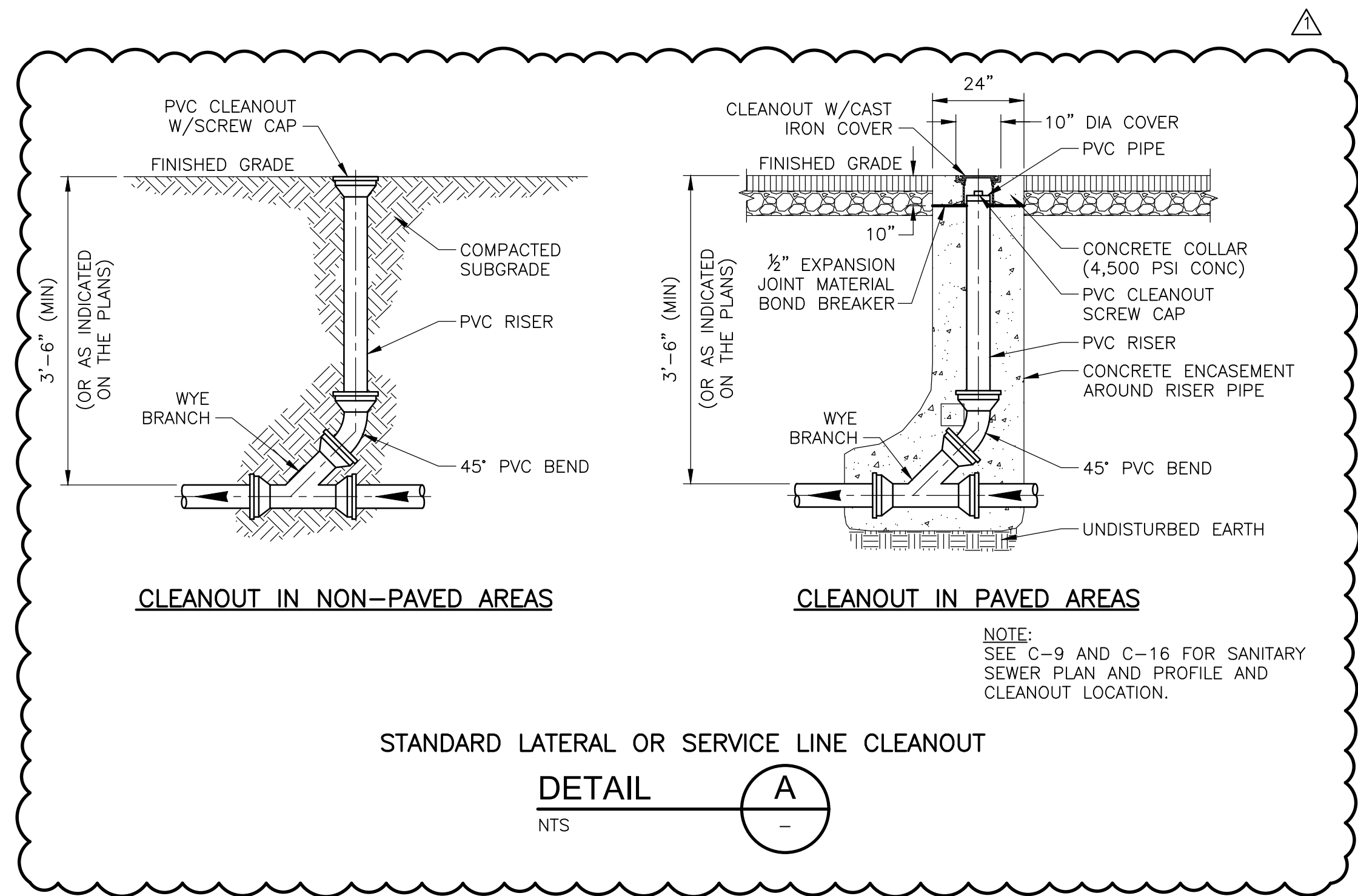
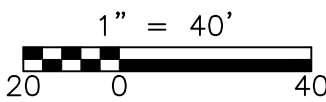


**1" GOX-316SS
PROFILE**
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'



**1/2" N2-316SS
PROFILE**
HORIZONTAL: 1" = 40'
VERTICAL: 1" = 10'

- NOTES:
- EXISTING UTILITIES SHOWN ARE APPROXIMATE AND BASED ON BEST AVAILABLE INFORMATION. NOT ALL UTILITIES MAY BE SHOWN. CONTRACTOR SHALL CONFIRM ALL UTILITIES AND FIELD VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	JJS	BZ	REVISED PER ADDENDUM 2.

DESIGNED BY: B. ORCHARD
DRAWN BY: D. KRAFT
SHEET CHK'D BY: B. ORCHARD
CROSS CHK'D BY: B. ZUIDERVLIT
APPROVED BY: B. FLINT
DATE: NOVEMBER 2022

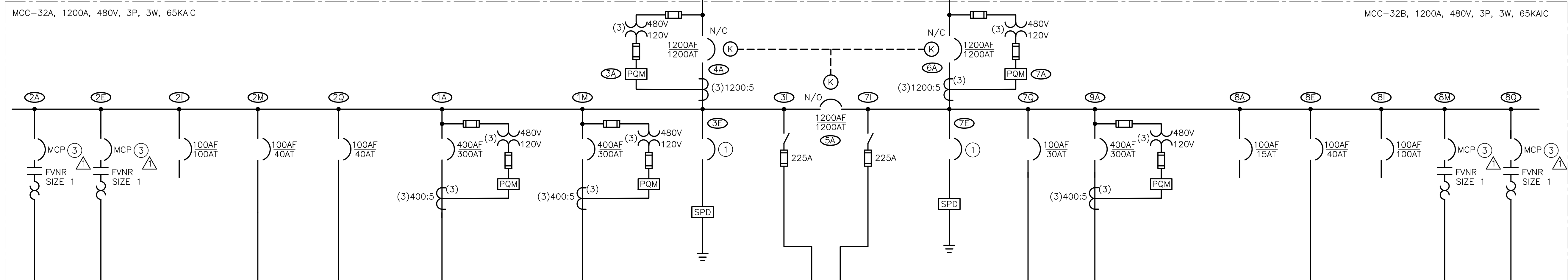
**CDM
Smith**
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

PIPE PROFILES AND DETAILS III

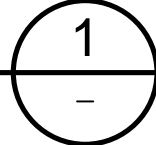
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SHEET NO.
C-49





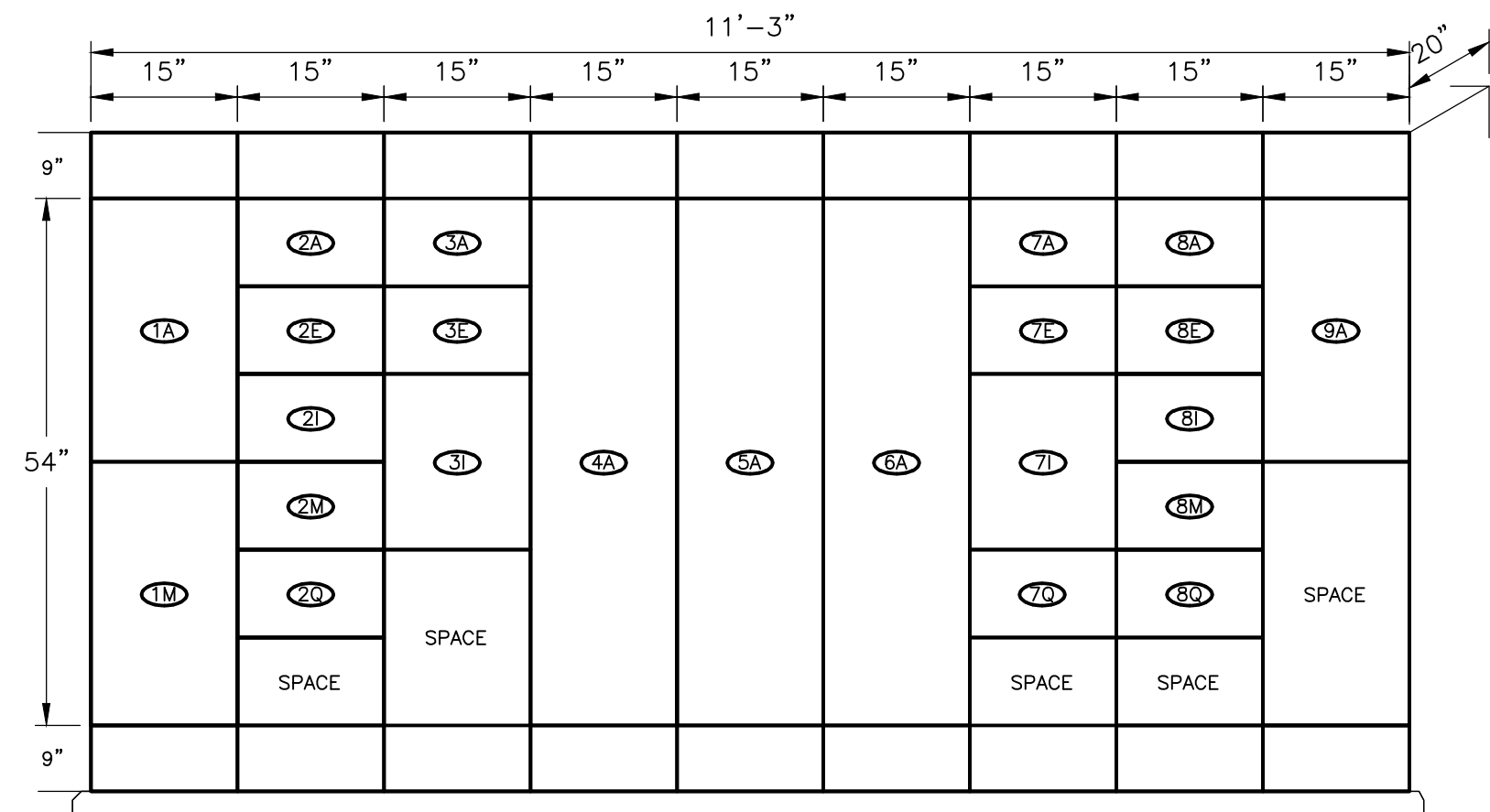
DIAGRAM

NTS



1. REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL CONDUIT AND WIRE QUANTITIES AND SIZES.
2. PROVIDE JUNCTION BOXES AT LOCATIONS FOR FUTURE EQUIPMENT.

- ① SIZED PER MANUFACTURER'S RECOMMENDATIONS.
- ② FUSE SIZED PER HVAC MANUFACTURER'S RECOMMENDATIONS.
- ③ SIZE MCP BASED ON MOTOR RATING.



MCC-32
ELEVATION
NTS

					DESIGNED BY: <u>R. MAGSIPOC</u>
					DRAWN BY: <u>N. PARI</u>
2	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2	SHEET CHK'D BY: <u>I. SMITH</u>
1	11/22	GDW	IBS	REVISED PER PERMIT REVIEW	CROSS CHK'D BY: <u>M. CUSAC</u>
REV. NO.	DATE	DRWN	CHKD	REMARKS	APPROVED BY: <u>T. MOHAMMED</u>
					DATE: <u>NOVEMBER 2022</u>



UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

OZONE GENERATION BUILDING LL MCC-32 ONE-LINE AND ELEVATION DIAGRAMS

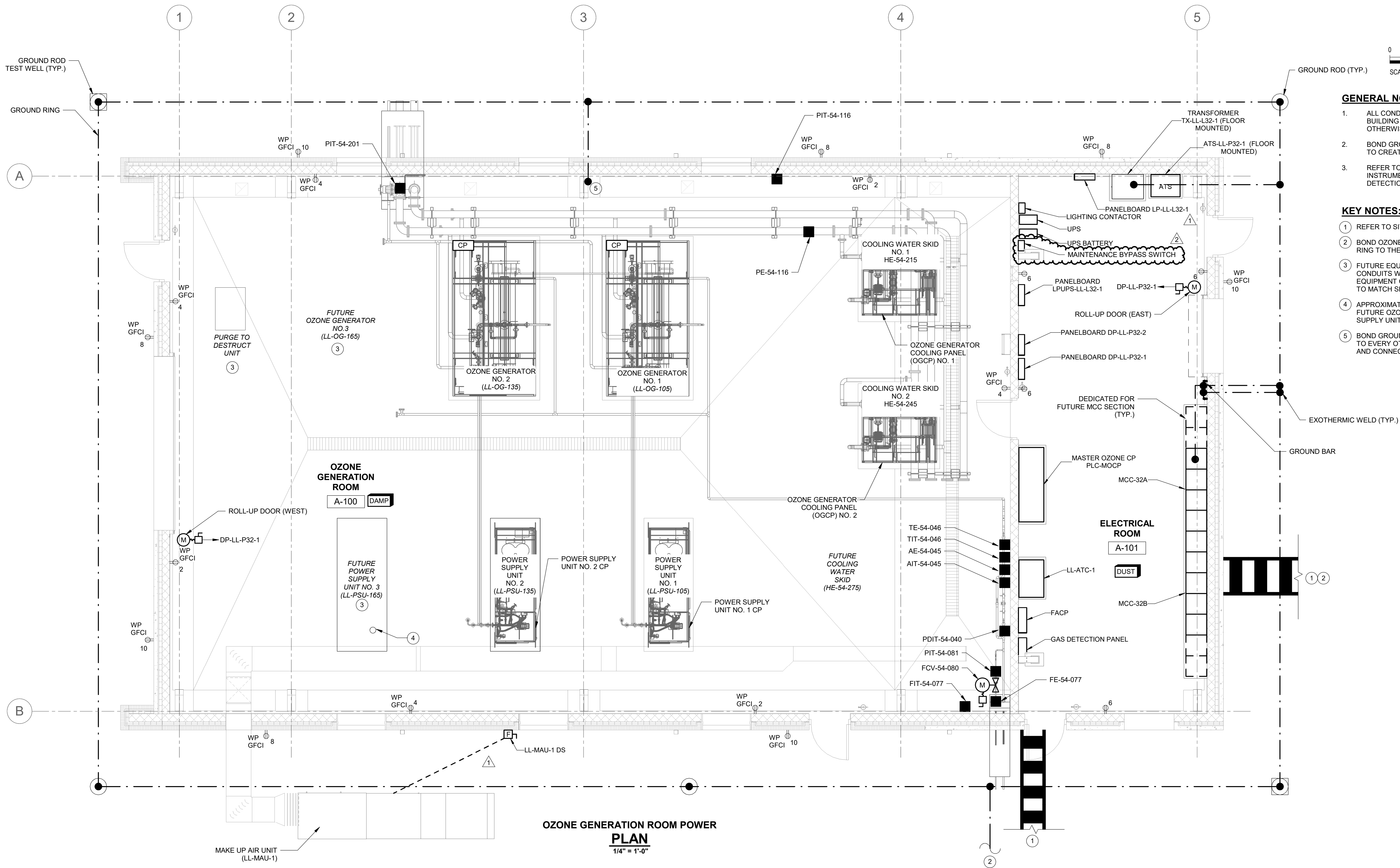
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FILE NAME: E018OZOL.DWG

SHEET NO.

E-18



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GENERAL NOTES:

1. ALL CONDUITS IN THE OZONE GENERATION BUILDING SHALL BE RUN EXPOSED UNLESS OTHERWISE NOTED.
2. BOND GROUNDING ELECTRODES PER NEC TO CREATE A GROUNDING SYSTEM.
3. REFER TO SPECIAL SYSTEMS PLAN FOR INSTRUMENTS RELATED TO GAS DETECTION.

KEY NOTES:

- 1 REFER TO SITE PLAN FOR CONTINUATION.
- 2 BOND OZONE GENERATION BUILDING GROUND RING TO THE EXISTING GROUNDING SYSTEM.
- 3 FUTURE EQUIPMENT: INSTALL SPARE CONDUITS WITH PULLSTRINGS FOR FUTURE EQUIPMENT CONDUIT SIZES AND QUANTITIES TO MATCH SIMILAR EQUIPMENT.
- 4 APPROXIMATE CONDUIT CAP LOCATION FOR FUTURE OZONE GENERATOR NO. 3 POWER SUPPLY UNIT PSU-3.
- 5 BOND GROUNDING ELECTRODE CONDUCTOR TO EVERY OTHER STRUCTURAL STEEL BEAM AND CONNECT TO THE GROUNDING SYSTEM.

OZONE GENERATION ROOM POWER PLAN
1/4" = 1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS
2	1/24	YL	TAM	REVISED PER ADDENDUM NO. 2
1	11/22	GDW	IBS	REVISED PER PERMIT REVIEW

DESIGNED BY: R. MAGSIPOC
DRAWN BY: G. WARD
SHEET CHK'D BY: I. SMITH
CROSS CHK'D BY: M. CUSAC
APPROVED BY: T. MOHAMMED
DATE: NOVEMBER 2022

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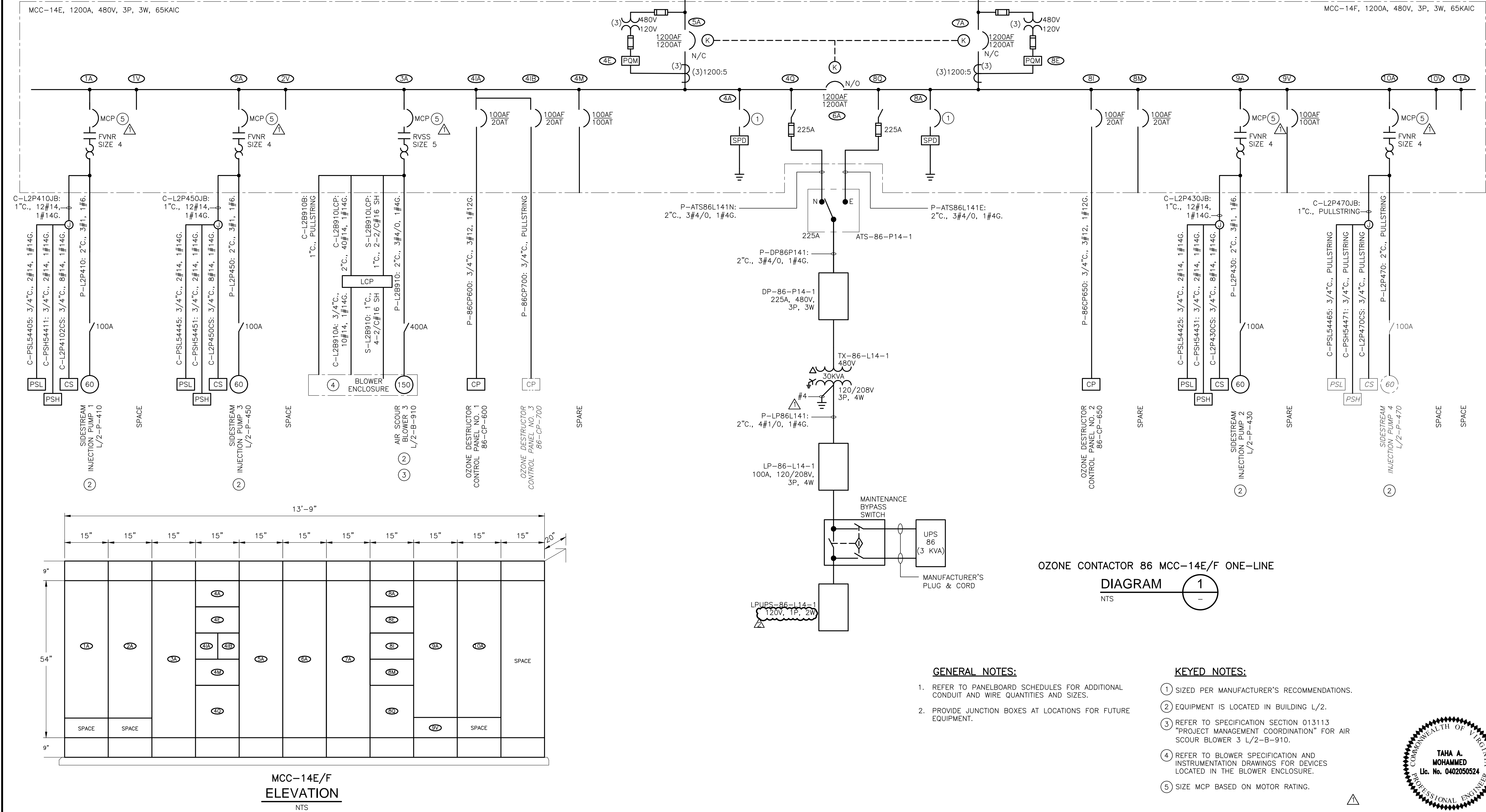
UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

OZONE GENERATION BUILDING LL
POWER PLAN

PROJECT NO. 20885-242778
FILE NAME: EW20010B.RVT
SHEET NO.
E-19



XREFS: [CDMS_2234; Tahar Mohammed See] Images: []
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GENERAL NOTES:

- REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL CONDUIT AND WIRE QUANTITIES AND SIZES.
- PROVIDE JUNCTION BOXES AT LOCATIONS FOR FUTURE EQUIPMENT.

KEYED NOTES:

- SIZED PER MANUFACTURER'S RECOMMENDATIONS.
- EQUIPMENT IS LOCATED IN BUILDING L/2.
- REFER TO SPECIFICATION SECTION 013113 "PROJECT MANAGEMENT COORDINATION" FOR AIR SCOUR BLOWER 3 L/2-B-910.
- REFER TO BLOWER SPECIFICATION AND INSTRUMENTATION DRAWINGS FOR DEVICES LOCATED IN THE BLOWER ENCLOSURE.
- SIZE MCP BASED ON MOTOR RATING.



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2
1	11/22	GDW	IBS	REVISED PER PERMIT REVIEW

DESIGNED BY:	R. MAGSIPOC
DRAWN BY:	N. PARI
SHEET CHK'D BY:	I. SMITH
CROSS CHK'D BY:	M. CUSAC
APPROVED BY:	T. MOHAMMED
DATE:	NOVEMBER 2022

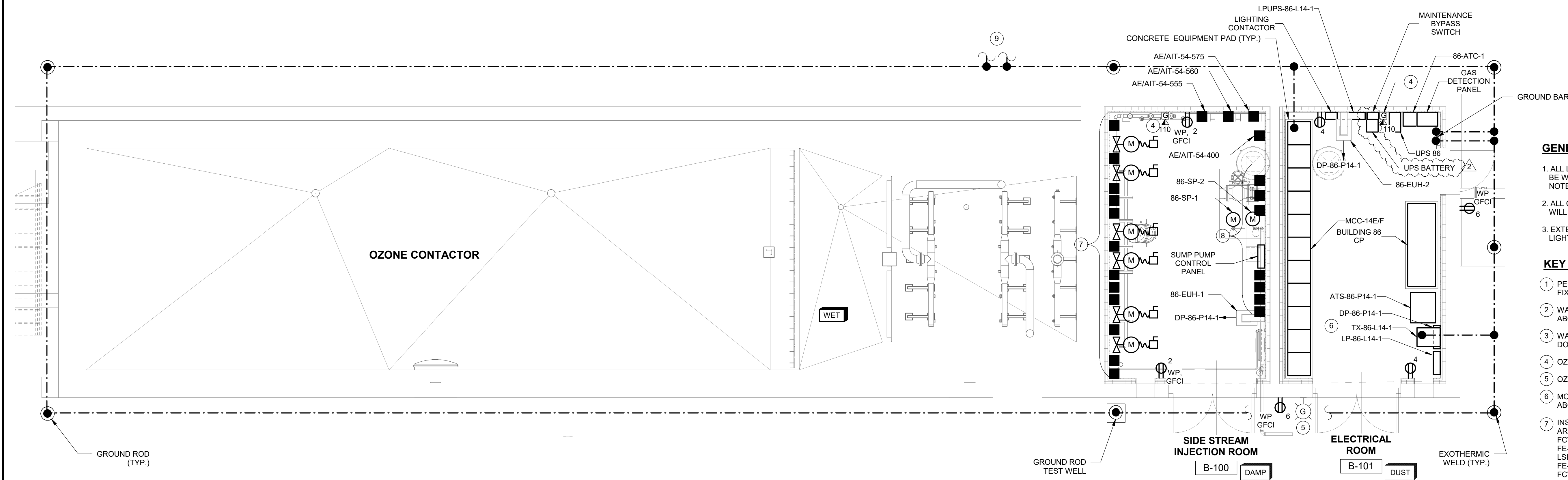


UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

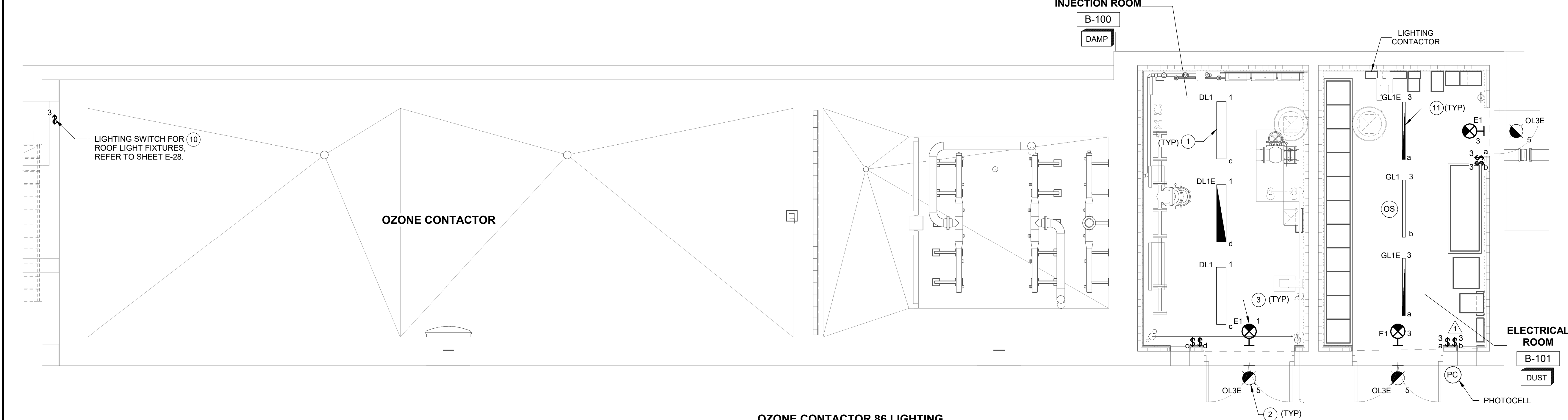
OZONE CONTACTOR 86
MCC-14E/F ONE-LINE AND ELEVATION
DIAGRAMS

PROJECT NO.	20885-242778
FILE NAME:	E026L20L.dwg
SHEET NO.	E-26

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OZONE CONTACTOR 86 POWER
PLAN
1/4" = 1'-0"



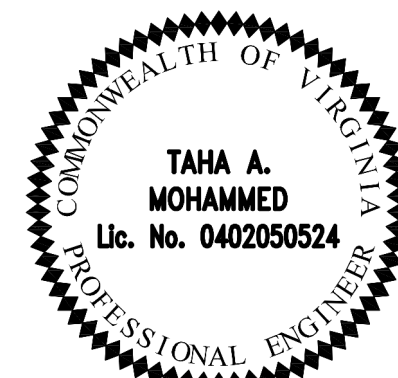
OZONE CONTACTOR 86 LIGHTING
PLAN
1/4" = 1'-0"

GENERAL NOTES:

1. ALL LIGHTING FIXTURES AND RECEPTACLES SHALL BE WIRED TO LP-86-L14-1 UNLESS OTHERWISE NOTED.
2. ALL CONDUITS IN THE OZONE CONTACTOR BUILDING WILL BE RUN EXPOSED.
3. EXTERIOR LIGHTING TO BE CONTROLLED BY LIGHTING CONTACTOR.

KEY NOTES:

- ① PENDANT MOUNT THE BOTTOM OF LIGHT FIXTURE AT 12'-0" A.F.F.
- ② WALL MOUNT EXTERIOR LIGHTING FIXTURES ABOVE THE DOOR OR 9'-0" A.F.F.
- ③ WALL MOUNT EXTERIOR EXIT SIGN ABOVE THE DOOR OR 8'-0" A.F.F.
- ④ OZONE DETECTION HORN/STROBE.
- ⑤ OZONE DETECTION BEACON.
- ⑥ MOUNTING HEIGHT OF TRANSFORMER SHALL BE ABOVE TOP OF LOUVER.
- ⑦ INSTRUMENTS IN ORDER FROM TOP TO BOTTOM ARE FE-54-311, FCV-54-312, LSH-54-315, FCV-54-318, FE-54-415, PIT-54-416, FUTURE FE-54-331, FUTURE FCV-54-332, FUTURE LSH-54-335, FUTURE FCV-54-338, FUTURE FE-54-435, FUTURE PIT-54-436, FE-54-351, FCV-54-352, LSH-54-355, FCV-54-358, FE-54-455, PIT-54-456.
- ⑧ INSTRUMENTS IN ORDER FROM TOP TO BOTTOM ARE FIT-54-311, FUTURE FIT-54-331, FIT-54-351, FIT-54-415, FUTURE FIT-54-435, FIT-54-455, LIT-54-550.
- ⑨ BOND TO THE EXISTING GROUNDING SYSTEM.
- ⑩ LIGHTING FIXTURE SWITCH MOUNTED ON STRUT SUPPORT AT 4'-0" ABOVE FINISHED GRADE. THREE-WAY SWITCH SHALL BE WIRED SUCH THAT IN THE ON POSITION THE SWITCH OVERRIDES THE LIGHTING CONTACTOR TO FORCE THE LIGHTS ON THE ROOF ON.
- ⑪ PENDANT MOUNT THE BOTTOM OF LIGHT FIXTURE AT 10'-0" A.F.F.



REV. NO.	DATE	DRWN	CHKD	REMARKS
2	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2
1	11/22	GDW	IBS	REVISED PER PERMIT REVIEW

DESIGNED BY: R. MAGSIPOC
DRAWN BY: G. WARD
SHEET CHK'D BY: I. SMITH
CROSS CHK'D BY: M. CUSAC
APPROVED BY: T. MOHAMMED
DATE: NOVEMBER 2022

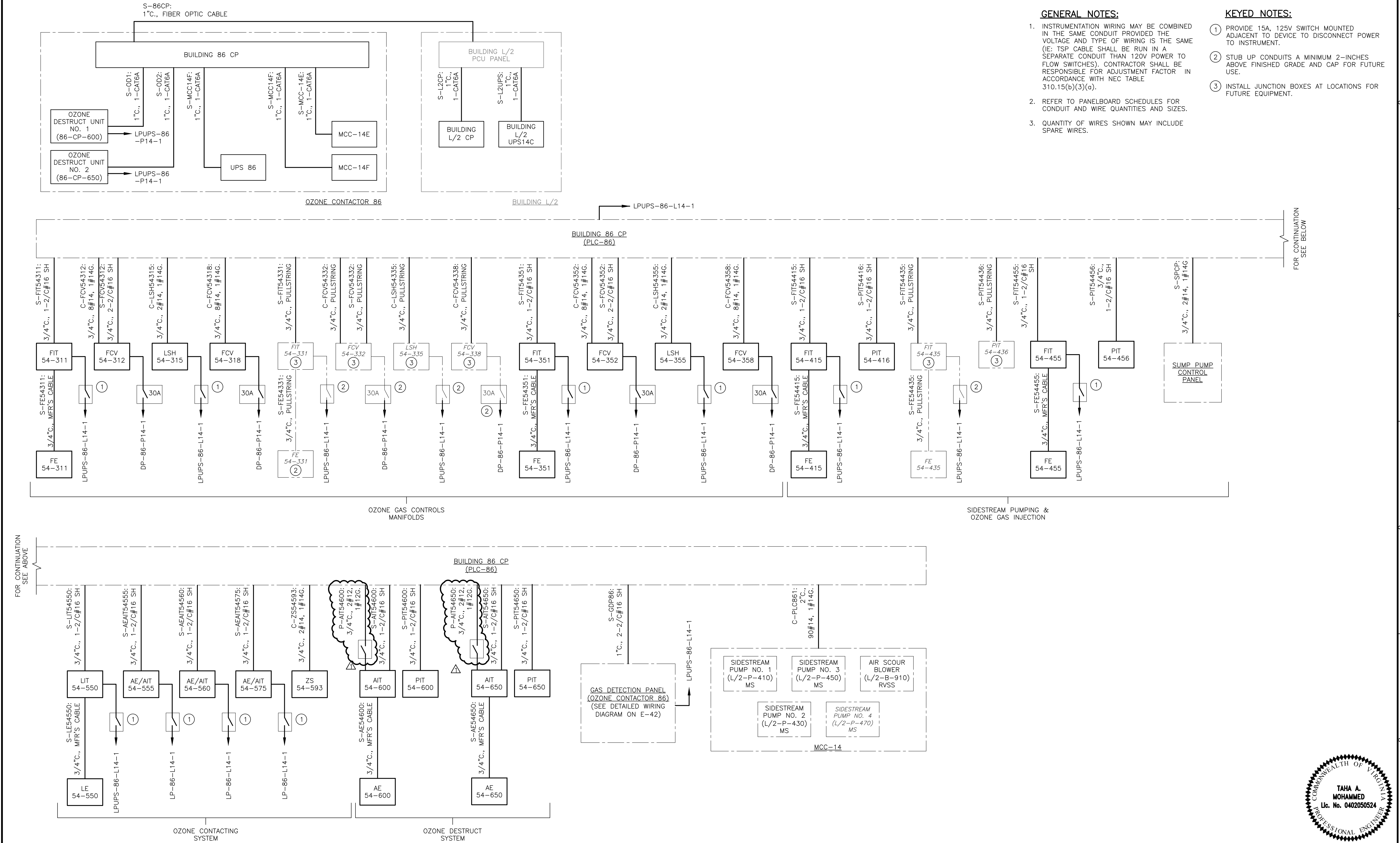


UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

OZONE CONTACTOR 86
ELECTRICAL AND SIDESTREAM INJECTION ROOMS
POWER AND LIGHTING PLANS

PROJECT NO. 20885-242778
FILE NAME: EW2000OC.RVT
SHEET NO. **E-27**

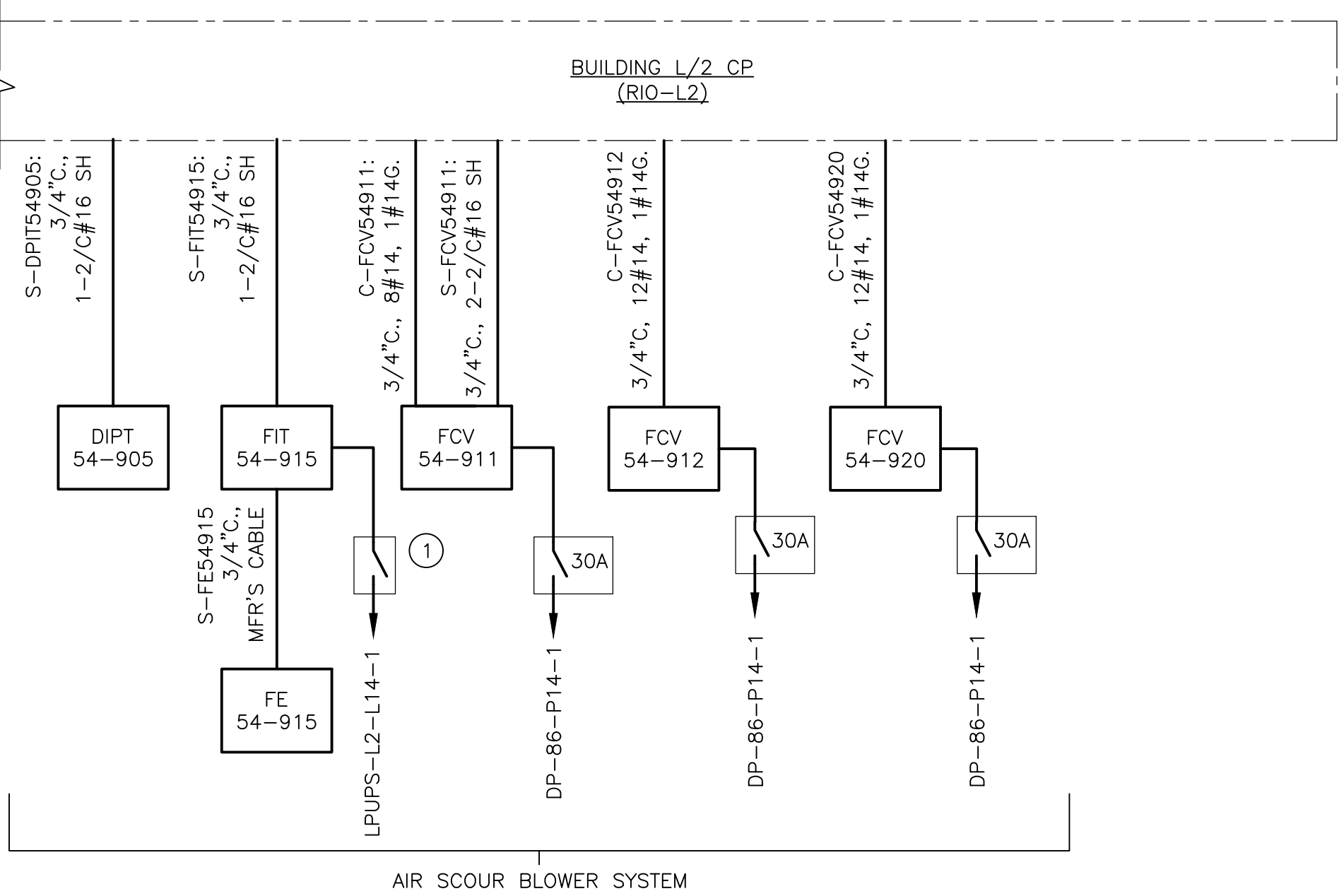
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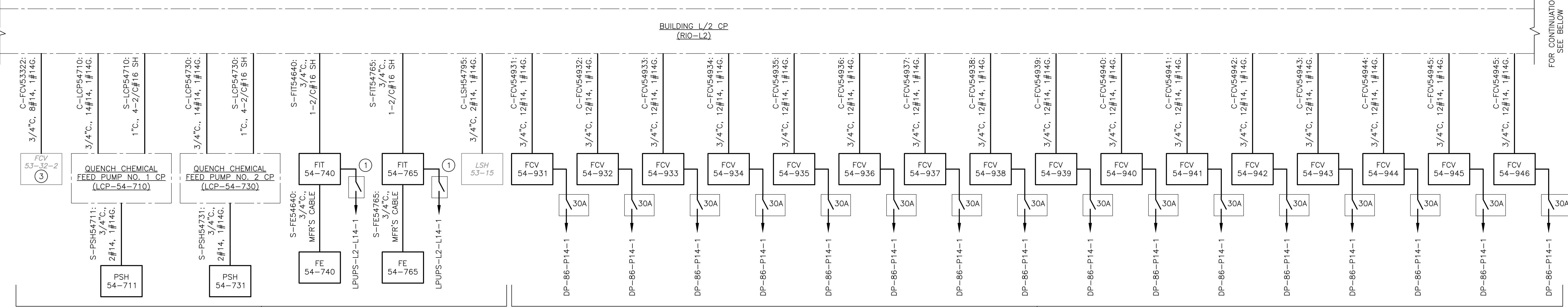
					DESIGNED BY: R. MAGSIPOC	CDM Smith 10560 Arrowhead Drive, Suite 500 Fairfax, VA 22030 Tel: (703) 691-6500	UPPER OCCOQUAN SERVICE AUTHORITY MILLARD H. ROBBINS, JR. WATER RECLAMATION PLANT OZONE BIOFILTRATION SYSTEM	ELECTRICAL RISER DIAGRAM II	PROJECT NO. 20885-242778
					DRAWN BY: T. BRENNEN				FILE NAME: E037NFRD.DWG
					SHEET CHK'D BY: I. SMITH				SHEET NO.
					CROSS CHK'D BY: M. CUSAC				E-37
					APPROVED BY: T. MOHAMMED				
1	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2	DATE: NOVEMBER 2022				
REV. NO.	DATE	DRWN	CHKD	REMARKS					

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FOR CONTINUATION
SEE ABOVE



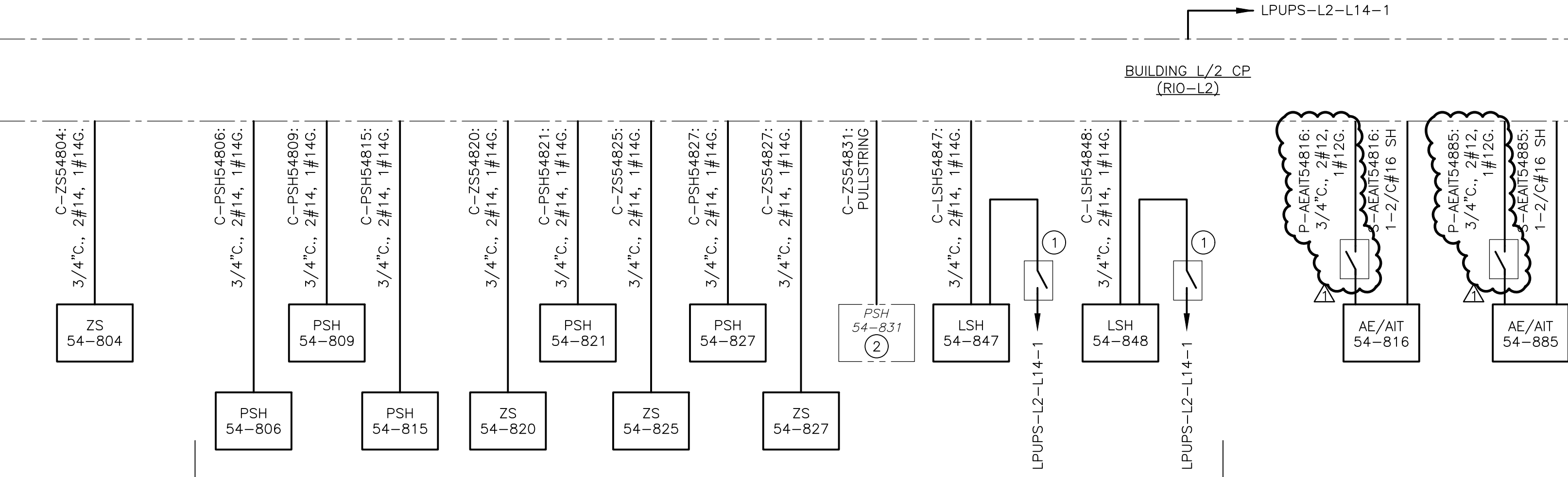
QUENCH CHEMICAL STORAGE, FEED & PUMPED INJECTION SYSTEM



BUILDING L/2 CP
(RIO-L2)

FOR CONTINUATION
SEE BELOW

FILTER EFFLUENT PUMP STATION



BUILDING L/2 CP
(RIO-L2)

FOR CONTINUATION
SEE BELOW

GENERAL NOTES:

- INSTRUMENTATION WIRING MAY BE COMBINED IN THE SAME CONDUIT PROVIDED THE VOLTAGE AND TYPE OF WIRING IS THE SAME (IE: TSP CABLE SHALL BE RUN IN A SEPARATE CONDUIT THAN 120V POWER TO FLOW SWITCHES). CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENT FACTOR IN ACCORDANCE WITH NEC TABLE 310.15(b)(3)(a).
- REFER TO PANELBOARD SCHEDULES FOR CONDUIT AND WIRE QUANTITIES AND SIZES.
- QUANTITY OF WIRES SHOWN MAY INCLUDE SPARE WIRES.

KEYED NOTES:

- PROVIDE 15A, 125V SWITCH MOUNTED ADJACENT TO DEVICE TO DISCONNECT POWER TO INSTRUMENT.
- STUB UP CONDUITS A MINIMUM 2-INCHES ABOVE FINISHED GRADE AND CAP FOR FUTURE USE.
- POWER SOURCE IS EXISTING.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2

DESIGNED BY: R. MAGSIPOC
DRAWN BY: T. BRENNEN
SHEET CHK'D BY: I. SMITH
CROSS CHK'D BY: M. CUSAC
APPROVED BY: T. MOHAMMED
DATE: NOVEMBER 2022

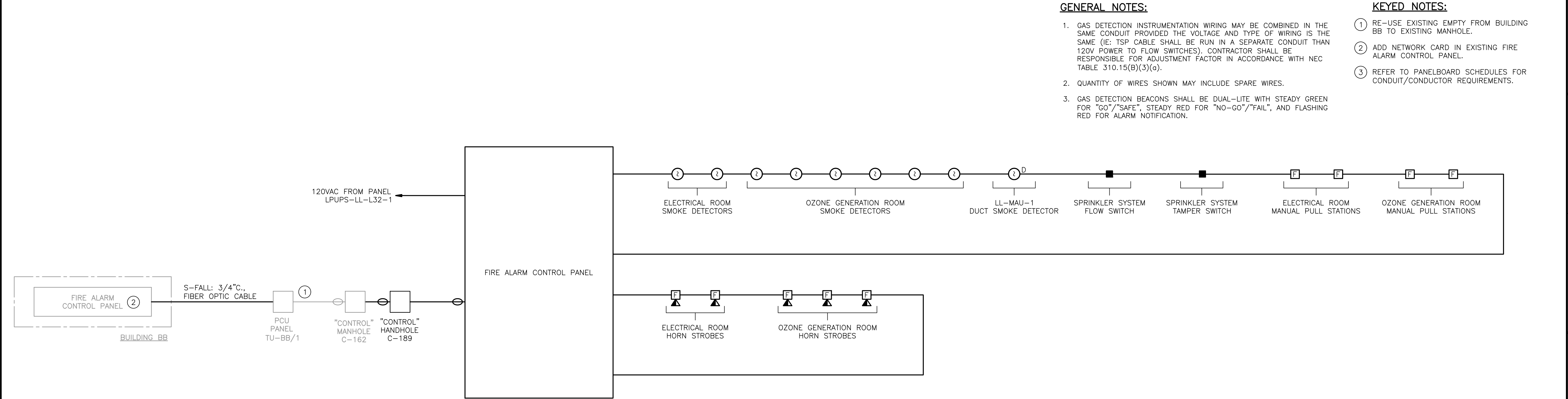


UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

ELECTRICAL
RISER DIAGRAM III

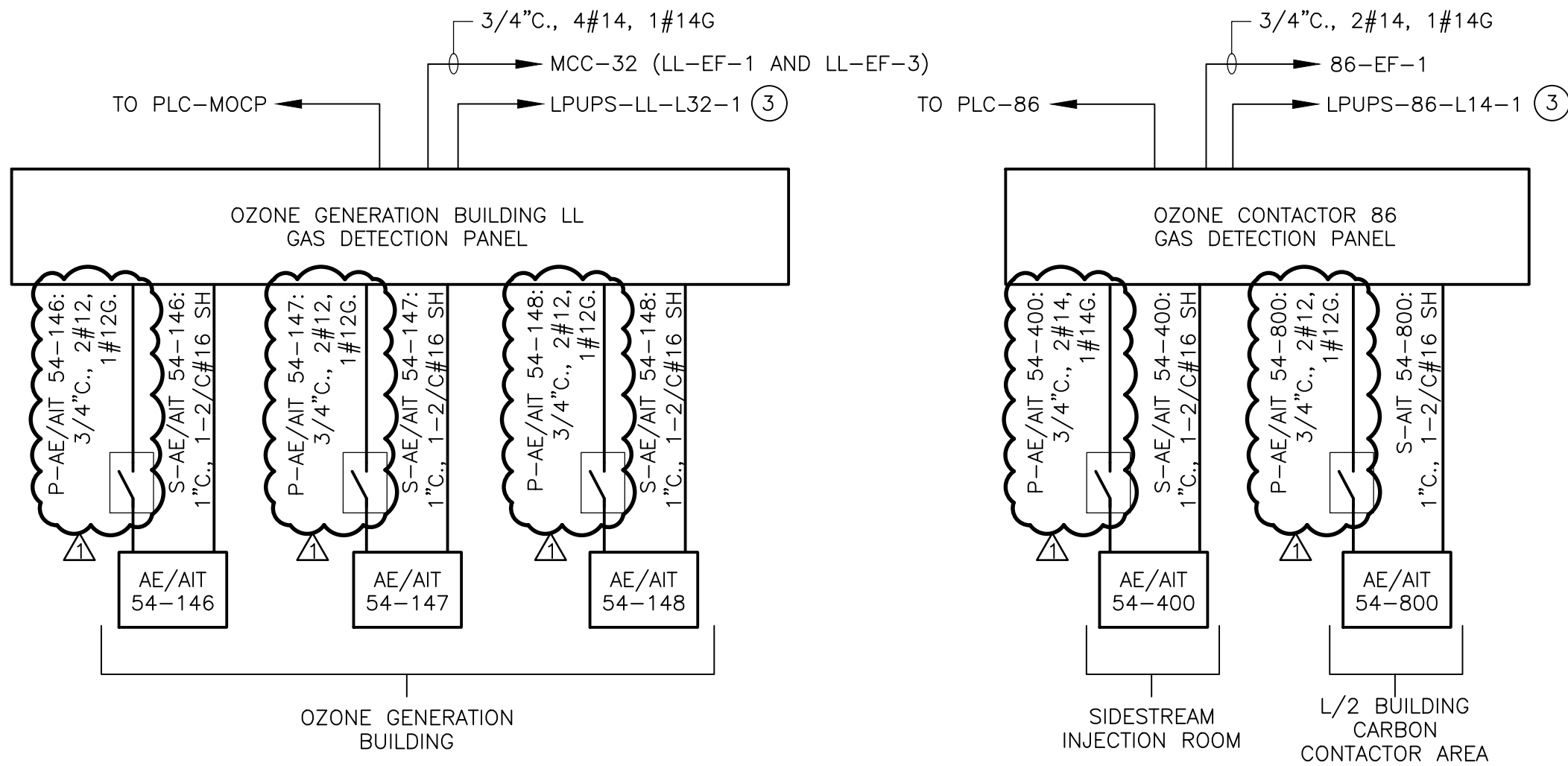
PROJECT NO. 20885-242778
FILE NAME: E038NFRD.DWG
SHEET NO.
E-38

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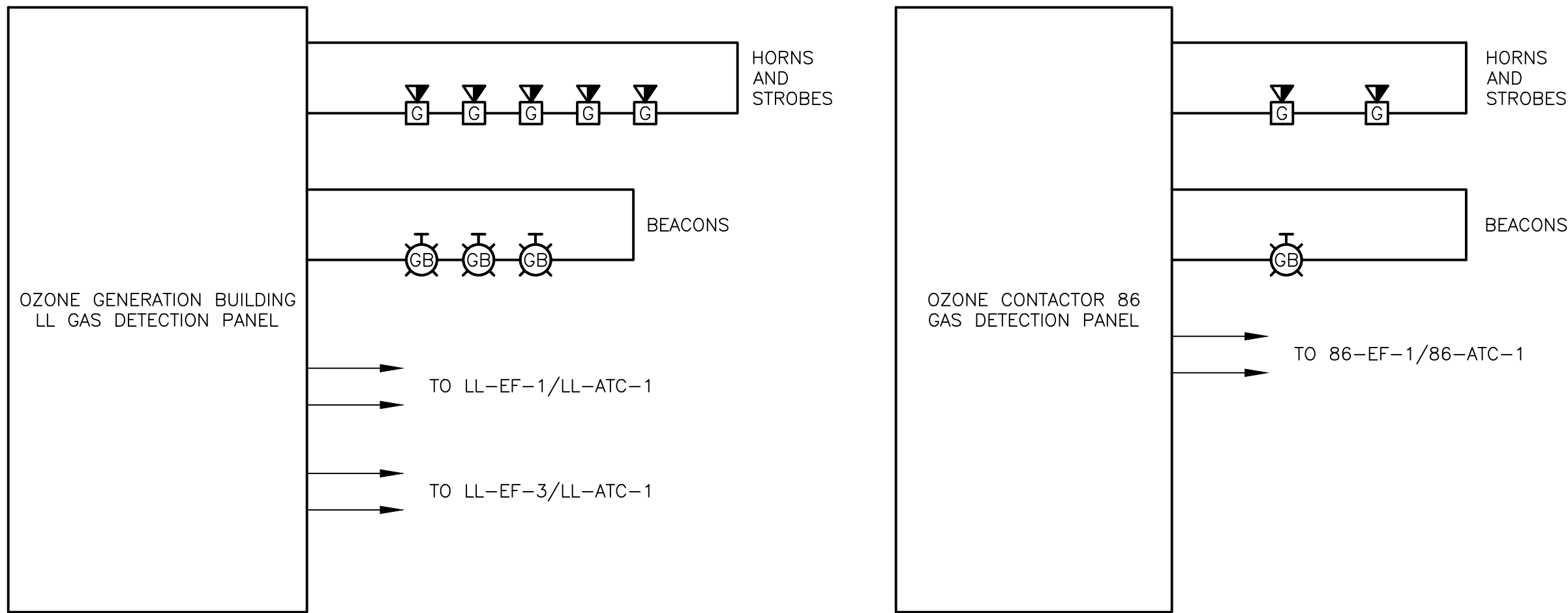
BUILDING LL FIRE ALARM RISER

DIAGRAM 1
NTS



OZONE DETECTION INITIATION RISER

DIAGRAM 2
NTS



OZONE DETECTION NOTIFICATION RISER

DIAGRAM 3
NTS



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/24	RMM	TAM	REVISED PER ADDENDUM NO. 2

DESIGNED BY: R. MAGSIPOCRW
DRAWN BY: T. BRENNEN
SHEET CHK'D BY: I. SMITH
CROSS CHK'D BY: M. CUSAC
APPROVED BY: T. MOHAMMED
DATE: NOVEMBER 2022






















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UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM




















ELECTRICAL
FIRE ALARM AND GAS DETECTION
RISER DIAGRAMS

PROJECT NO. 20885-242778
FILE NAME: E042NFRD.DWG
SHEET NO. E-42

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HVAC SYMBOLS	
	THERMOSTAT
	HIGH TEMPERATURE SWITCH
	LOW TEMPERATURE SWITCH
	SMOKE DETECTOR
	FLOW SENSOR
	HUMIDISTAT
	DUCT MOUNTED TEMPERATURE SENSOR
	WALL TIMER
	BREAK GLASS SWITCH
	WALL SWITCH
	MOTOR OPERATED DAMPER
	EXTERIOR ALARM STATION
	INTERIOR ALARM STATION
	VOLUME DAMPER
	FIRE DAMPER
	SMOKE ACTUATED FIRE DAMPER
	FLEXIBLE CONNECTION
	ELBOW WITH TURNING VANES
	EXHAUST GRILLE
	EXHAUST REGISTER
	RETURN GRILLE

NOTE:
1. SYMBOLS AND ABBREVIATIONS SHOWN ON THE SHEET ARE GENERIC AND MAY NOT HAVE BEEN USED ON THE PROJECT.

HVAC SYMBOLS	
	SUPPLY REGISTER
	SUPPLY DUCT
	RETURN/EXHAUST DUCT
	DOOR GRILLE
	TRANSFER GRILLE
	TRANFER DUCT
	SPLITTER DAMPER
	SHOE-TAP
	DAMPER-EXTRACTOR DUCT CONNECTION
	CEILING DIFFUSER - TYPE VARIES
	ROOF MOUNTED EXHAUST FAN
	WALL MOUNTED EXHAUST FAN
	VARIABLE AIR VOLUME REGULATOR W/ OUTLETS
	ROUND FLEXIBLE INSULATED DUCT
	SHEET METAL DUCT
	ELECTRIC UNIT HEATER
	ELECTRIC DUCT HEATER
	ENERGY RECOVERY UNIT
	WT BOX WITH TRANSITION

HVAC ABBREVIATIONS	
A	AIR
AABC	ASSOCIATED AIR BALANCE COUNCIL
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
APU	AIR PURIFICATION UNIT
AR	ACID RESISTANT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ATC	AUTOMATIC TEMPERATURE CONTROL
BDD	BACKDRAFT DAMPER
BEL	BELOW
BLDG	BUILDING
BS	BIRD SCREEN
BTU	BRITISH THERMAL UNITS
C	CONDENSATE
CD	CONTROL DAMPER
CENT	CENTRIFUGAL
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CONC	CONCRETE
CONN	CONNECTION
CW	CHILLED WATER
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY BULB
DG	DOOR GRILLE
DIA	DIAMETER
DISC	DISCHARGE
DN	DOWN
DPR	DAMPER
DS	DISCONNECT SWITCH
EA	EXHAUST AIR
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EVAP	EVAPORATION
FC	FLEXIBLE CONNECTION
FD	FIRE DAMPER
FIN	FINISH
FL	FLOOR
FLA	FULL LOAD AMPS
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET
FT2	SQUARE FEET
GA	GAUGE
GALV/GS	GALVANIZED
GFC	GAS FIRED CHILLER
GPH	GALLONS PER HOUR

HVAC ABBREVIATIONS	
GPM	GALLONS PER MINUTE
HG	HOT GAS
HP	HORSEPOWER
HR	HOUR
HW	HOT WATER
HZ	HERTZ
KW	KILOWATT
LBS	POUNDS
LD	LINEAR DIFFUSER
LIQ	LIQUID
LVR	LOUVER
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BTUS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MTD	MOUNTED
MTG	MOUNTING
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O/A	OUTSIDE AIR
OBD	OPOSED BLADE DAMPER
OSA	OUTSIDE AIR
PAC	PACKAGED AIR CONDITIONING UNIT
PBD	PARALLEL BLADE DAMPER
PCD	PERFORATED CEILING DIFFUSER
PCF	POUNDS PER CUBIC FOOT
PH	PHASE
PPM	PARTS PER MILLION
PROP.	PROPELLER
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
R	REFRIGERANT
R/A	RETURN AIR
RG	RETURN GRILLE
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SHT	SHEET
SM	SHEET METAL
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SP	STATIC PRESSURE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
ST	STEAM
STD	STANDARD
SUCT	SUCTION
SW	SWITCH
TDH	TOTAL DISCHARGE HEAD
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TV	TURNING VANES
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
V	VOLTS
VAP	VAPOR
VD	VOLUME DAMPER
VVT	VARIABLE VOLUME TERMINAL
W/	WITH
WB	WET BULB
WG	WATER GAUGE
WT	WEIGHT
WTR	WATER

HVAC NOTES	
1	HVAC EQUIPMENT DIMENSIONS, LOCATIONS, DUCTWORK AND PIPING SYSTEM LAYOUTS ARE BASED ON EQUIPMENT SELECTED BY THE ENGINEER. IF THE CONTRACTOR PROPOSES TO FURNISH EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACE DIFFERING FROM THAT INDICATED ON THE DRAWINGS, OR SPECIFIED, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER, FOR APPROVAL, DETAILED ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, INSTRUMENTATION, HVAC AND ELECTRICAL DRAWINGS AND EQUIPMENT LISTS SHOWING ALL NECESSARY CHANGES AND EMBODYING ALL FEATURES OF THE EQUIPMENT HE PROPOSES TO FURNISH. THIS INFORMATION SHALL INCLUDE BUT SHALL NOT BE LIMITED TO PLANS, SECTIONS, DETAILS, AND SCHEMATICS OF ALL APPURTENANCES REQUIRED. SUCH CHANGES, IF APPROVED BY THE ENGINEER, SHALL BE AT NO EXTRA COST TO THE OWNER. THE CONTRACTOR SHALL ASSUME THE COST OF, AND THE RESPONSIBILITY FOR, SATISFACTORILY ACCOMPLISHING ALL THE NECESSARY CHANGES CORRESPONDING TO THE DIMENSIONS AND CHARACTERISTICS OF THE EQUIPMENT SUBMITTED AND APPROVED BY THE ENGINEER. REFER TO SPECIFICATIONS FOR FURTHER DETAILS.
2	SIZES OF EQUIPMENT PADS INDICATED ON THE DRAWINGS ARE APPROXIMATE. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE EQUIPMENT FURNISHED. ALL FLOOR MOUNTED EQUIPMENT SHALL BE SET ON CONCRETE PADS CONFORMING TO DETAILS SHOWN ON THE STRUCTURAL DRAWINGS.
3	DIELECTRIC COUPLINGS, FLANGES OR UNIONS SHALL BE INSTALLED AT ALL CONNECTIONS OF COPPER PIPE TO OTHER TYPES OF METALLIC PIPING.
4	HVAC PIPING AND DUCTWORK DRAWINGS DO NOT SHOW ALL DRAINS, VENTS, OFFSETS AND FITTINGS ETC. REQUIRED FOR THE COMPLETE SYSTEM. SMALL PIPING IS SHOWN APPROXIMATELY TO SCALE BUT NOT EVERY FITTING AND OFFSET IS SHOWN. SOME VALVES AND APPURTENANCES MAY BE OMITTED FOR THE SAKE OF CLARITY. THE CONTRACTOR SHALL FURNISH, INSTALL AND TEST ALL HVAC SYSTEMS SHOWN ON THE DRAWINGS AND DETAILS, AND/OR AS DEFINED IN THE SPECIFICATIONS TO PROVIDE THE COMPLETE SYSTEM.
5	UNLESS OTHERWISE SHOWN ON THE DRAWING, ALL WALL PENETRATIONS SHALL BE AS SHOWN ON THE WALL PENETRATION DETAILS. ABOVE GROUND EXTERIOR WALL AND ROOF PENETRATIONS SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS. IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY SUBSTITUTE ALTERNATE METHODS PROVIDING THEY MEET INTENDED DESIGN REQUIREMENTS.
6	NOT ALL AND ONLY CERTAIN TYPES OF SUPPORTS ARE SHOWN ON THE HVAC DRAWINGS. UNLESS OTHERWISE DETAILED ON THE DRAWINGS ALL PIPE AND DUCT SUPPORTS SHALL BE DESIGNED, FURNISHED AND INSTALLED BY THE CONTRACTOR AS SPECIFIED AND TO THE APPROVAL OF THE ENGINEER.
7	FOR ALL ROOF MOUNTED EQUIPMENT, MAINTAIN A MINIMUM OF 10'-0" CLEARANCE FROM ANY ROOF EDGE UNLESS GUARDRAILS HAVE BEEN PROVIDED.
8	UNLESS OTHERWISE NOTED, MOUNT ALL DUCTWORK AND PIPING TIGHT TO STRUCTURE. MAINTAIN A MINIMUM 7'-0" CLEAR HEIGHT BELOW DUCTWORK, INCLUDING SUPPORTS. COORDINATE INSTALLATION OF DUCTWORK WITH ALL OTHER NEW AND EXISTING EQUIPMENT, PIPING, CONDUIT, ETC. UNLESS OTHERWISE NOTED, MOUNT ALL DUCTWORK AND PIPING TIGHT TO STRUCTURE. MAINTAIN A MINIMUM 7'-0" CLEAR HEIGHT BELOW DUCTWORK, INCLUDING SUPPORTS. COORDINATE INSTALLATION OF DUCTWORK WITH ALL OTHER NEW AND EXISTING EQUIPMENT, PIPING, CONDUIT, ETC.
9	SEE ELECTRICAL DRAWINGS FOR AREA ELECTRICAL/CODE RATING. ALL HVAC EQUIPMENT SHALL COMPLY WITH THE REQUIREMENTS OF THOSE AREA CLASSIFICATIONS.

REV. NO.	DATE	DRWN	CHKD	REMARKS

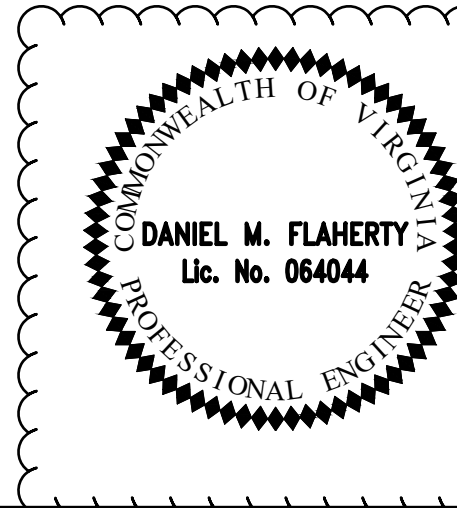
DESIGNED BY: S. BURDETT
DRAWN BY: F. PYSHNOV
SHEET CHK'D BY: S. TASCARELLA
CROSS CHK'D BY: B. FLINT
APPROVED BY: D. FLAHERTY
DATE: NOVEMBER 2022

CDM
Smith

10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 661-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

HVAC SYMBOLS AND ABBREVIATIONS



PROJECT NO. 20885-242778
FILE NAME: HWZ000OB.RVT

SHEET NO.

H-1

FLOOR PLAN
1/4" = 1'-0"

OZONE GENERATION ROOM A-100

ELECTRICAL ROOM A-101

GENERAL NOTES:
COORDINATE LOCATIONS OF ALL HVAC PIPING, DUCTWORK, AND EQUIPMENT WITH ALL OTHER UTILITIES, PIPING, ELECTRICAL EQUIPMENT, CONDUIT, WIRING, LIGHTING, BUILDING STRUCTURE, ETC.

REVISIONS:

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: S. BURDETT
DRAWN BY: E. PYSHNOV
SHEET CHK'D BY: S. TASCARELLA
CROSS CHK'D BY: B. FLINT
APPROVED BY: D. FLAHERTY
DATE: NOVEMBER 2022

CDM Smith
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UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

OZONE GENERATION BUILDING LL FLOOR PLAN

PROJECT NO. 20885-242778
FILE NAME: HWZ000OB.RVT
SHEET NO. H-2

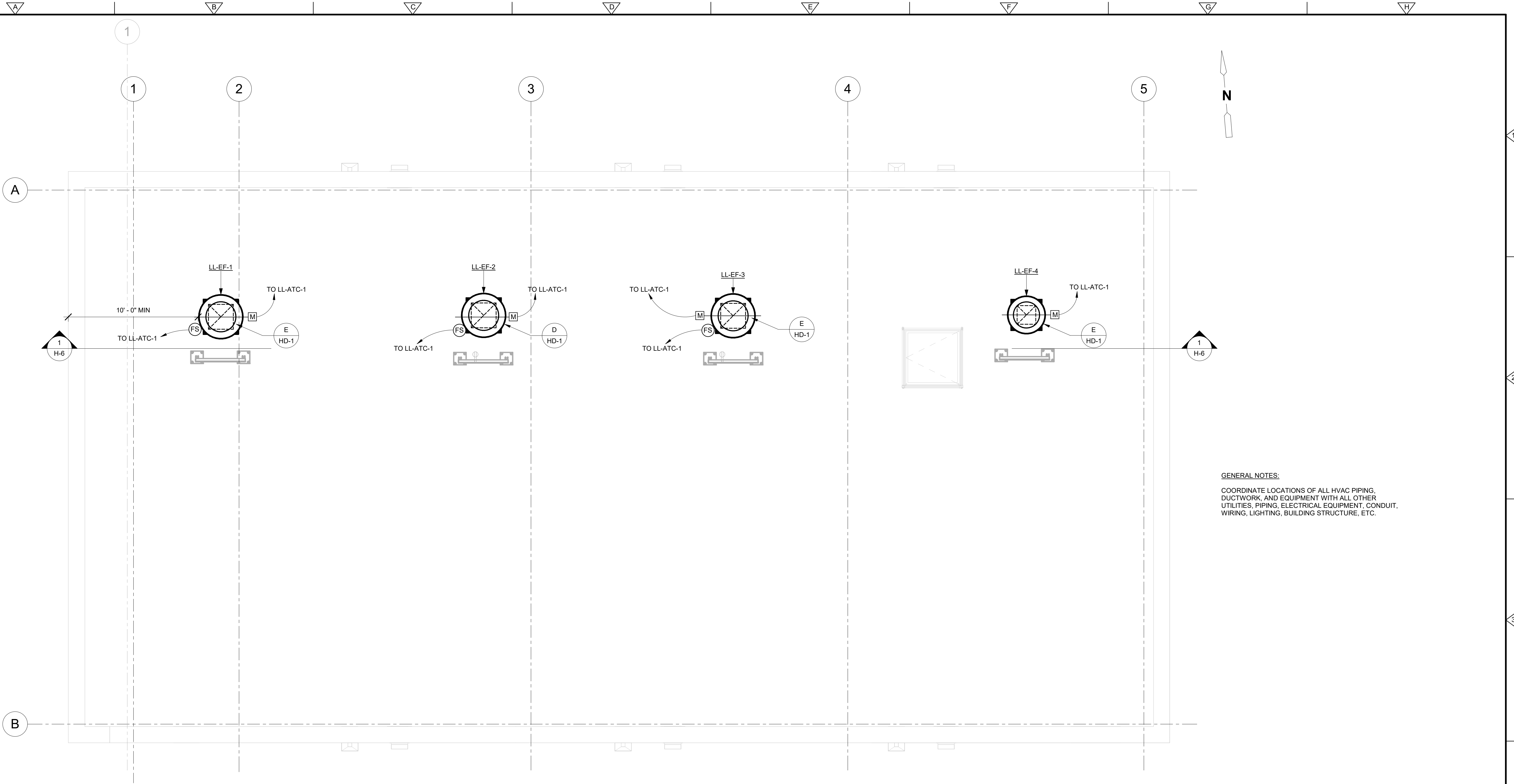
1/4" = 1'-0'

SCALE: $1/4" = 1'-0"$

PROJECT NO.	20885-242778
FILE NAME:	HWZ0000B.RVT

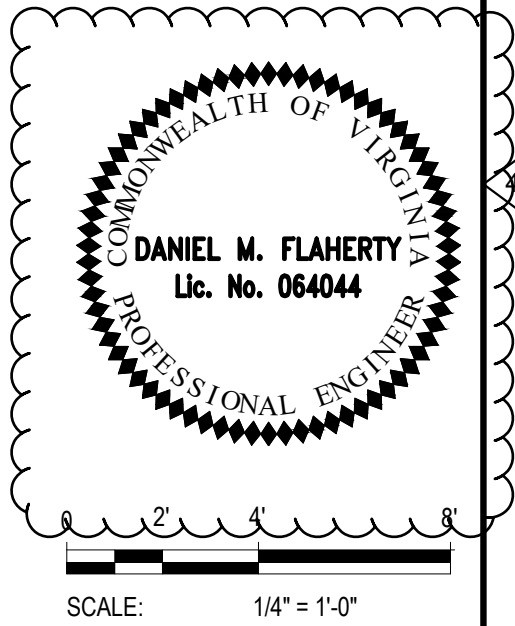
H-2

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GENERAL NOTES:
COORDINATE LOCATIONS OF ALL HVAC PIPING,
DUCTWORK, AND EQUIPMENT WITH ALL OTHER
UTILITIES, PIPING, ELECTRICAL EQUIPMENT, CONDUIT,
WIRING, LIGHTING, BUILDING STRUCTURE, ETC.

ROOF PLAN
1/4" = 1'-0"



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: S. BURDETT
DRAWN BY: E. PYSHNOV
SHEET CHK'D BY: S. TASCARELLA
CROSS CHK'D BY: B. FLINT
APPROVED BY: D. FLAHERTY
DATE: NOVEMBER 2022

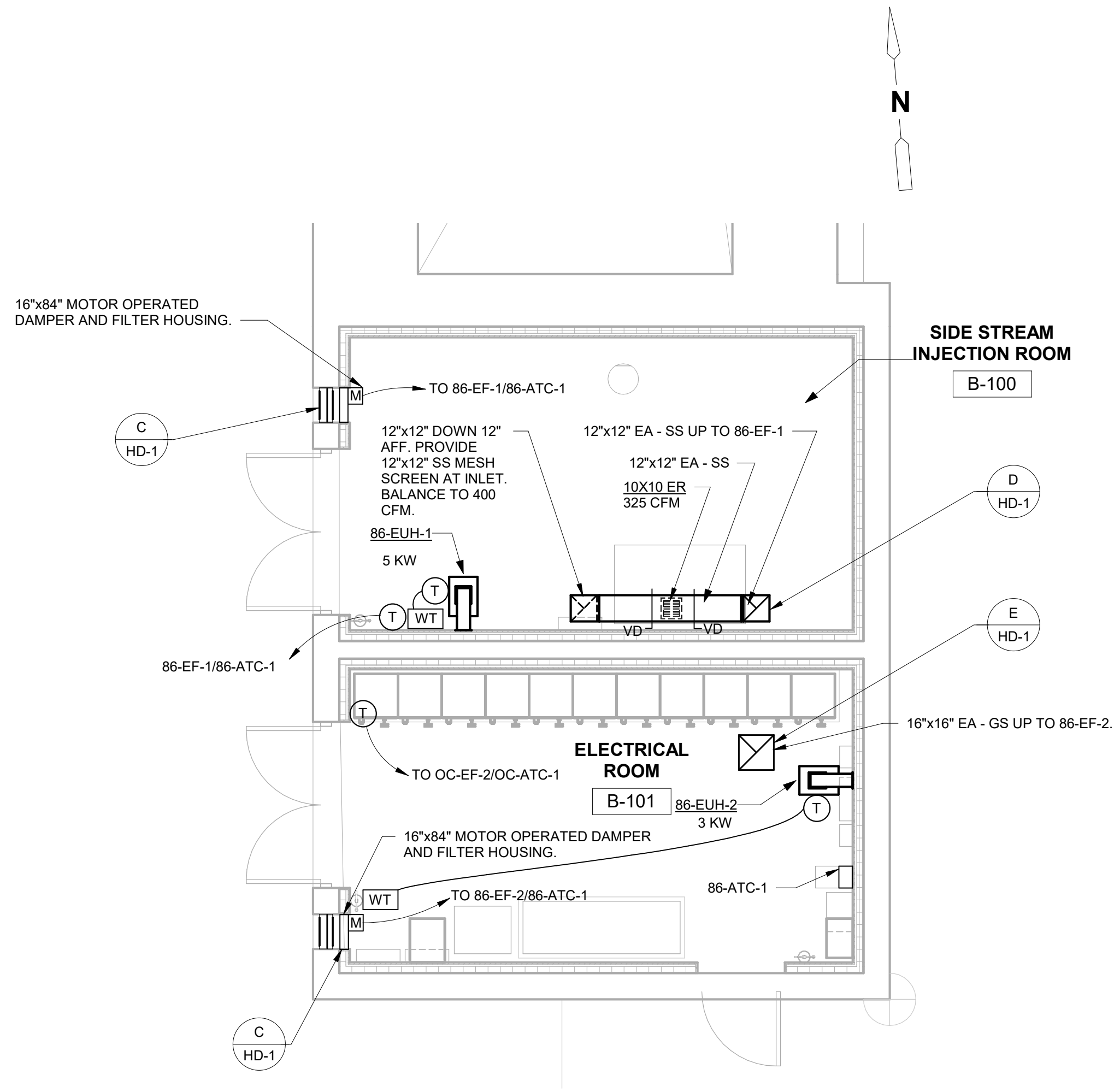
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MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

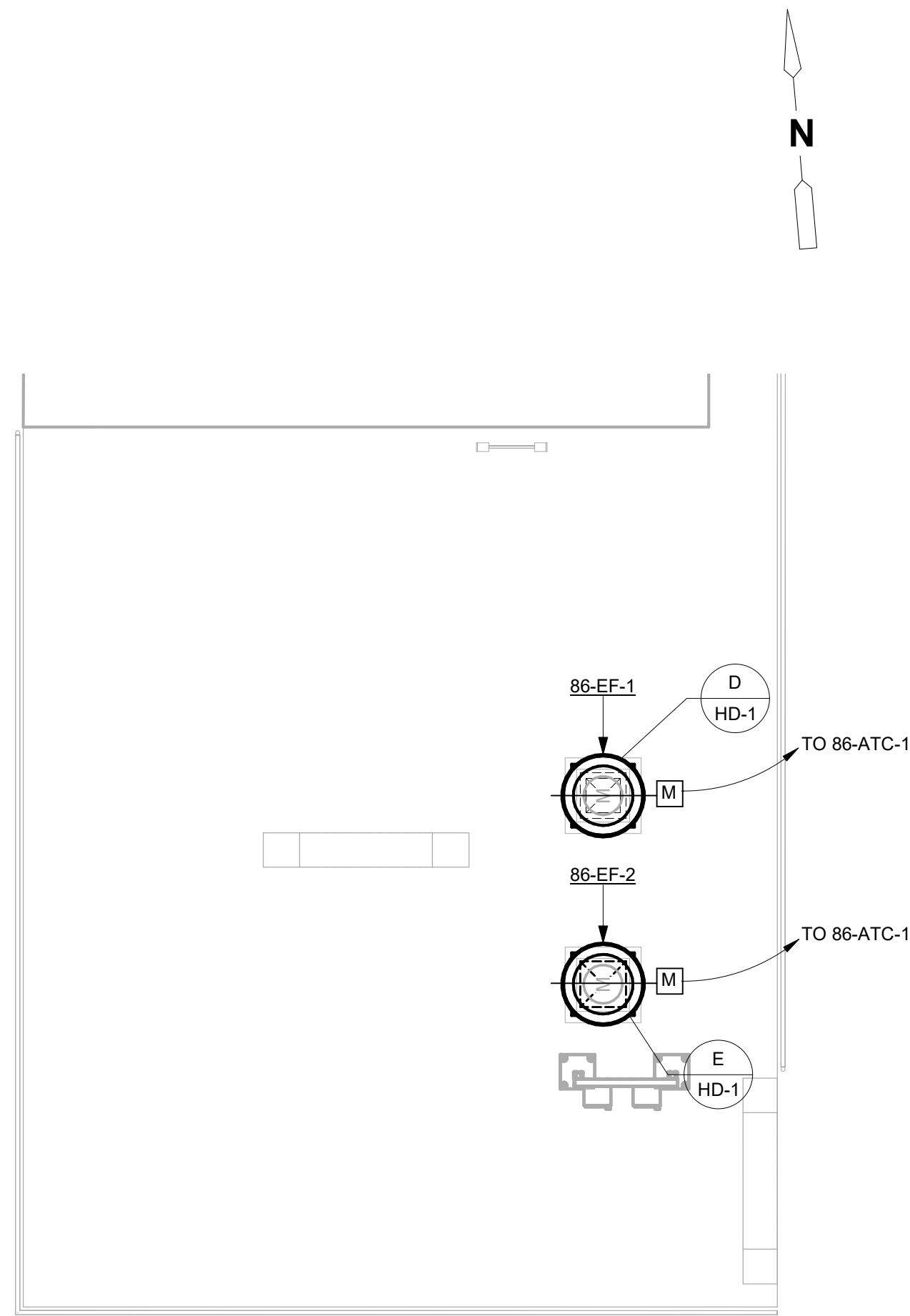
OZONE GENERATION BUILDING LL
ROOF PLAN

PROJECT NO. 20885-242778
FILE NAME: HWZ0000B.RVT
SHEET NO.
H-3

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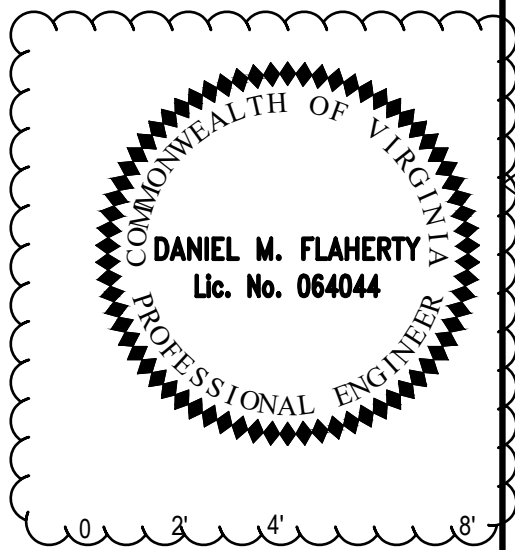
FLOOR PLAN
1/4" = 1'-0"



ROOF PLAN
1/4" = 1'-0"

GENERAL NOTES:

COORDINATE LOCATIONS OF ALL HVAC PIPING, DUCTWORK, AND EQUIPMENT WITH ALL OTHER UTILITIES, PIPING, ELECTRICAL EQUIPMENT, CONDUIT, WIRING, LIGHTING, BUILDING STRUCTURE, ETC.



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

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: S. BURDETT
DRAWN BY: B. BILODEAU
SHEET CHK'D BY: S. TASCARELLA
CROSS CHK'D BY: B. FLINT
APPROVED BY: D. FLAHERTY
DATE: NOVEMBER 2022

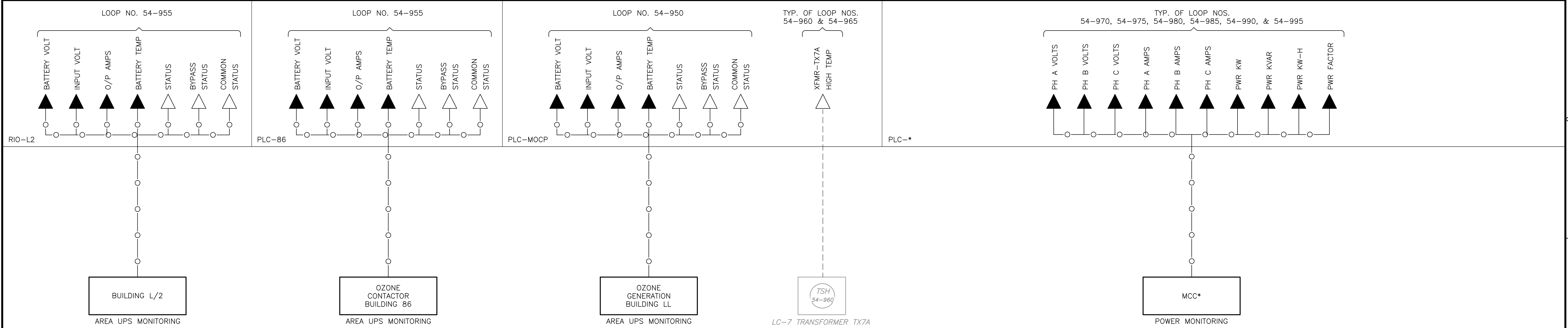
CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

OZONE CONTACTOR 86
FLOOR AND ROOF PLANS

PROJECT NO. 20885-242778
FILE NAME: HWZ000OC.RVT
SHEET NO.
H-5

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LOCATION	PLC	EQUIPMENT	LOOP	CABLE
BUILDING M	PLC-MOCP	SWGR-7A	54-970	RS-485
BUILDING M	PLC-MOCP	SWGR-7B	54-975	RS-485
OZONE GENERATION BUILDING LL	PLC-MOCP	MCC-32A	54-980	CAT-6A
OZONE GENERATION BUILDING LL	PLC-MOCP	MCC-32B	54-985	CAT-6A
OZONE CONTACTOR BUILDING 86	PLC-86	MCC-14E	54-990	CAT-6A
OZONE CONTACTOR BUILDING 86	PLC-86	MCC-14F	54-995	CAT-6A

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	M. CUSAC
DRAWN BY:	N. GOKULRAJ
SHEET CHK'D BY:	G. VILLAR
CROSS CHK'D BY:	B. ZUIDERVLIT
APPROVED BY:	M. CUSAC
DATE:	NOVEMBER 2022

CDMSmith

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Fairfax, VA 22030
Tel: (703) 691-6500

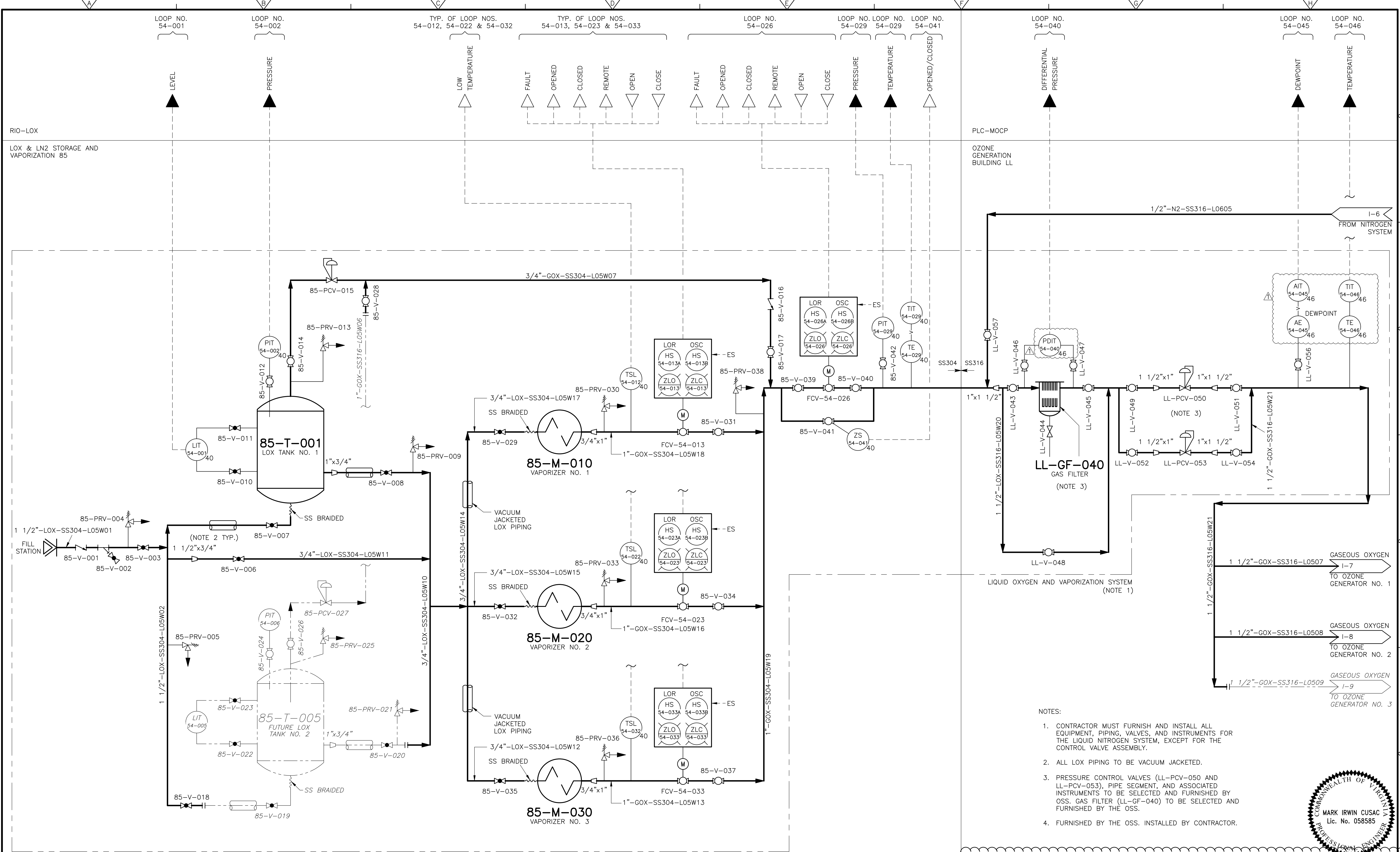
UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

PROCESS & INSTRUMENTATION DIAGRAM
MISCELLANEOUS SYSTEM

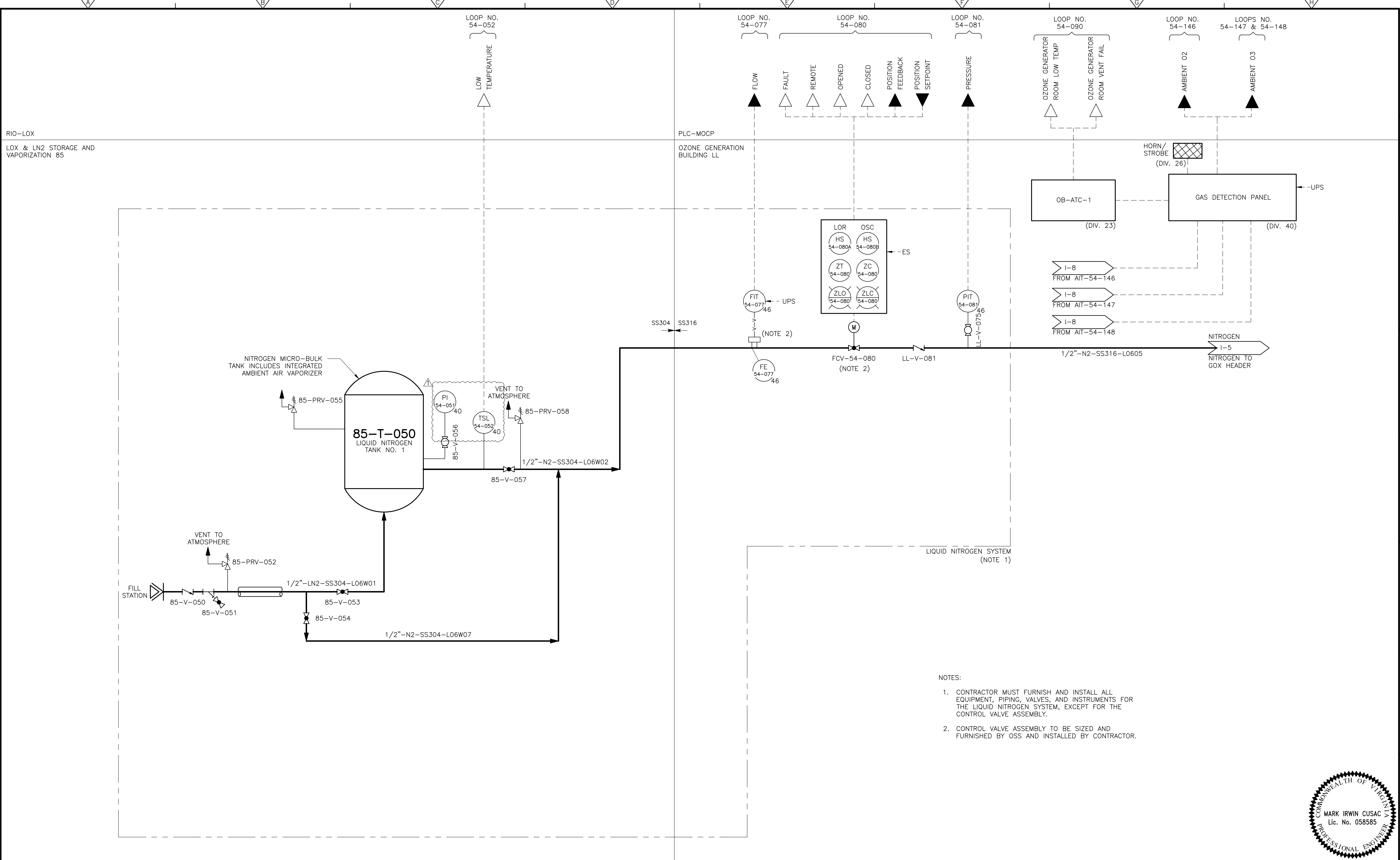
PROJECT NO.	20885-242778
FILE NAME:	I004PID.DWG
SHEET NO.	I-4



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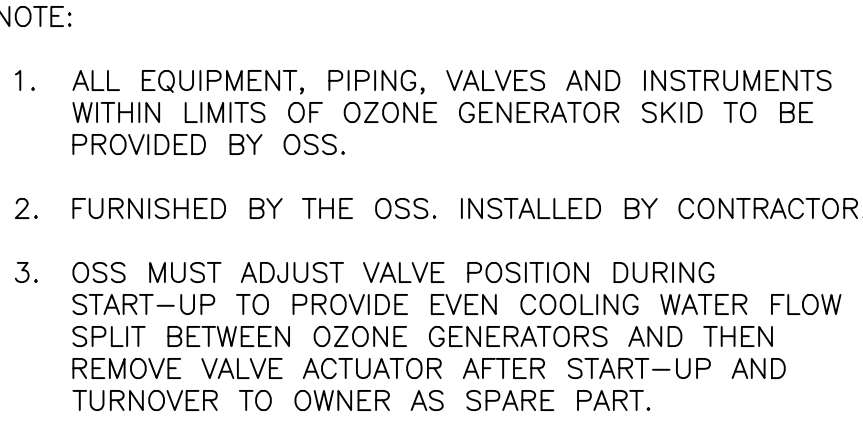
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- NOTES:
- CONTRACTOR MUST FURNISH AND INSTALL ALL EQUIPMENT, PIPING, VALVES, AND INSTRUMENTS FOR THE LIQUID NITROGEN SYSTEM, EXCEPT FOR THE CONTROL VALVE ASSEMBLY.
 - CONTROL VALVE ASSEMBLY TO BE SIZED AND FURNISHED BY OSS AND INSTALLED BY CONTRACTOR.



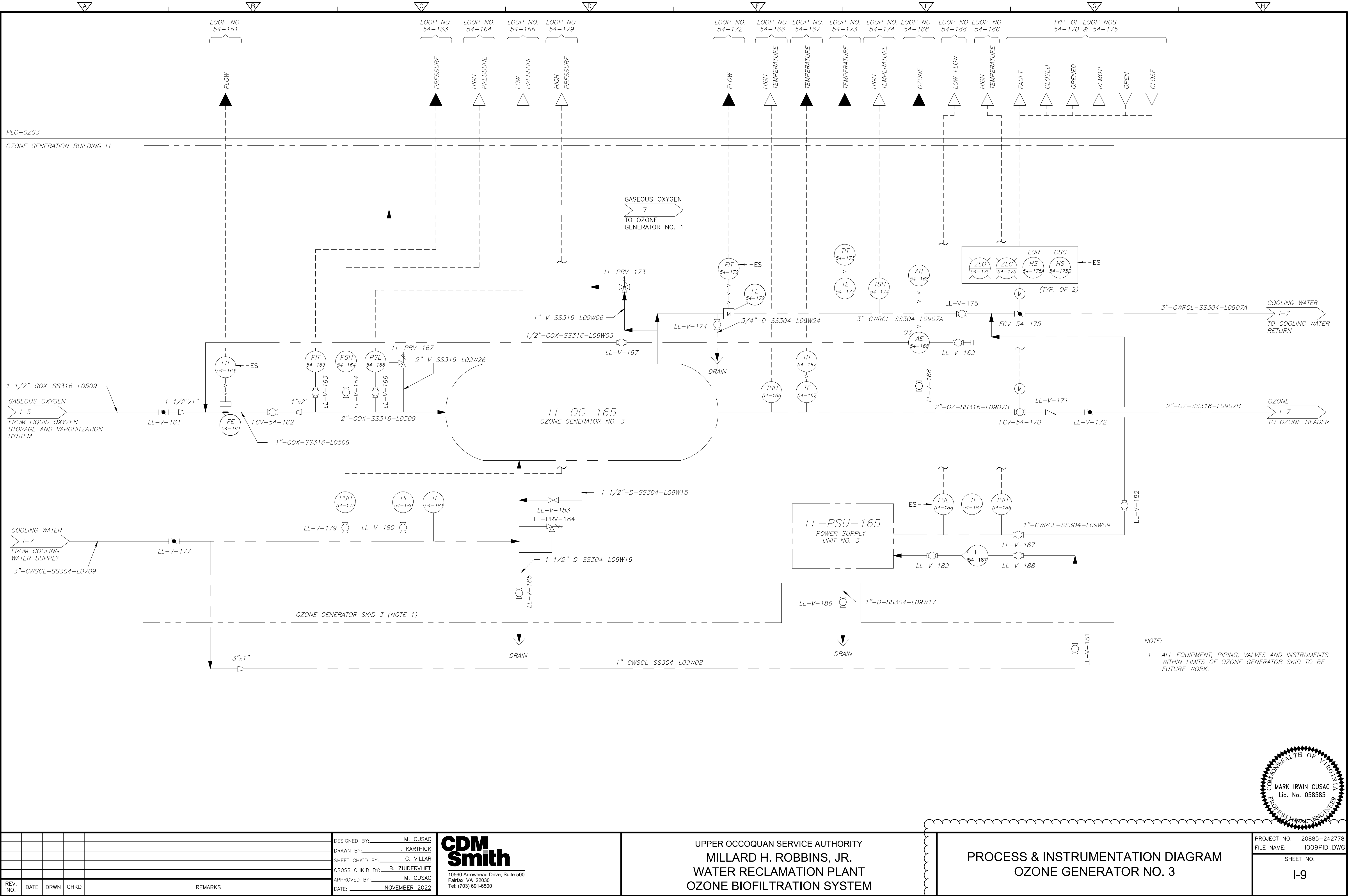
						DESIGNED BY: <u>M. CUSAC</u>	 10560 Arrowhead Drive, Suite 500 Fairfax, VA 22030 Tel: (703) 691-6500	UPPER OCCOQUAN SERVICE AUTHORITY MILLARD H. ROBBINS, JR. WATER RECLAMATION PLANT OZONE BIOFILTRATION SYSTEM	PROCESS & INSTRUMENTATION DIAGRAM SUPPLEMENTAL NITROGEN	PROJECT NO. 20885-242778
						DRAWN BY: <u>T. KARTHICK</u>				FILE NAME: I006PID.DWG
						SHEET CHK'D BY: <u>G. VILLAR</u>				SHEET NO.
						CROSS CHK'D BY: <u>B. ZUIDERVLIT</u>				I-6
						APPROVED BY: <u>M. CUSAC</u>				
REV. NO.	DATE	DRWN	CHKD	REMARKS		DATE: <u>NOVEMBER 2022</u>				
1	12/23	GDV	BWZ	ADENDUM 2, REVISED FOR CLARITY.						



					DESIGNED BY: <u>M. CUSAC</u>	 10560 Arrowhead Drive, Suite 500 Fairfax, VA 22030 Tel: (703) 691-6500	UPPER OCCOQUAN SERVICE AUTHORITY MILLARD H. ROBBINS, JR. WATER RECLAMATION PLANT OZONE BIOFILTRATION SYSTEM	PROCESS & INSTRUMENTATION DIAGRAM OZONE GENERATOR NO. 2	PROJECT NO. 20885-242778
					DRAWN BY: <u>T. KARTHICK</u>				FILE NAME: IO08PID1.DWG
					SHEET CHK'D BY: <u>G. VILLAR</u>				
					CROSS CHK'D BY: <u>B. ZUIDERVLIT</u>				
					APPROVED BY: <u>M. CUSAC</u>				SHEET NO.
REV. NO.	DATE	DRWN	CHKD	REMARKS	DATE: <u>NOVEMBER 2022</u>				I-8

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. CUSAC
DRAWN BY: T. KARTHICK
SHEET CHK'D BY: G. VILLAR
CROSS CHK'D BY: B. ZUIDERVLIT
APPROVED BY: M. CUSAC
DATE: NOVEMBER 2022

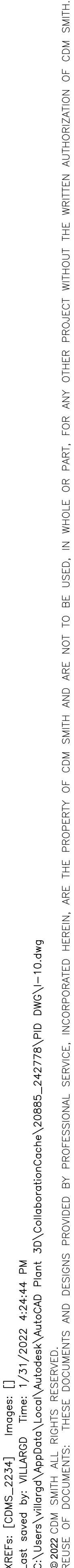


UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

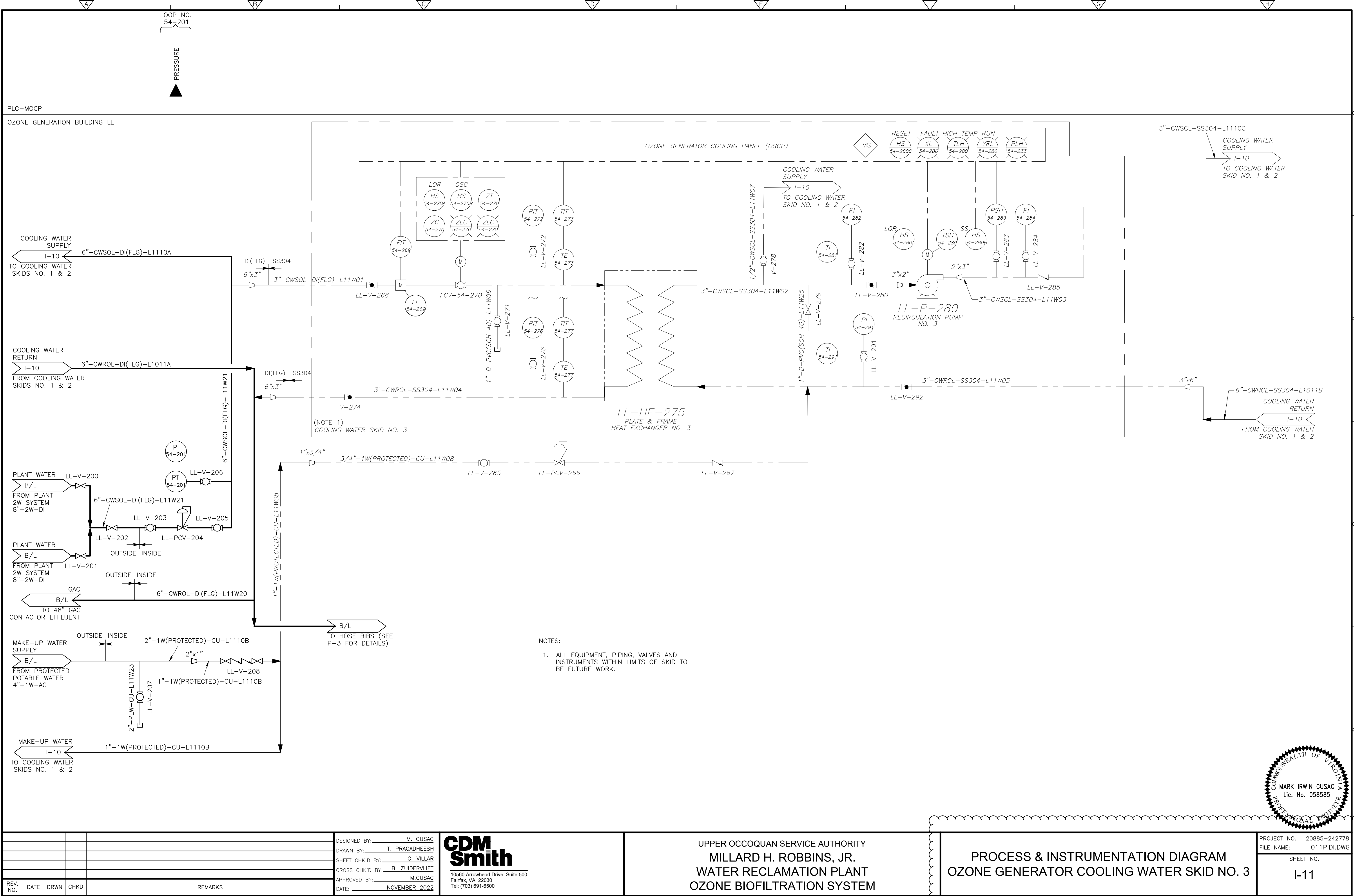
PROCESS & INSTRUMENTATION DIAGRAM
OZONE GENERATOR NO. 3

PROJECT NO. 20885-242778 FILE NAME: I009PID.DWG	SHEET NO. I-9
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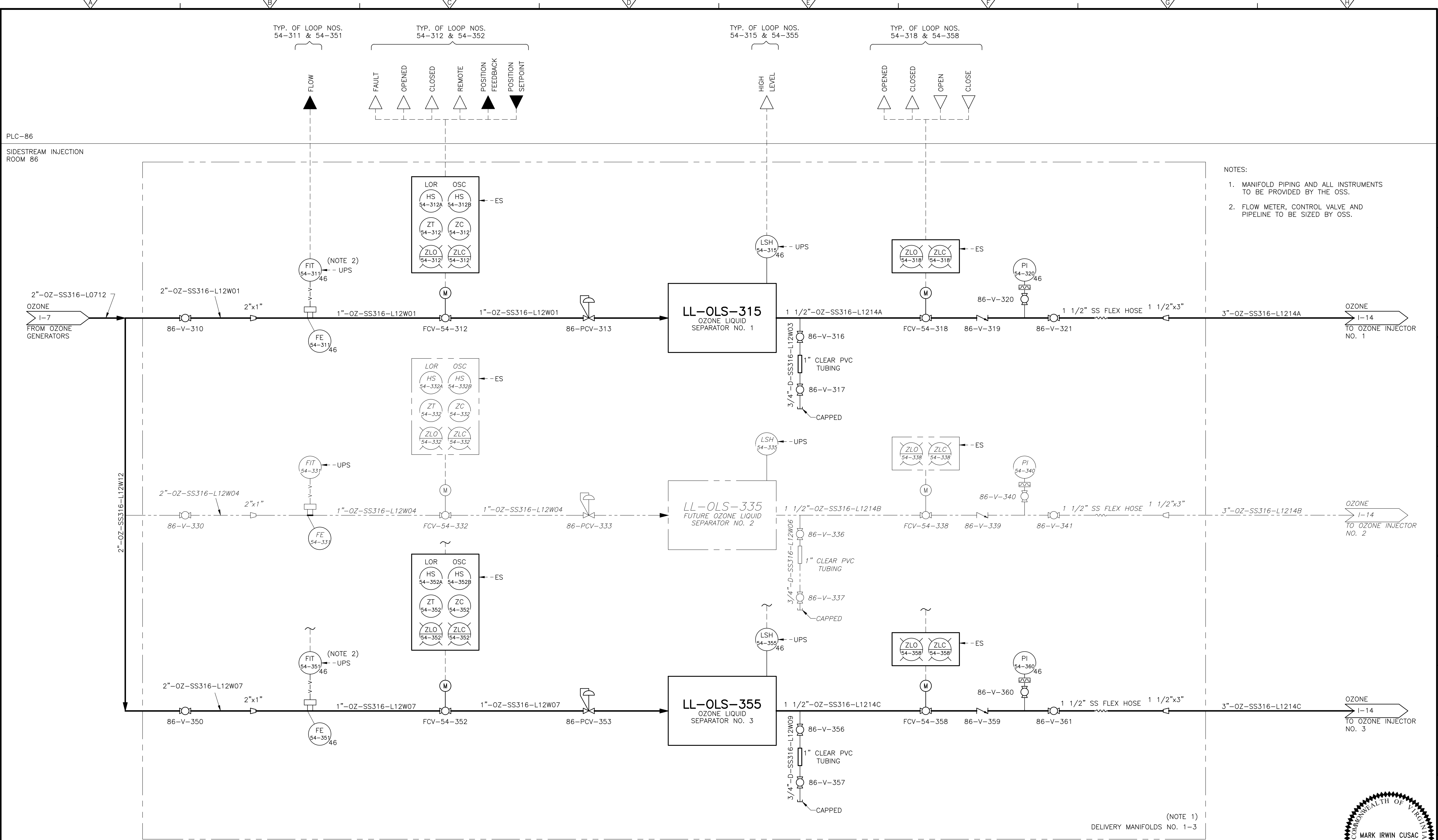




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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. CUSAC
DRAWN BY: V M KARTHICRAJA
SHEET CHK'D BY: G. VILLAR
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: M. CUSAC
DATE: NOVEMBER 2022

**CDM
Smith**
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

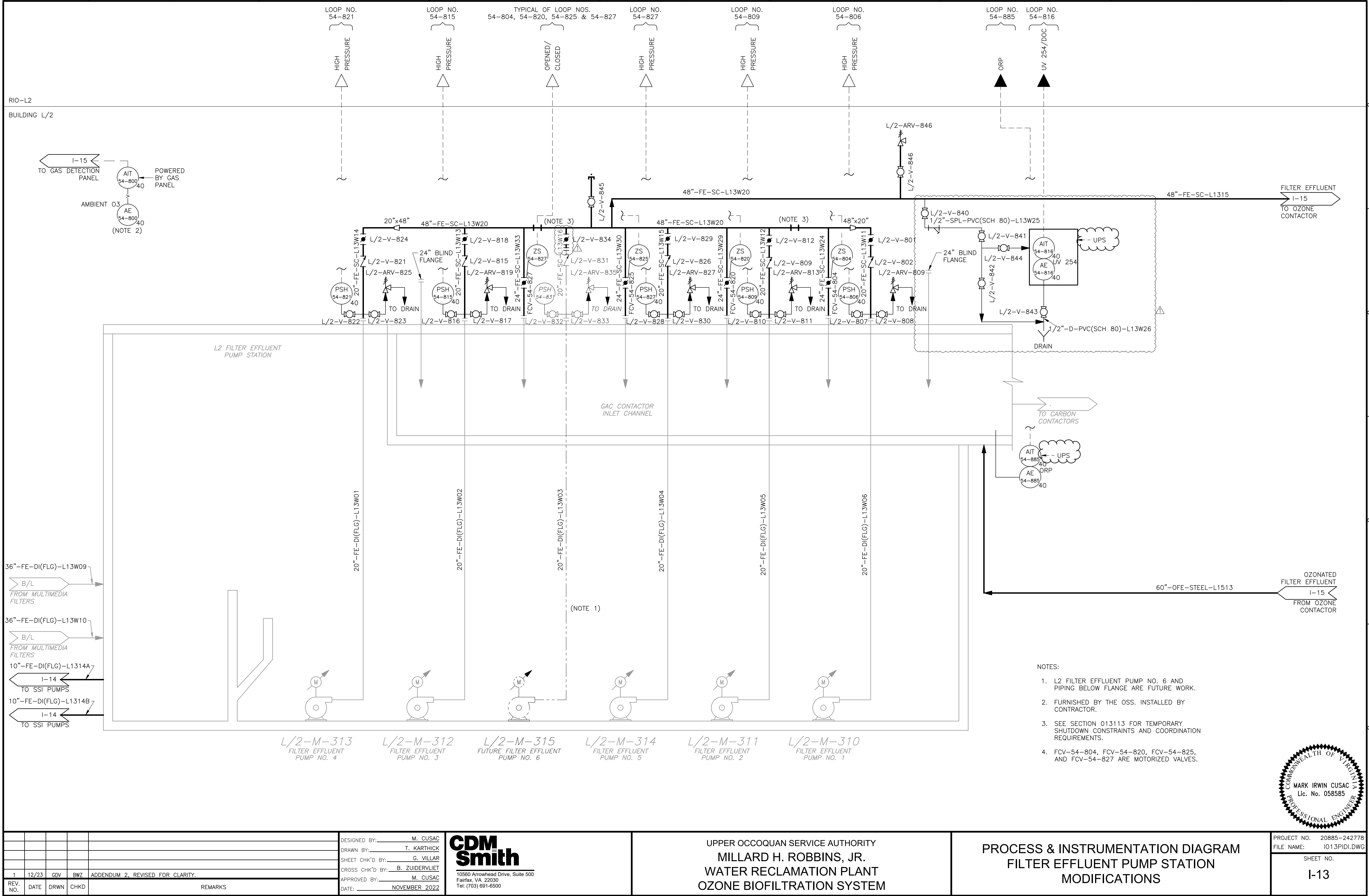
UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

PROCESS & INSTRUMENTATION DIAGRAM
OZONE GAS CONTROL MANIFOLDS

PROJECT NO. 20885-242778
FILE NAME: I012PID.DWG
SHEET NO.
I-12



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PLC-86

L/2 CORRIDOR

NOTES:

- FURNISHED BY THE OSS. INSTALLED BY CONTRACTOR.
- REFER TO E-27 FOR LOCATION OF MCCS.

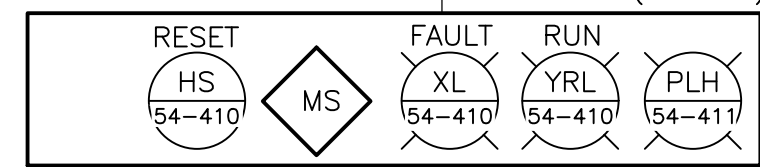
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FILTER EFFLUENT
FROM IPS INLET
CHANNEL

BASKET
STRAINER

L/2-V-401

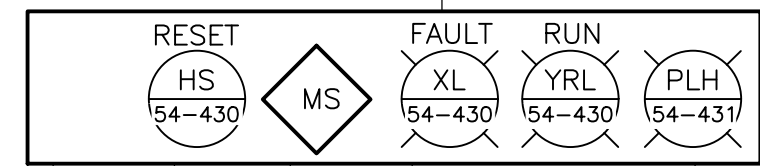
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MCC



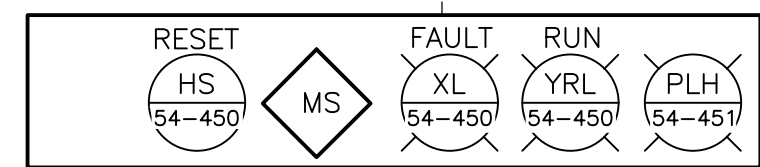
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SIDESTREAM PUMP
NO. 1

MCC



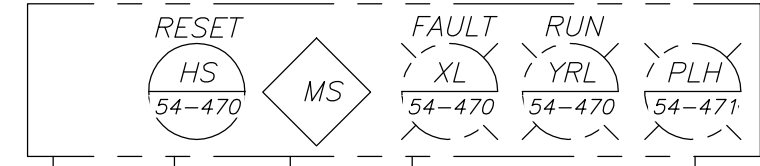
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SIDESTREAM PUMP
NO. 2

MCC



L/2-P-450
SIDESTREAM PUMP
NO. 3

MCC



L/2-P-470
FUTURE SIDESTREAM PUMP
NO. 4

SIDESTREAM
INJECTION ROOM 86

I-15
TO GAS DETECTION PANEL

POWERED
BY GAS
PANEL
O3
AE
54-400
40
(NOTE 1)

UPS
FIT
54-415
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PIT
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PT
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D(FLG) SS316

10"x4"

86-V-414

4"-FE-SS316-L14W06

86-V-418

1"-D-SS316-L14W07

86-V-415

FE 54-415 40

86-V-416

86-V-419

4"x6"

6"-OFE-SS316-L1415A

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 1

3"-OZ-SS316-L1214A

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 2

3"-OZ-SS316-L1214B

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-434

4"-FE-SS316-L14W16

86-V-440

1"-D-SS316-L14W17

86-V-435

FE 54-435 40

86-V-436

86-V-437

4"x6"

6"-OFE-SS316-L1415B

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214C

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214D

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-454

4"-FE-SS316-L14W29

86-V-458

1"-D-SS316-L14W27

86-V-455

FE 54-455 40

86-V-456

86-V-459

4"x6"

6"-OFE-SS316-L1415C

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214E

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214F

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-474

4"-FE-SS316-L14W34

86-V-478

1"-D-SS316-L14W31

86-V-479

FE 54-479 40

86-V-480

86-V-481

4"x6"

6"-OFE-SS316-L1415D

I-15

TO SAMPLE RETURN
SYSTEM

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214G

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214H

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-494

4"-FE-SS316-L14W38

86-V-498

1"-D-SS316-L14W35

86-V-499

FE 54-499 40

86-V-500

86-V-501

4"x6"

6"-OFE-SS316-L1415E

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214I

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214J

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-514

4"-FE-SS316-L14W42

86-V-518

1"-D-SS316-L14W39

86-V-519

FE 54-519 40

86-V-520

86-V-521

4"x6"

6"-OFE-SS316-L1415F

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214K

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214L

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-534

4"-FE-SS316-L14W45

86-V-538

1"-D-SS316-L14W41

86-V-539

FE 54-539 40

86-V-540

86-V-541

4"x6"

6"-OFE-SS316-L1415G

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214M

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214N

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-554

4"-FE-SS316-L14W48

86-V-558

1"-D-SS316-L14W43

86-V-559

FE 54-559 40

86-V-560

86-V-561

4"x6"

6"-OFE-SS316-L1415H

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214O

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214P

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-574

4"-FE-SS316-L14W51

86-V-578

1"-D-SS316-L14W45

86-V-579

FE 54-579 40

86-V-580

86-V-581

4"x6"

6"-OFE-SS316-L1415I

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214Q

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

3"-OZ-SS316-L1214R

OZONE

I-12

FROM OZONE DELIVERY
MANIFOLD NO. 3

D(FLG) SS316

10"x4"

86-V-594

4"-FE-SS316-L14W54

86-V-598

1"-D-SS316-L14W47

86-V-599

FE 54-599 40

86-V-600

86-V-601

4"x6"

6"-OFE-SS316-L1415J

I-15

TO OZONE CONTACTOR
NOZZLE MANIFOLD

OZONE

I-12

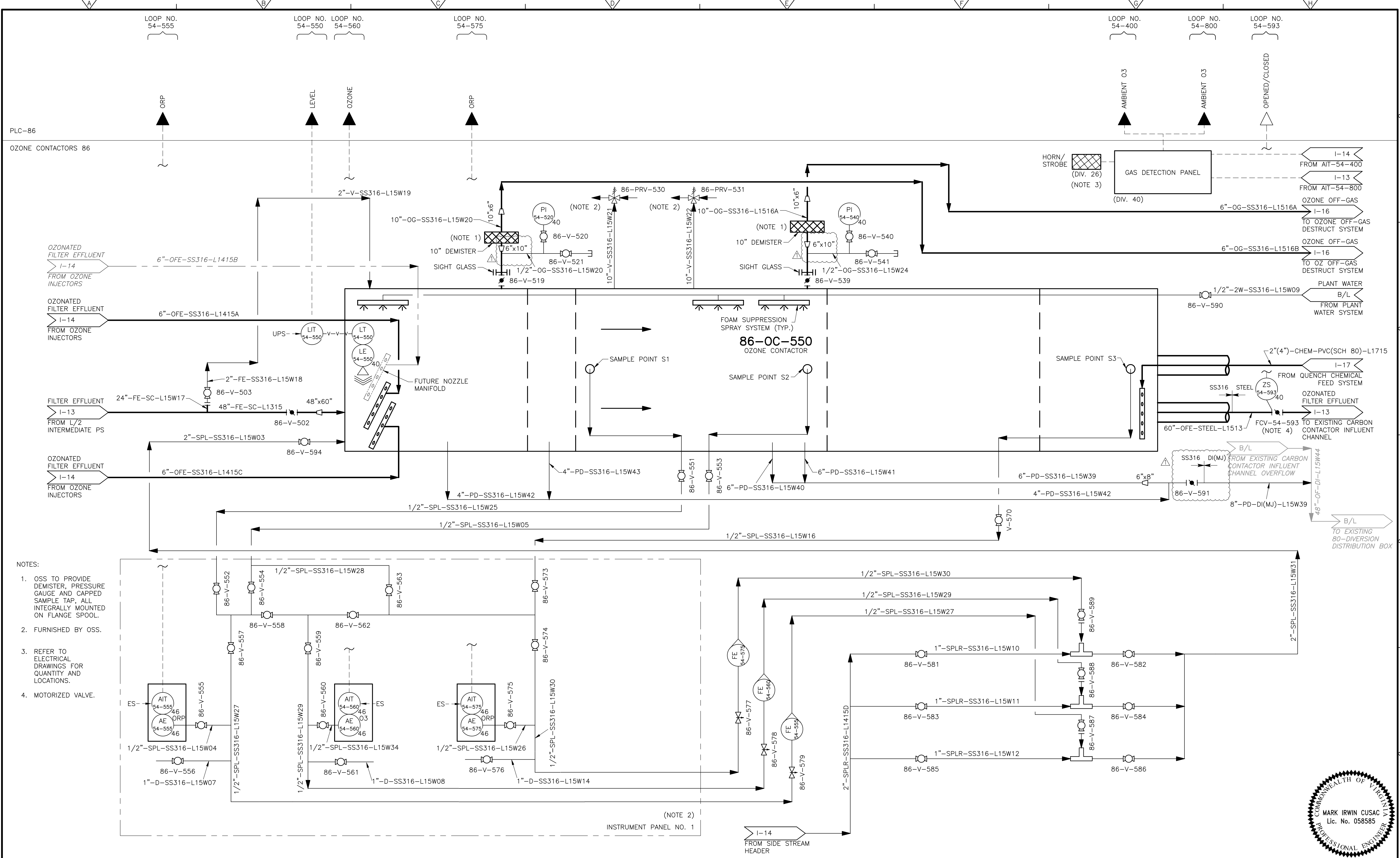
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MANIFOLD NO. 3


3"-OZ-SS316-L1214S

OZONE

I-12

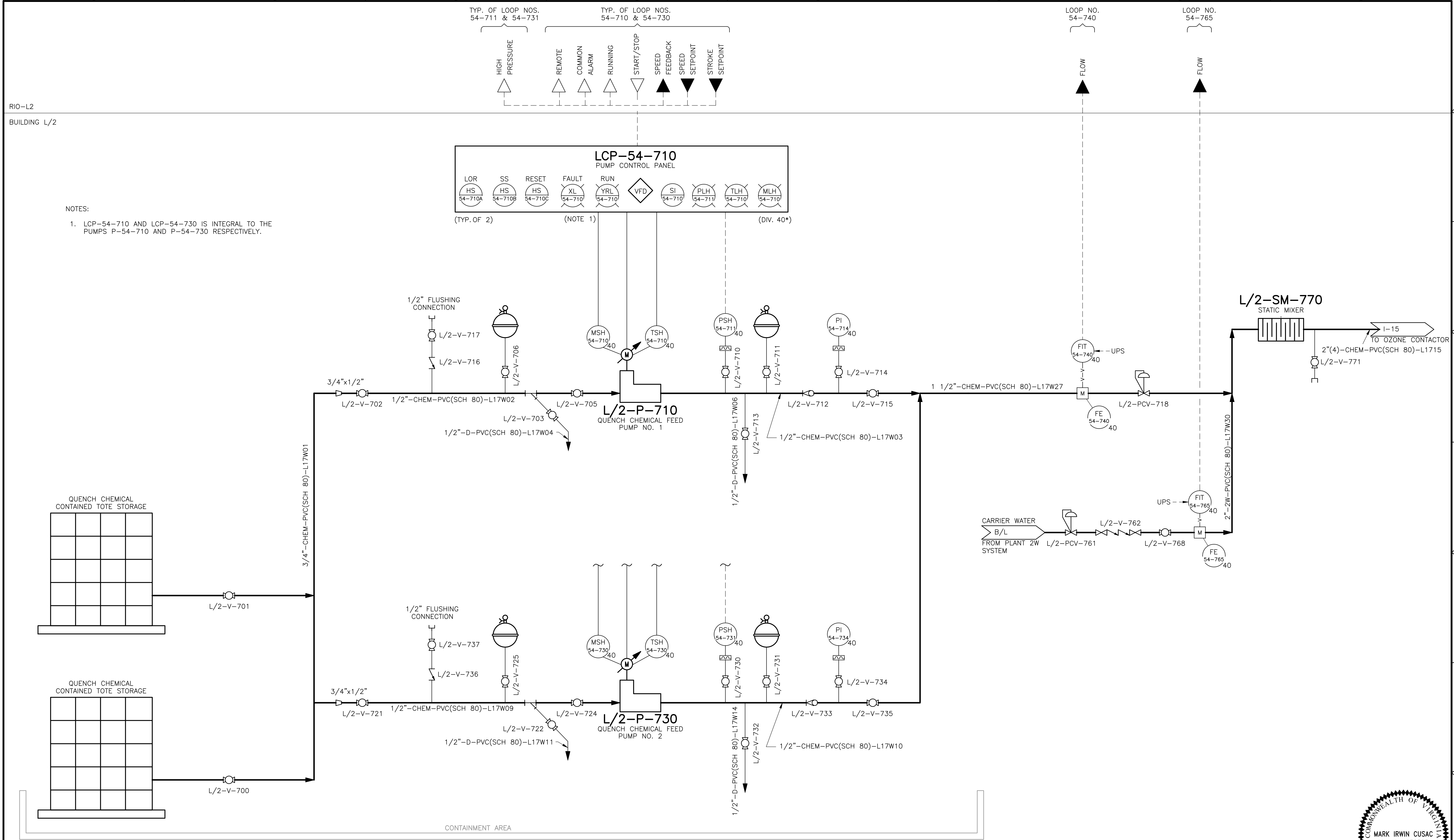
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					DESIGNED BY: M. CUSAC	 10560 Arrowhead Drive, Suite 500 Fairfax, VA 22030 Tel: (703) 691-6500	UPPER OCCOQUAN SERVICE AUTHORITY MILLARD H. ROBBINS, JR. WATER RECLAMATION PLANT OZONE BIOFILTRATION SYSTEM	PROCESS AND INSTRUMENTATION DIAGRAM OZONE CONTACTING SYSTEM	PROJECT NO. 20885-242778	
					DRAWN BY: T. PRAGADHEESH				FILE NAME: I015PID.DWG	
					SHEET CHK'D BY: G. VILLAR				SHEET NO.	
					CROSS CHK'D BY: B. ZUIDERVLIT				I-15	
1	12/23	GDV	BWZ	ADDENDUM 2, REVISED FOR CLARITY.		APPROVED BY: M. CUSAC				
REV. NO.	DATE	DRWN	CHKD	REMARKS		DATE: NOVEMBER 2022				



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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. CUSAC
DRAWN BY: T. KARTHICK
SHEET CHK'D BY: G. VILLAR
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: M. CUSAC
DATE: NOVEMBER 2022

CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

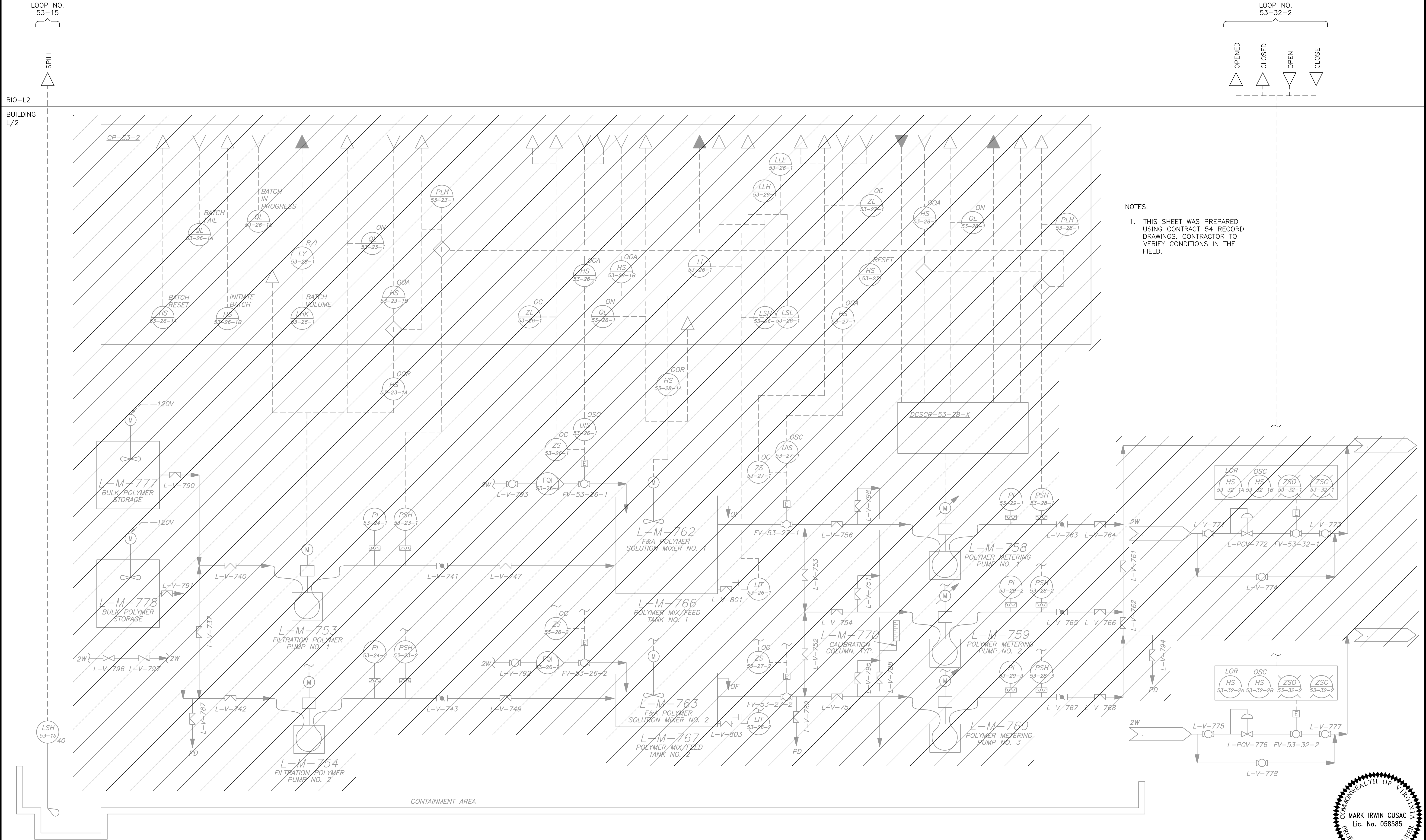
UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

PROCESS & INSTRUMENTATION DIAGRAM
QUENCH CHEMICAL STORAGE, FEED &
PUMPED INJECTION SYSTEM

PROJECT NO. 20885-242778
FILE NAME: I017PID.DWG
SHEET NO.
I-17



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NOTES:
1. THIS SHEET WAS PREPARED USING CONTRACT 54 RECORD DRAWINGS. CONTRACTOR TO VERIFY CONDITIONS IN THE FIELD.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: M. CUSAC
DRAWN BY: T. PRAGADHEESH
SHEET CHK'D BY: G. VILLAR
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: M. CUSAC
DATE: NOVEMBER 2022

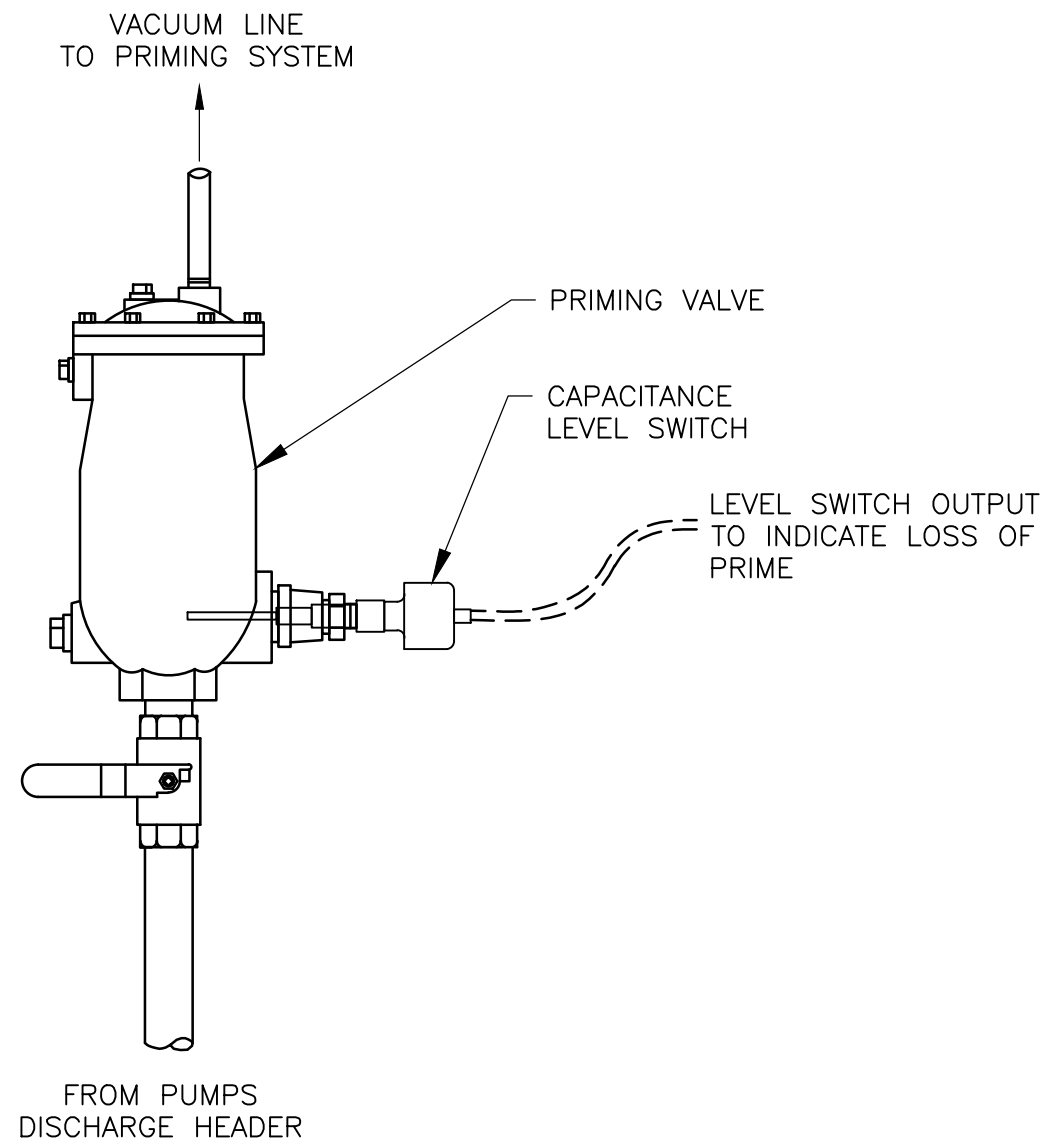
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Fairfax, VA 22030
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UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

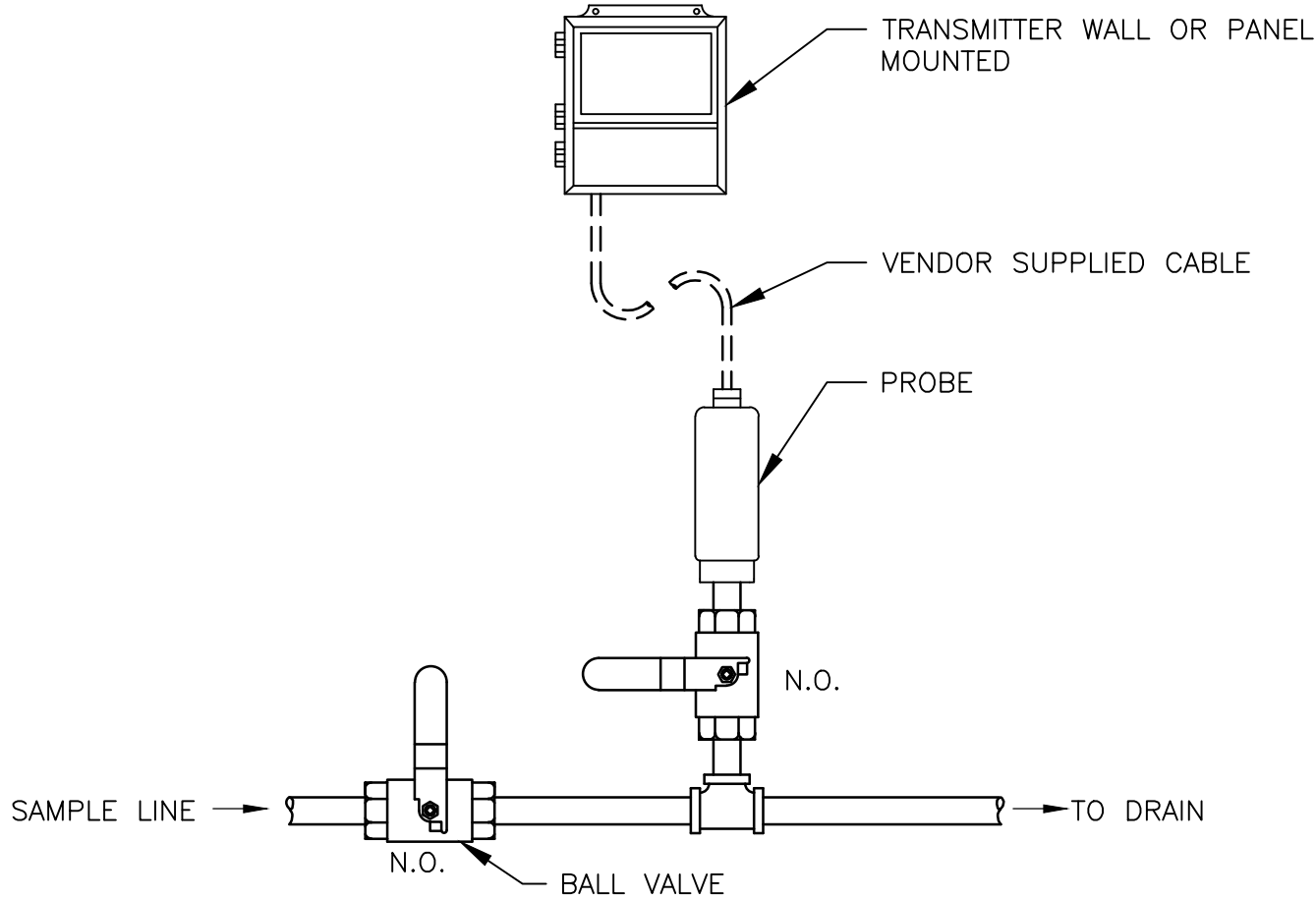
PROCESS & INSTRUMENTATION DIAGRAM
FILTRATION AND CHEMICAL SLUDGE
THICKENING POLYMER FEED SYSTEM

PROJECT NO. 20885-242778
FILE NAME: I018PID.DWG
SHEET NO.
I-18

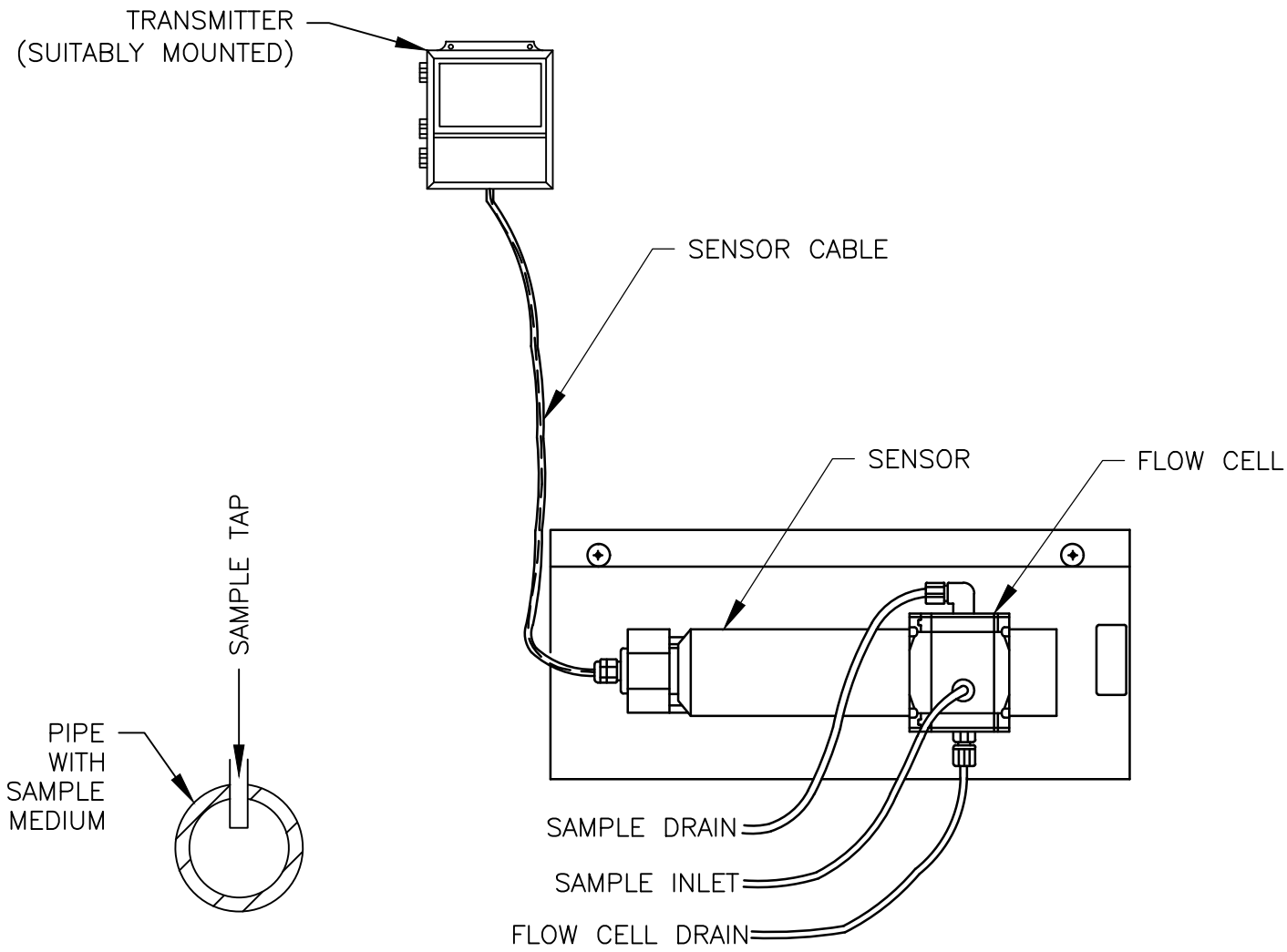
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CAPACITANCE LEVEL SWITCH
(ON PRIMING VALVE)
DETAIL I
NTS

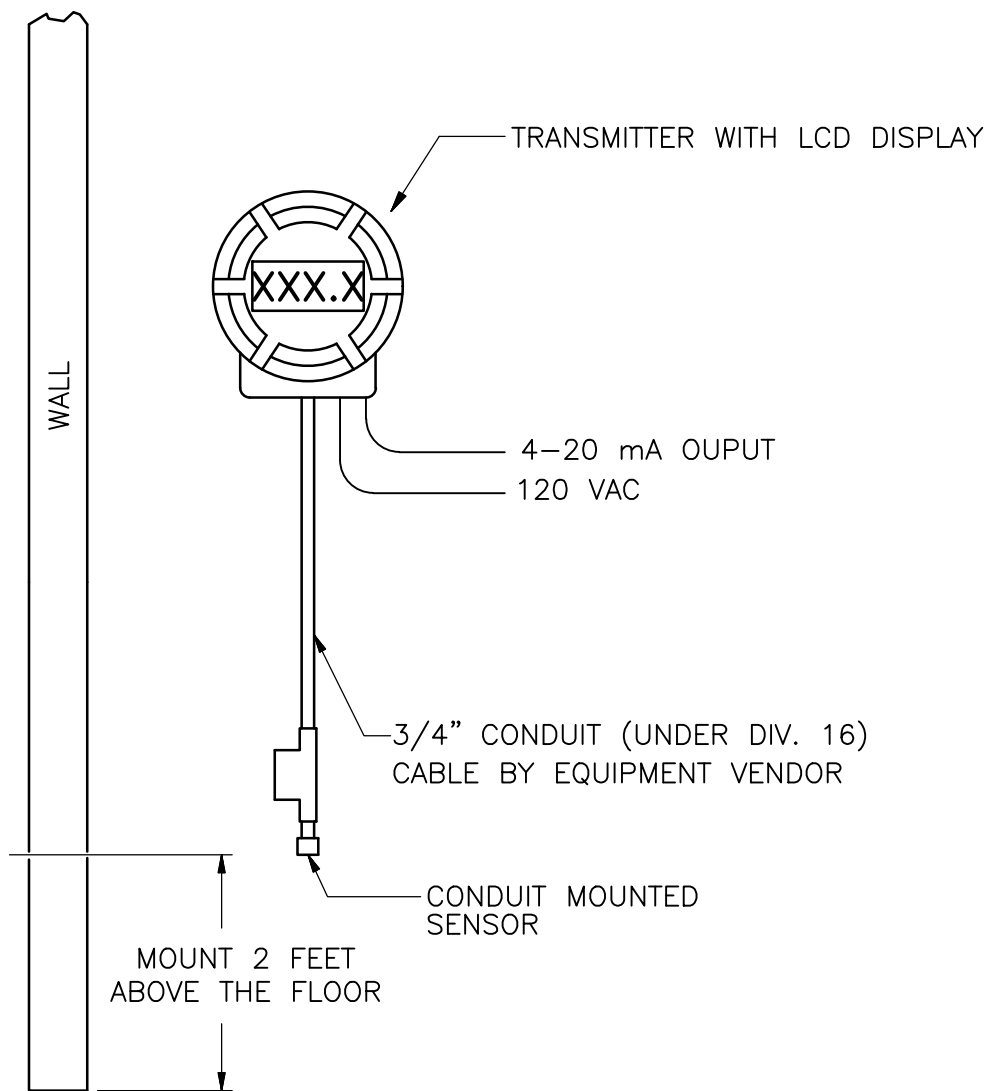


ORP ANALYZER AND TRANSMITTER
(FLOW-THROUGH)
DETAIL J
NTS

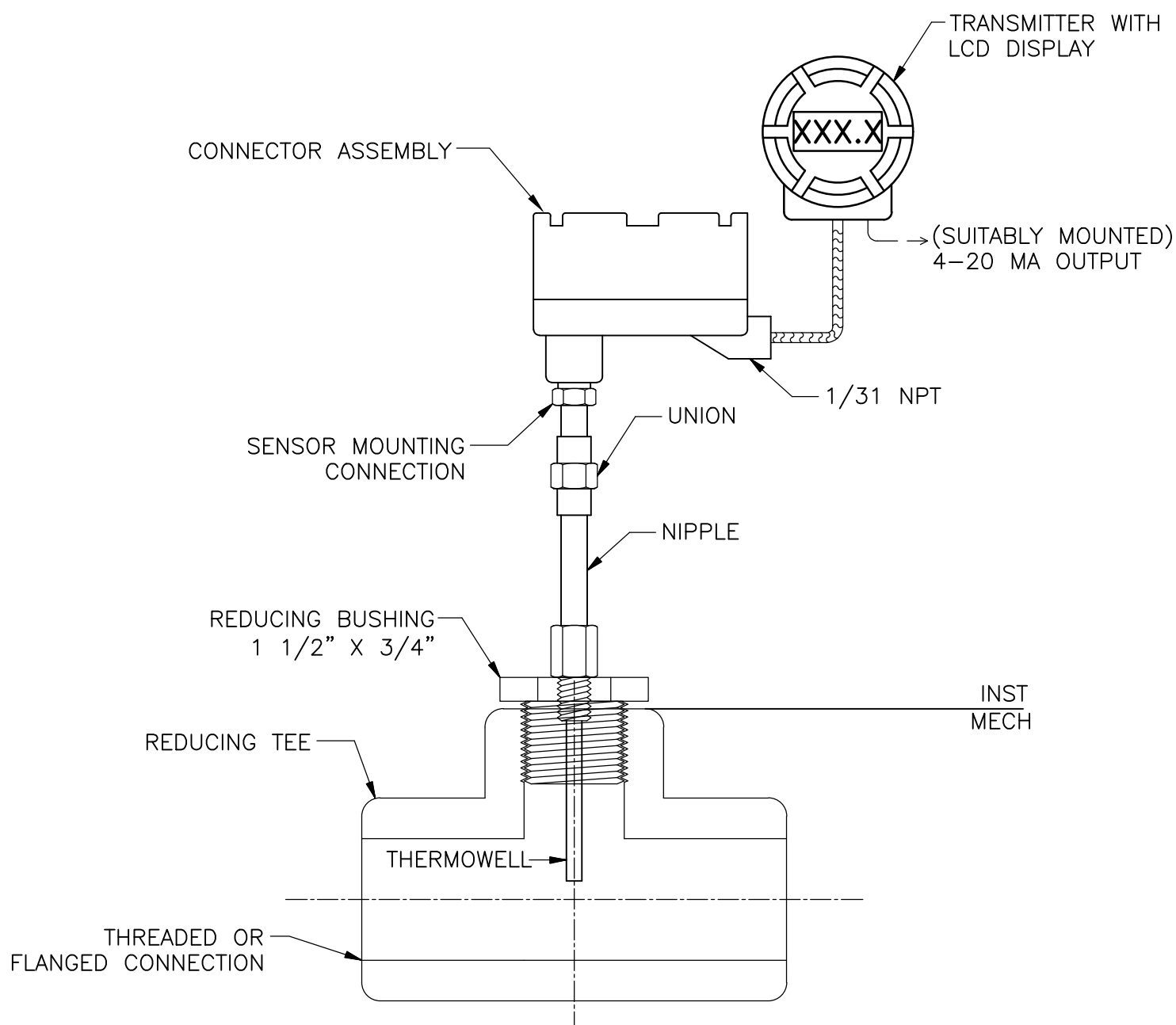


- NOTES:
1. SAMPLE LINE SHALL BE 1/2" O.D. TUBING. REDUCE TUBING LENGTH AS MUCH AS POSSIBLE TO REDUCE SAMPLE LAG TIME. TUBING NOT PROVIDED BY MANUFACTURER.
 2. DO NOT INSTALL THE SAMPLE LINE ON THE BOTTOM OF THE PROCESS VESSEL TO PREVENT FAULTY READINGS FROM SEDIMENT.

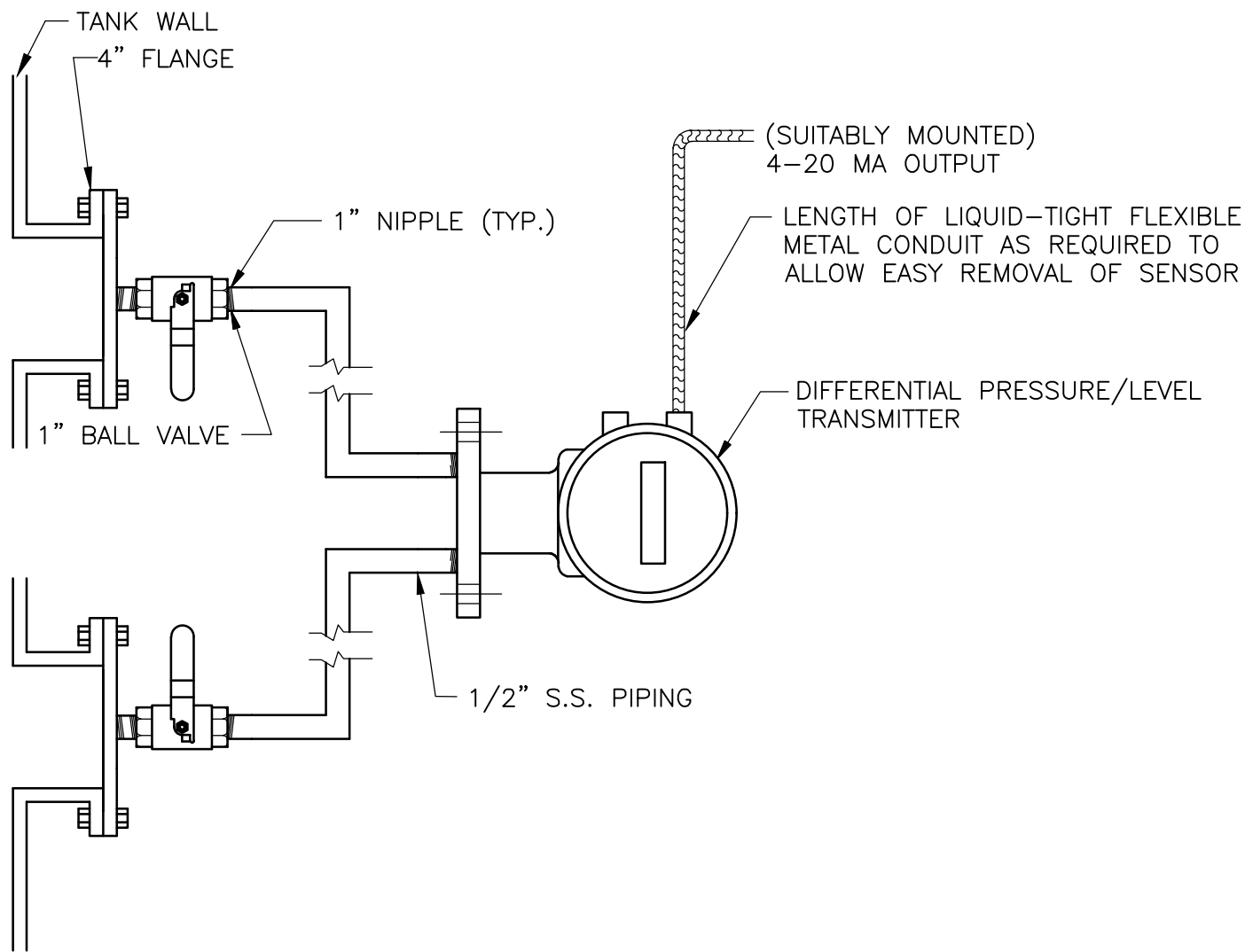
UVT ANALYSER
DETAIL K
NTS



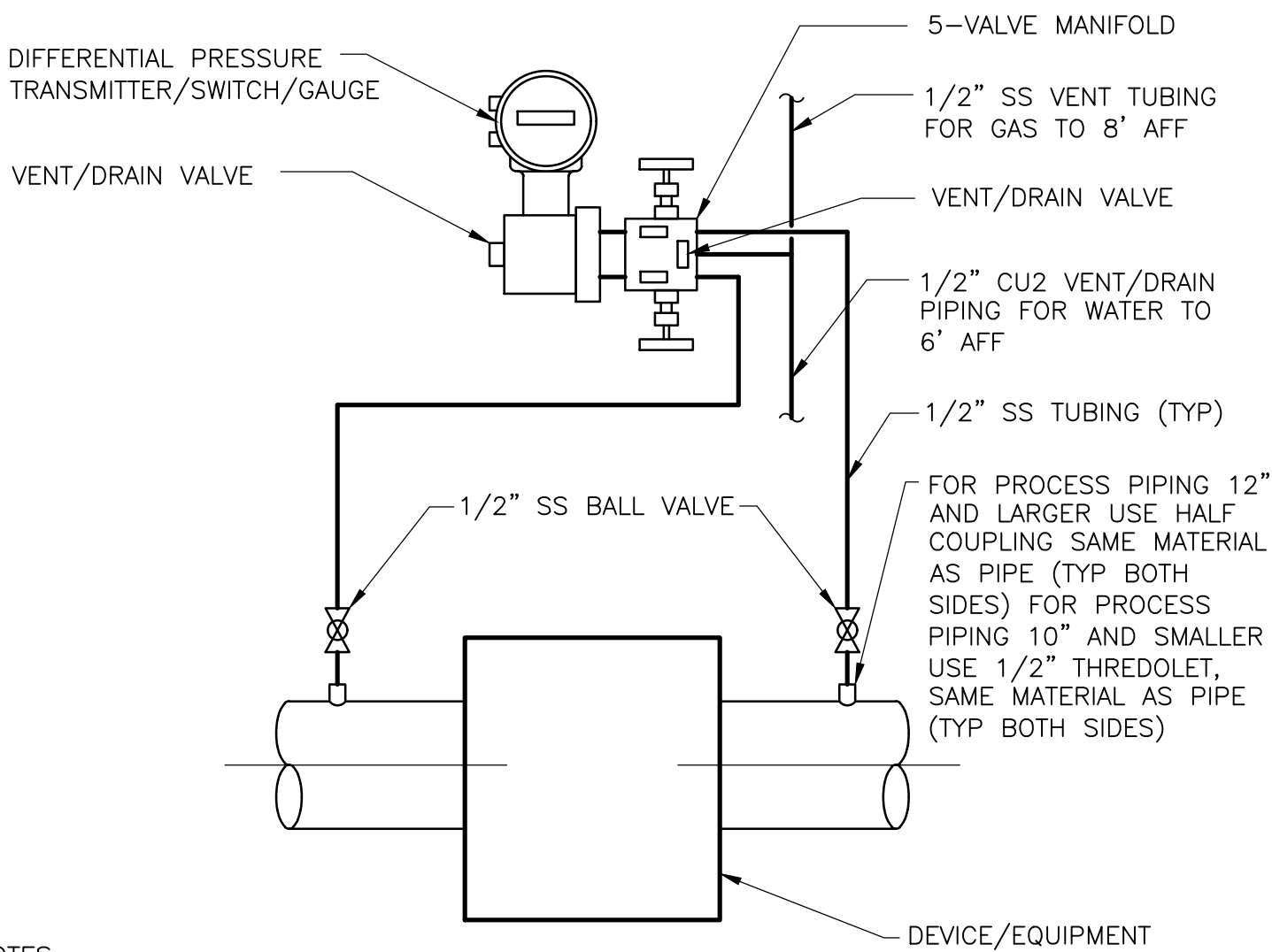
AMBIENT OZONE/OXYGEN ANALYSER
DETAIL L
NTS



RTD TEMPERATURE TRANSMITTER
(WITH THERMOWELL)
DETAIL M
NTS

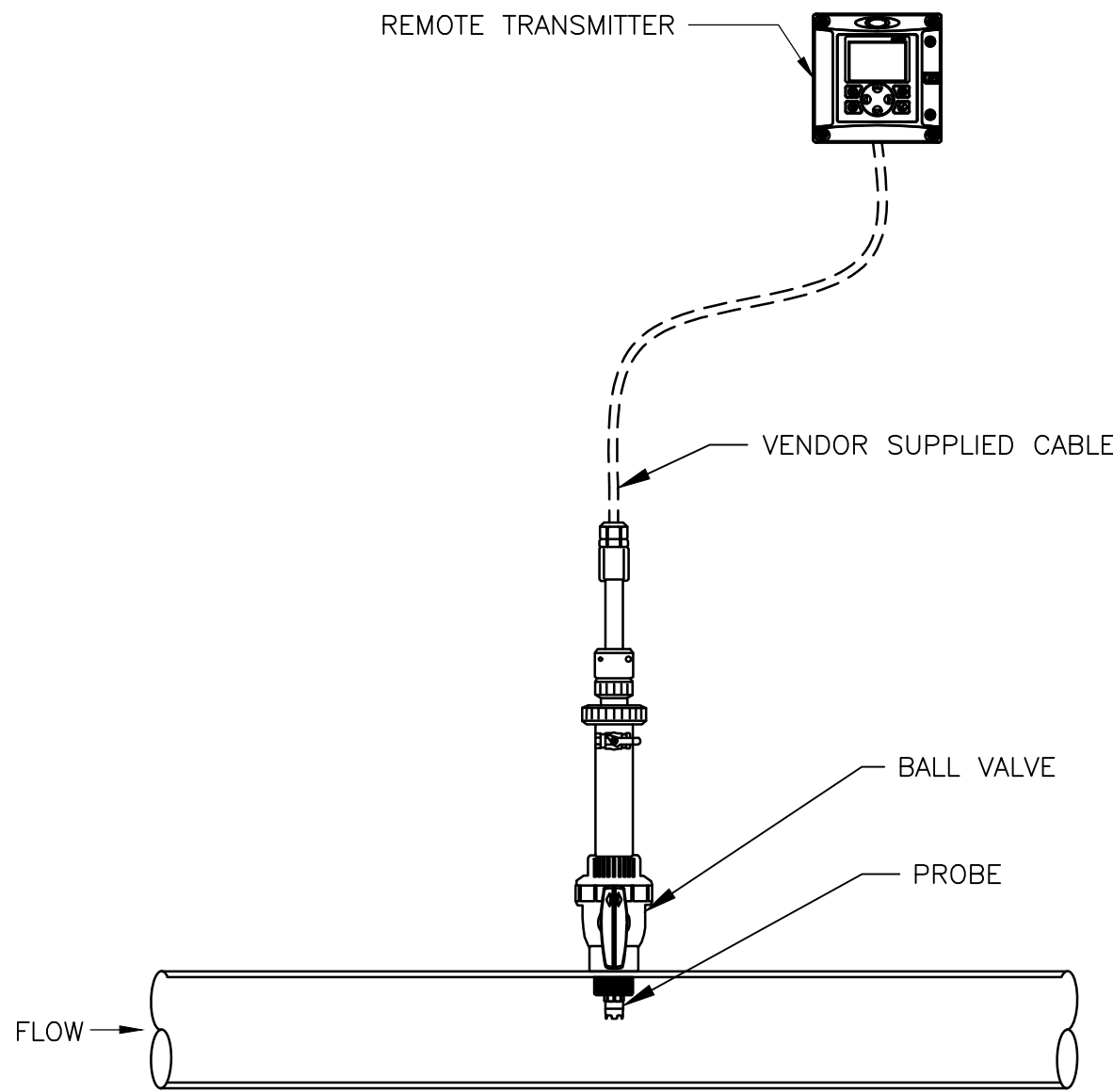


DIFFERENTIAL PRESSURE LEVEL TRANSMITTER
(ON SIDE OF TANK)
DETAIL N
NTS



- NOTES:
- 1) IF PROCESS FLUID IS GAS, THEN DRAIN PIPING NEED NOT BE INCLUDED. IF PROCESS FLUID IS WATER, THEN VENT TUBING NEED NOT BE INCLUDED.
 - 2) IF PROCESS FLUID IS WATER, MOUNT TRANSMITTER AT OR BELOW CENTERLINE OF PIPING AND SLOPE ALL TUBING AND PIPING DOWNWARDS TO TRANSMITTER.
 - 3) IF PROCESS FLUID IS GAS, MOUNT TRANSMITTER AT OR ABOVE CENTERLINE OF PIPING AND SLOPE ALL TUBING DOWNWARDS TOWARDS PIPING.

DIFFERENTIAL PRESSURE TRANSMITTER/SWITCH/GAUGE
DETAIL O
NTS



DEWPOINT ANALYSER
DETAIL P
NTS



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	GDV	BWZ	ADDENDUM 2, REVISED FOR CLARITY.

DESIGNED BY: M. CUSAC
DRAWN BY: T. PRAGADHEESH
SHEET CHK'D BY: G. VILLAR
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: M. CUSAC
DATE: NOVEMBER 2022

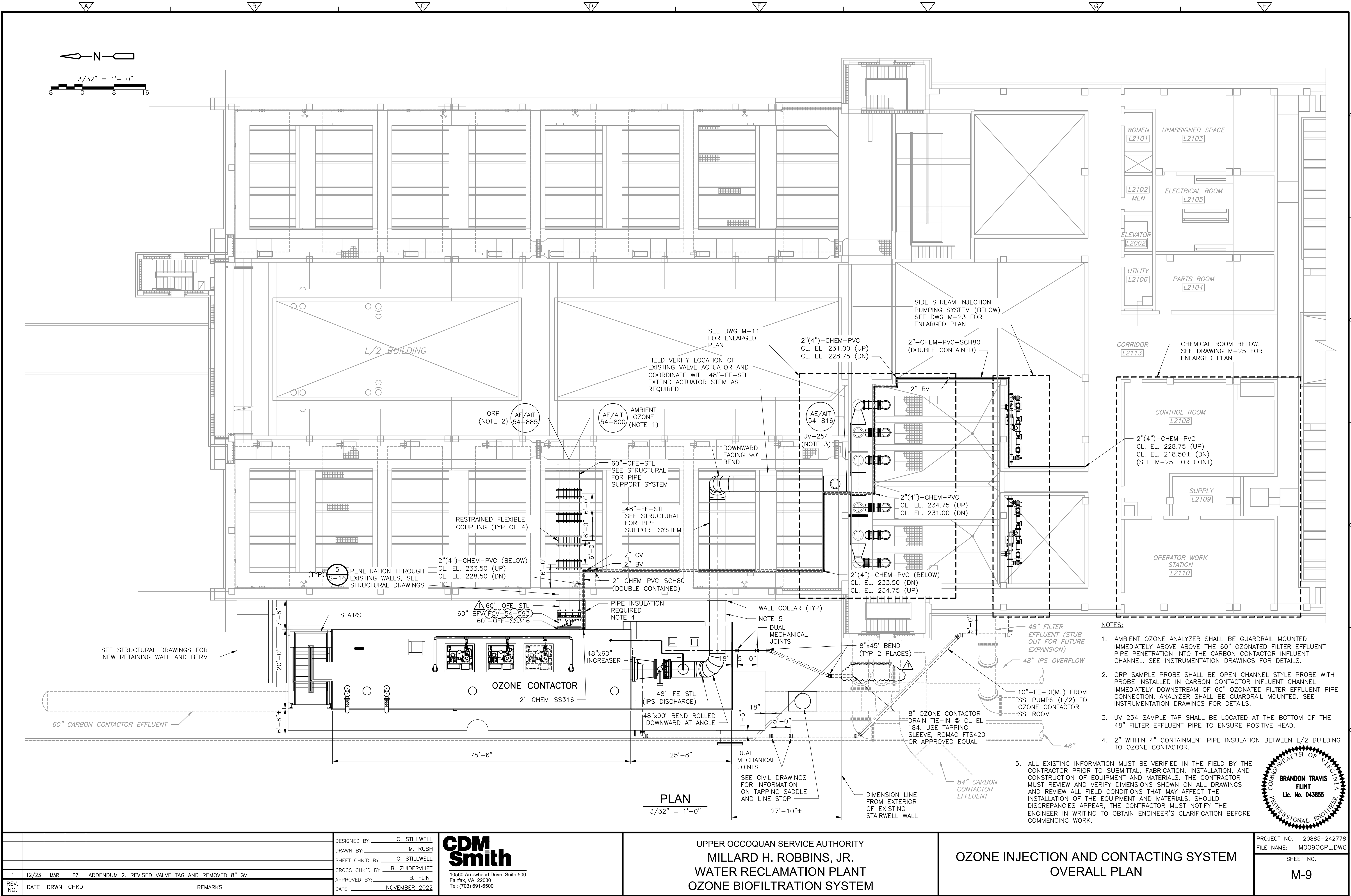
CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

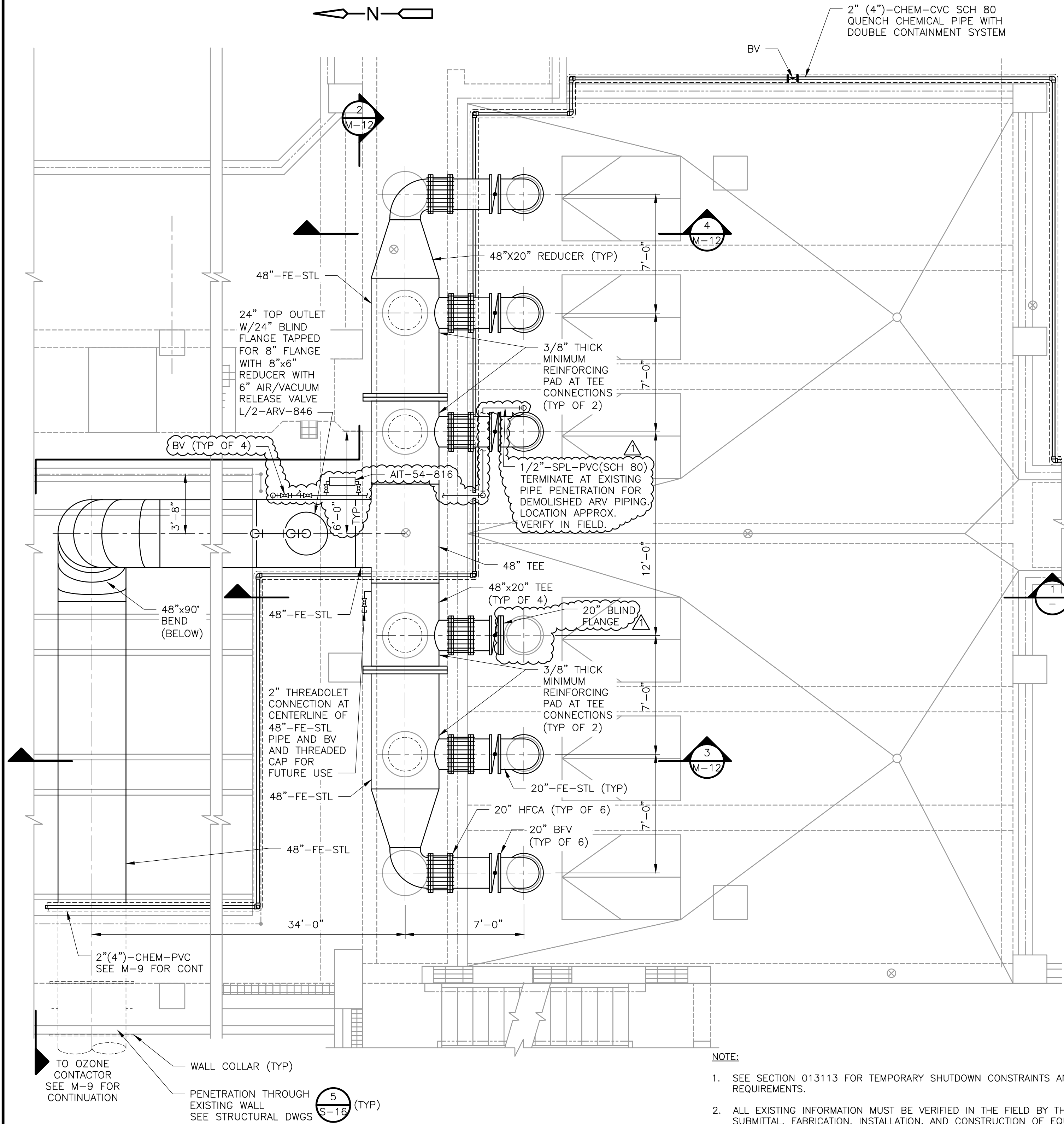
INSTALLATION DETAILS - II

PROJECT NO. 20885-242778
FILE NAME: I02DETL.DWG
SHEET NO.
ID-2

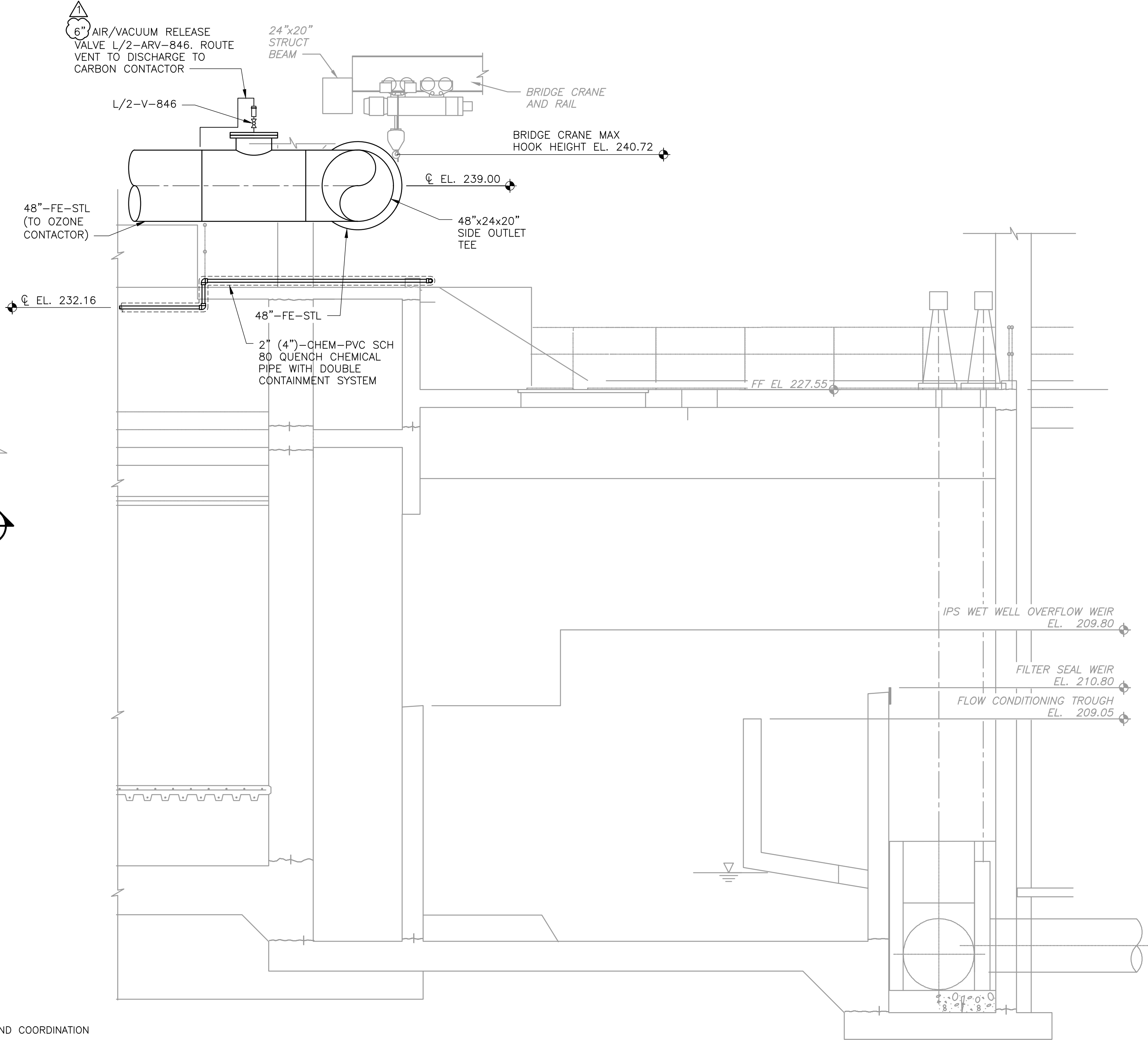
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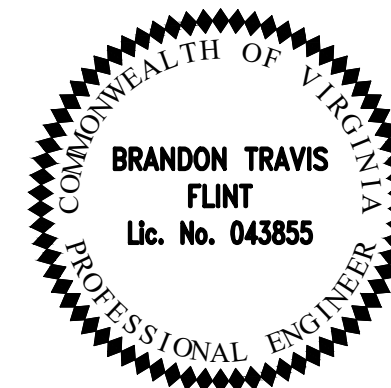
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FILTER EFFLUENT PUMP STATION
PLAN
1/4" = 1'-0"



FILTER EFFLUENT PUMP STATION
SECTION 1
1/4" = 1'-0"



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	MAR	BWZ	ADDENDUM 2. REVISED ARV SIZE

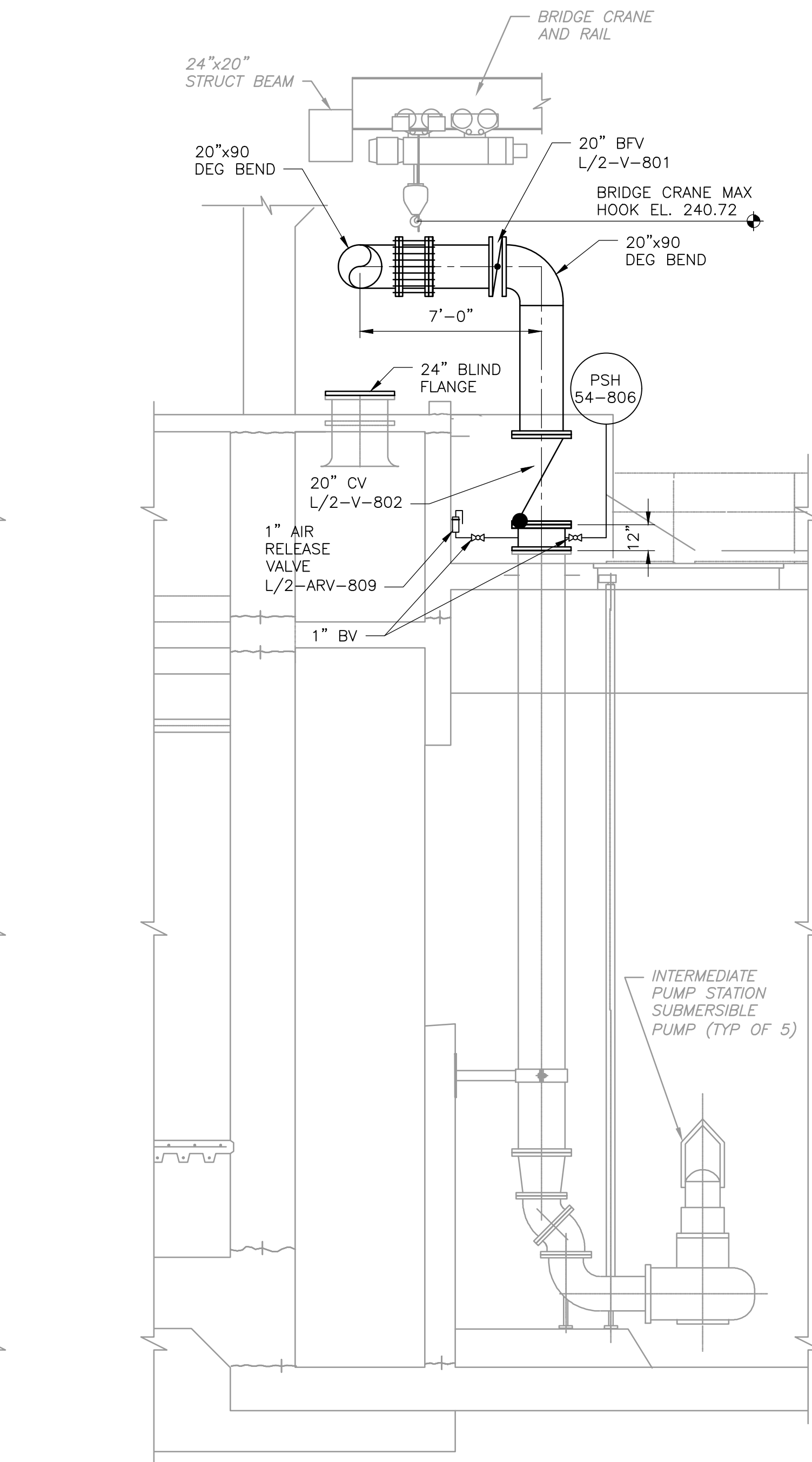
DESIGNED BY: C. STILLWELL
DRAWN BY: M. RUSH
SHEET CHK'D BY: C. STILLWELL
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: B. FLINT
DATE: NOVEMBER 2022

CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

BUILDING L/2 INTERMEDIATE PUMP STATION
MODIFICATIONS
PLAN AND SECTION

PROJECT NO. 20885-242778
FILE NAME: M011PSPS.DWG
SHEET NO.
M-11



1. SECTION 3 SHOWS INSTRUMENTS AND VALVES FOR THE DISCHARGE FROM PUMP NO. 3 (L-M-312). ARRANGEMENT IS TYPICAL OF PUMPS NO. 2 (L-M-311), NO. 3 (L-M-312), NO. 5 (L-M-314), AND FUTURE PUMP NO. 6 (L-M-315). SEE P&ID'S FOR INDIVIDUAL DISCHARGE LATERAL EQUIPMENT AND INSTRUMENT NUMBERING.
2. SECTION 4 SHOWS INSTRUMENTS AND VALVES FOR THE DISCHARGE FROM PUMP NO. 1 (L-M-310). ARRANGEMENT IS TYPICAL OF PUMPS NO. 1 (L-M-310), AND NO. 4 (L-M-313). SEE P&ID'S FOR INDIVIDUAL DISCHARGE LATERAL EQUIPMENT AND INSTRUMENT NUMBERING.
3. ALL EXISTING INFORMATION MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO SUBMITTAL, FABRICATION, INSTALLATION, AND CONSTRUCTION OF EQUIPMENT AND MATERIALS. THE CONTRACTOR MUST REVIEW AND VERIFY DIMENSIONS SHOWN ON ALL DRAWINGS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE EQUIPMENT AND MATERIALS. SHOULD DISCREPANCIES APPEAR, THE CONTRACTOR MUST NOTIFY THE ENGINEER IN WRITING TO OBTAIN ENGINEER'S CLARIFICATION BEFORE COMMENCING WORK.

FILTER EFFLUENT PUMP STATION

SECTION 4

1/4" = 1'-0" M-11



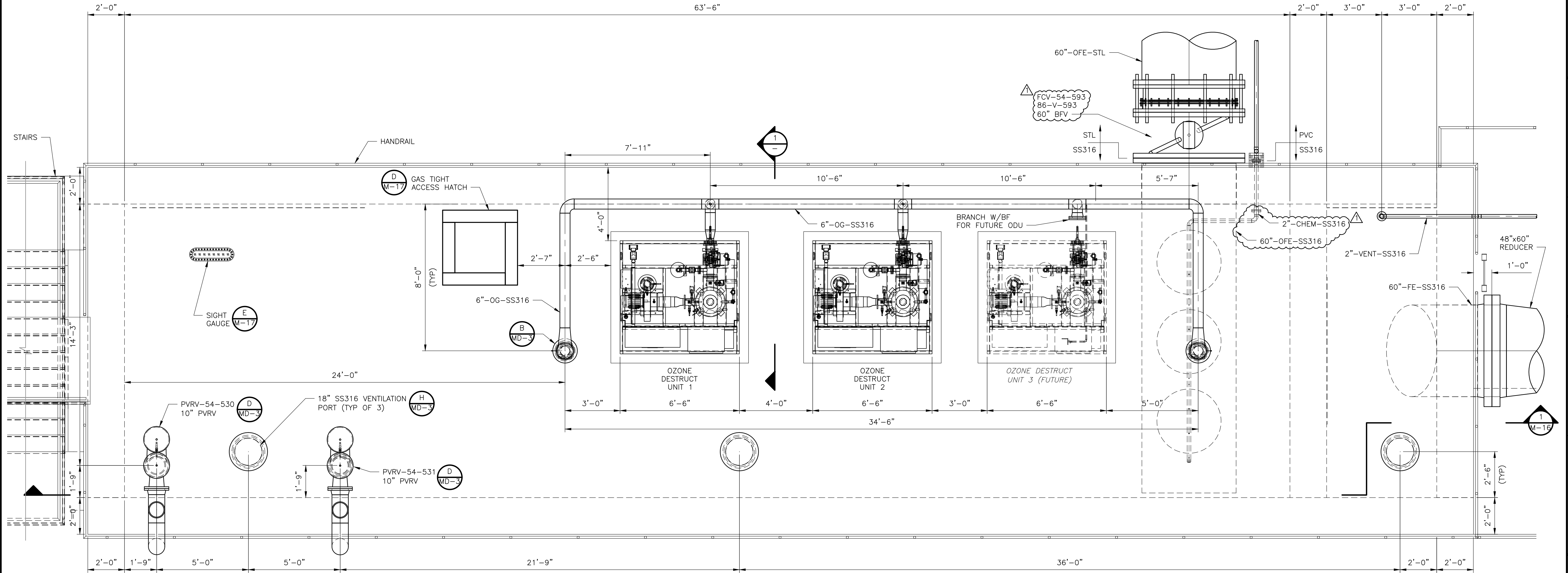
**CDM
Smith**
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

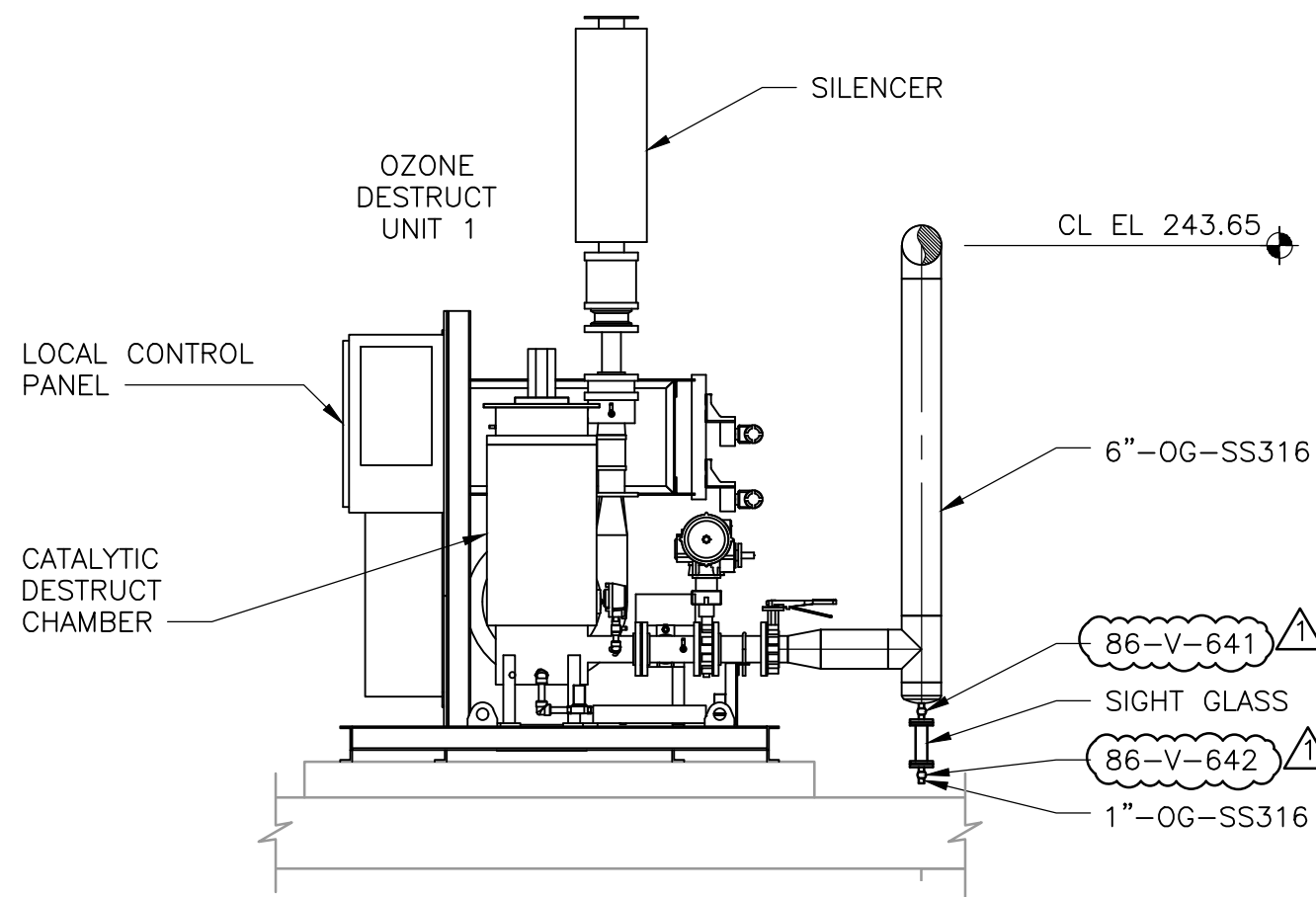
BUILDING L/2 INTERMEDIATE PUMP STATION MODIFICATIONS SECTIONS

PROJECT NO. 20885-242778
FILE NAME: M012PSSC.DWG
SHEET NO.
M-12

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ROOF PLAN
3/8" = 1'-0"



SECTION 1
3/8" = 1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	MAR	BWZ	ADDENDUM 2. REVISED CALLOUTS

DESIGNED BY: C. STILLWELL
DRAWN BY: M-RUSH
SHEET CHK'D BY: C. STILLWELL
CROSS CHK'D BY: B. ZUIDERVLIT
APPROVED BY: B. FLINT
DATE: NOVEMBER 2022

CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

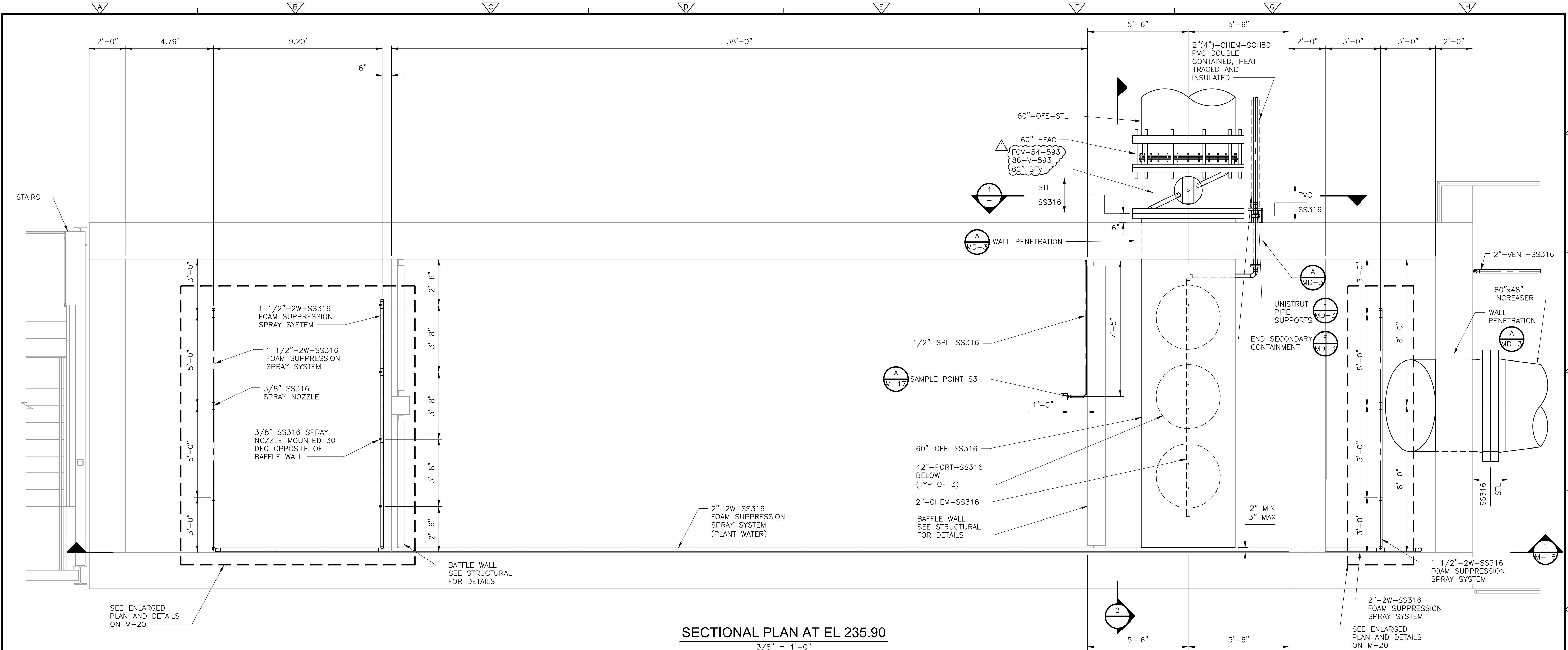
UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

OZONE CONTACTOR 86
PLAN AT EL. 245.00

PROJECT NO. 20885-242778
FILE NAME: M0130CPL.DWG
SHEET NO.
M-13

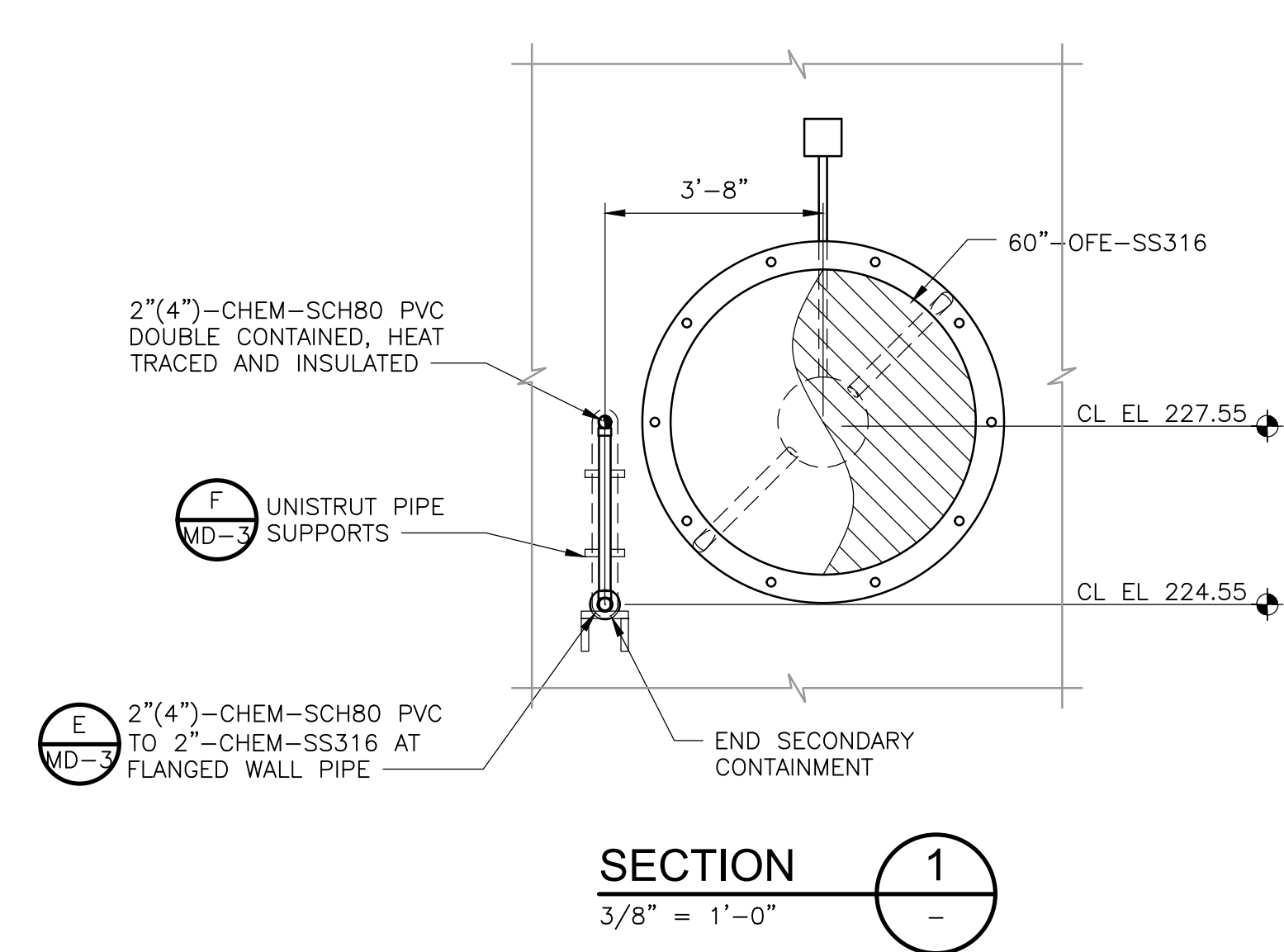


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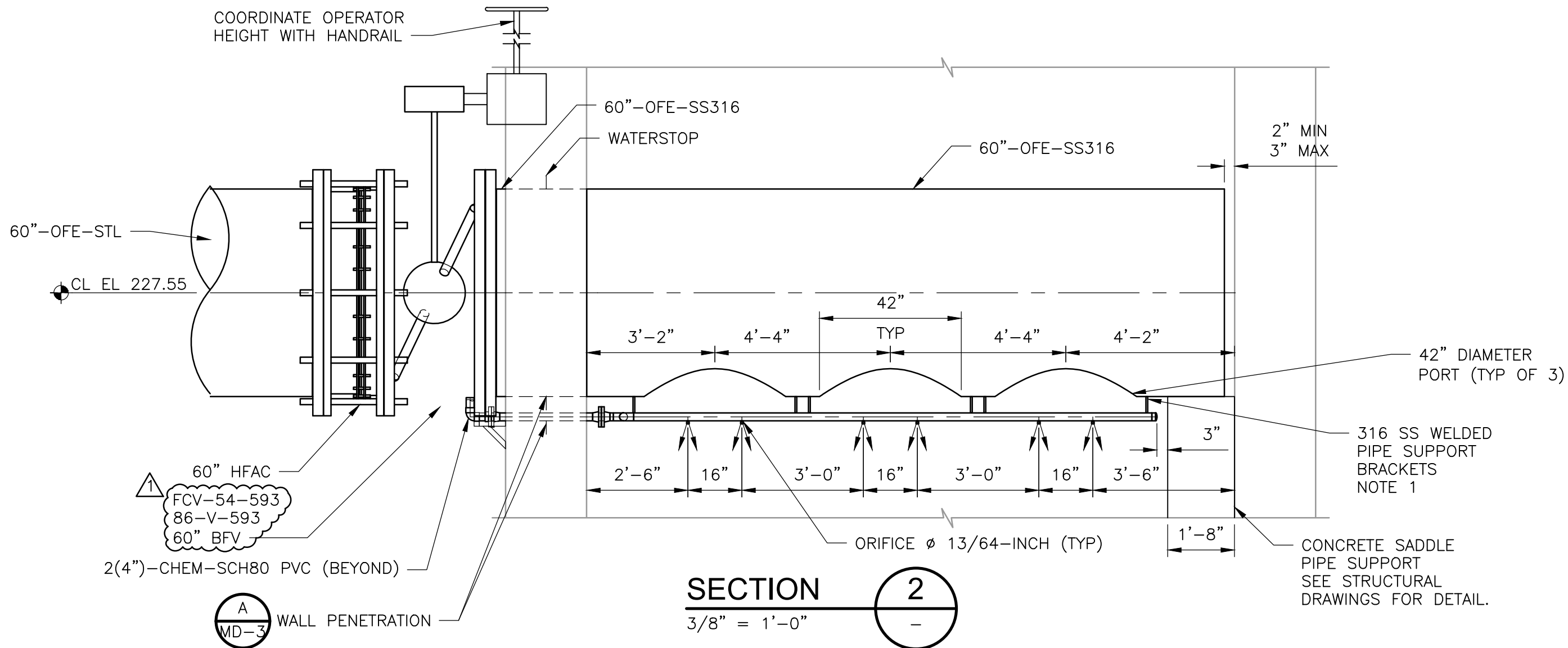
SECTIONAL PLAN AT EL 235.90

3/8" = 1'-0"



SECTION 1

3/8" = 1'-0"



SECTION 2

3/8" = 1'-0"

NOTES:

1. QUENCH CHEMICAL DIFFUSER PIPE SHALL BE FACTORY WELDED TO 60" OFE PIPE UP TO FLANGED CONNECTION. SEE SPECIFICATION SECTION 400522 FOR REQUIREMENTS.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	MAR	BWZ	ADDENDUM 2. REVISED CALLOUT TAG

DESIGNED BY: C. STILLWELL
DRAWN BY: M. RUSH
SHEET CHK'D BY: C. STILLWELL
CROSS CHK'D BY: B. ZUIDERVLIT
APPROVED BY: B. FLINT
DATE: NOVEMBER 2022

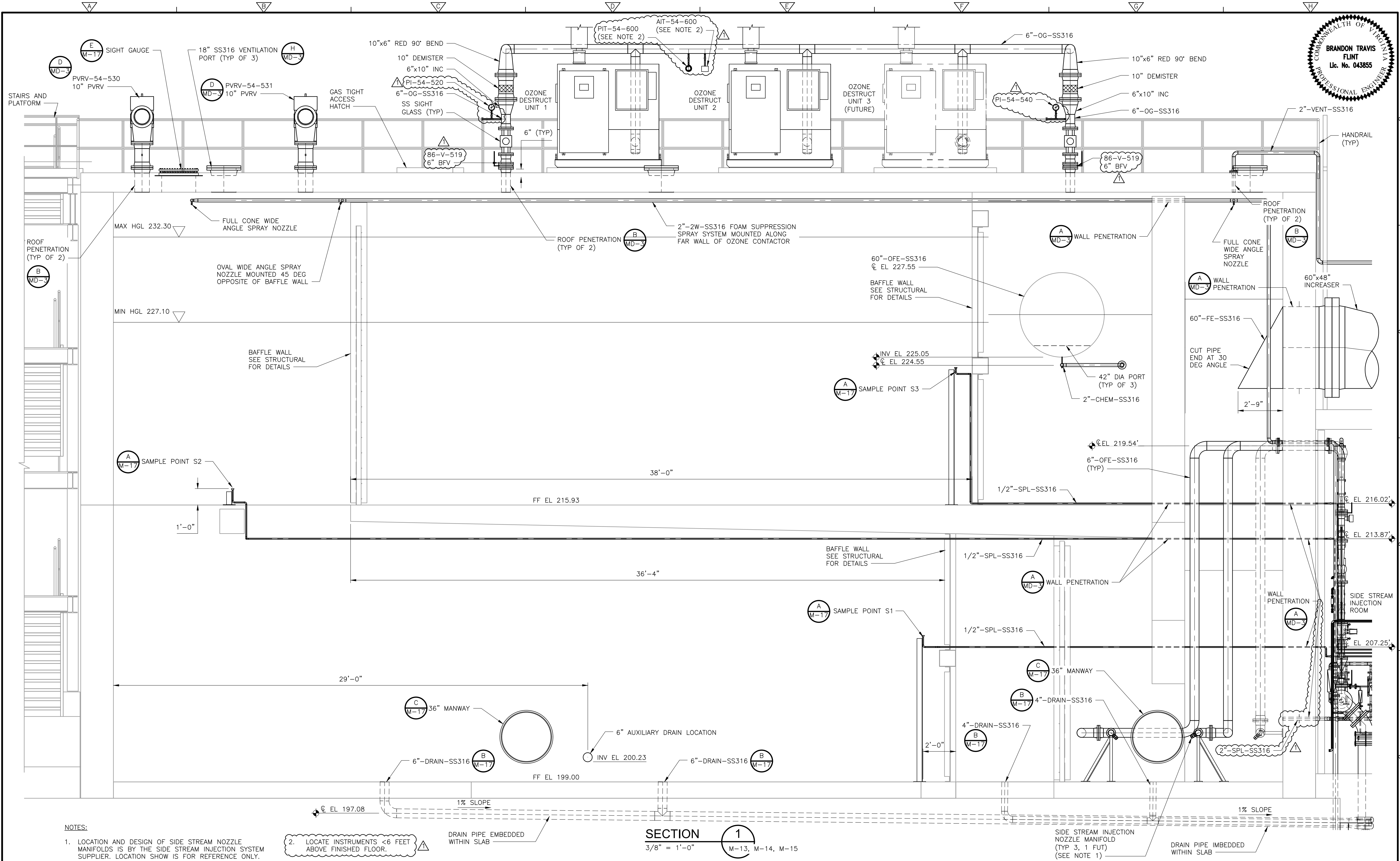
CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

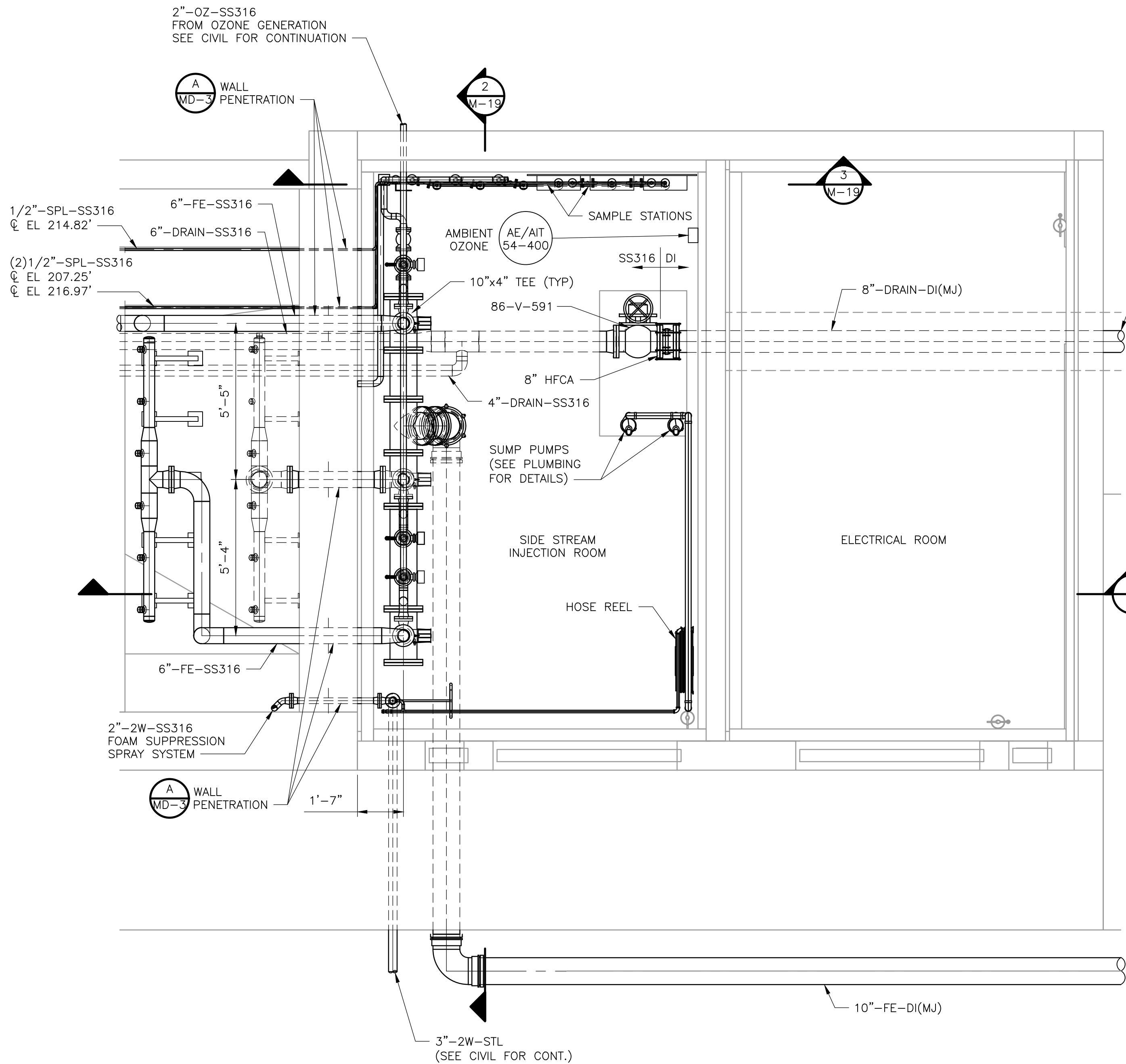
OZONE CONTACTOR 86
PLAN AT EL. 235.00

PROJECT NO. 20885-242778
FILE NAME: M0140CPL.DWG
SHEET NO.
M-14

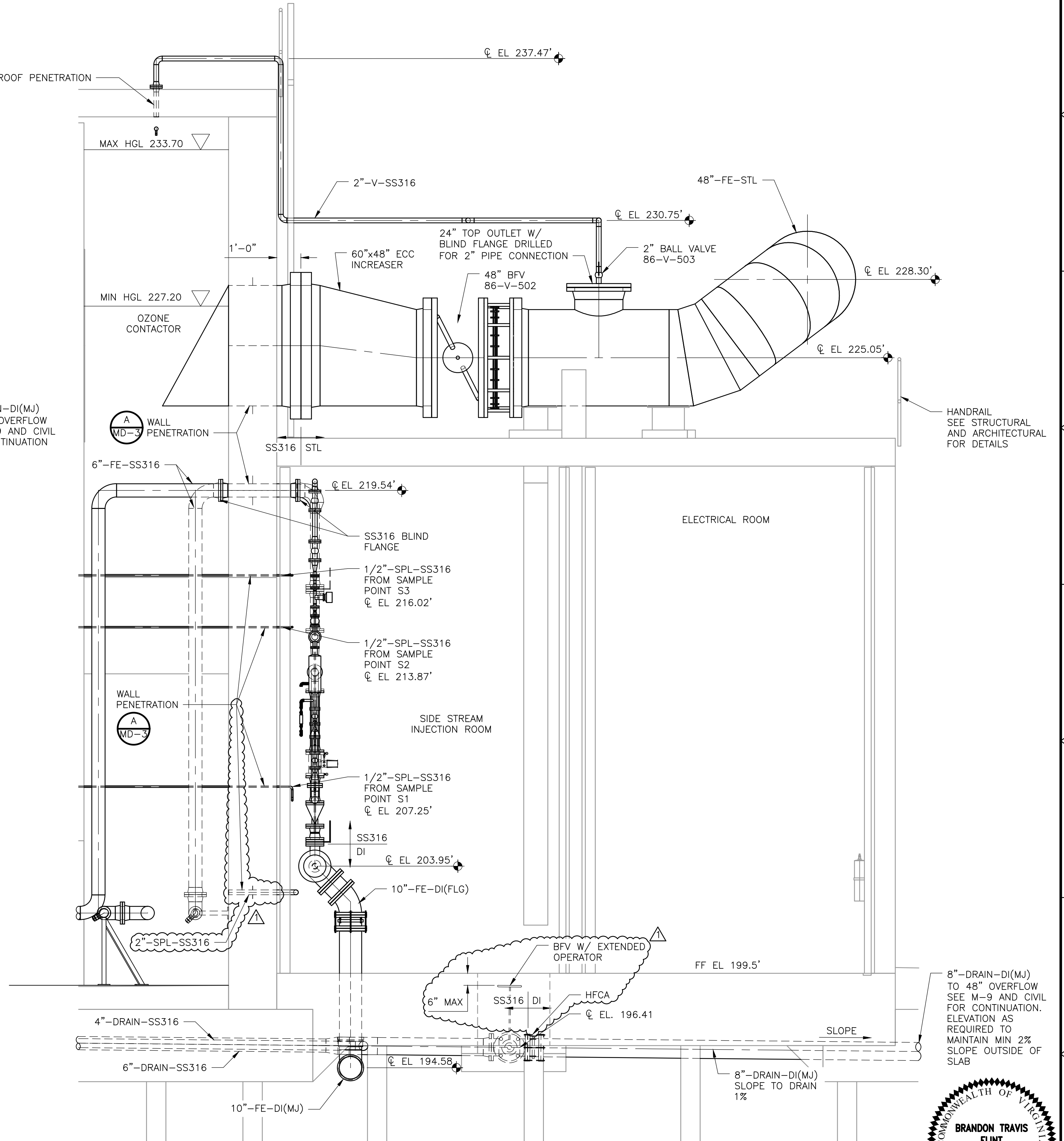
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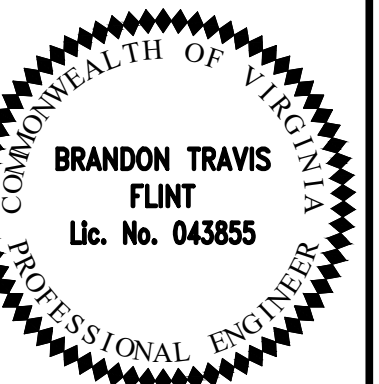
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PLAN
3/8" = 1'-0"



SECTION 1
3/8" = 1'-0"



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	MAR	BWZ	ADDENDUM 2. REVISED FOR CLARIFICATION.

DESIGNED BY: C. STILLWELL
DRAWN BY: M. RUSH
SHEET CHK'D BY: C. STILLWELL
CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: B. FLINT
DATE: NOVEMBER 2022

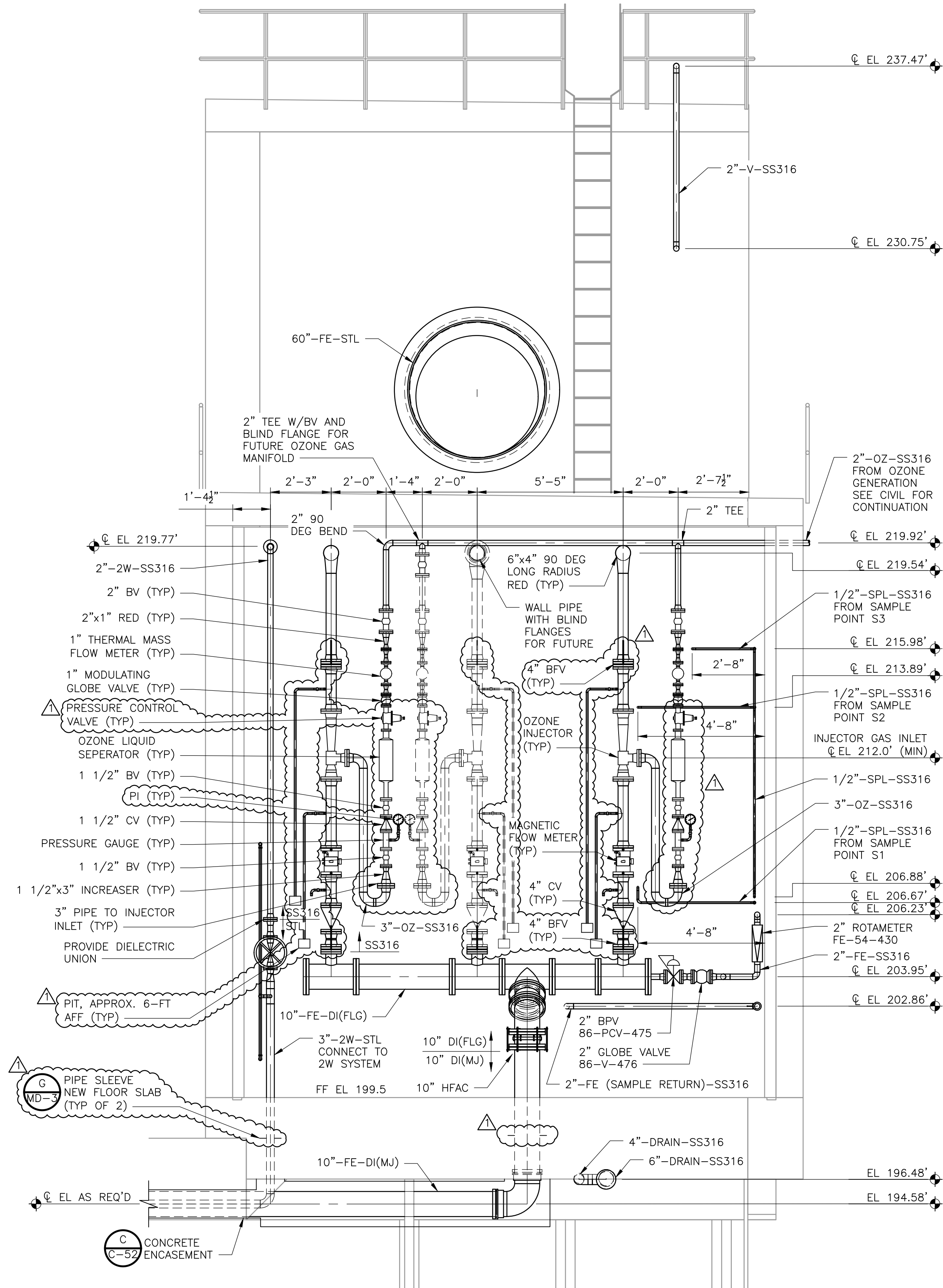
CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

SIDESTREAM INJECTION ROOM 86
PLAN AND SECTION

PROJECT NO. 20885-242778
FILE NAME: M0180CPS.DWG
SHEET NO.
M-18

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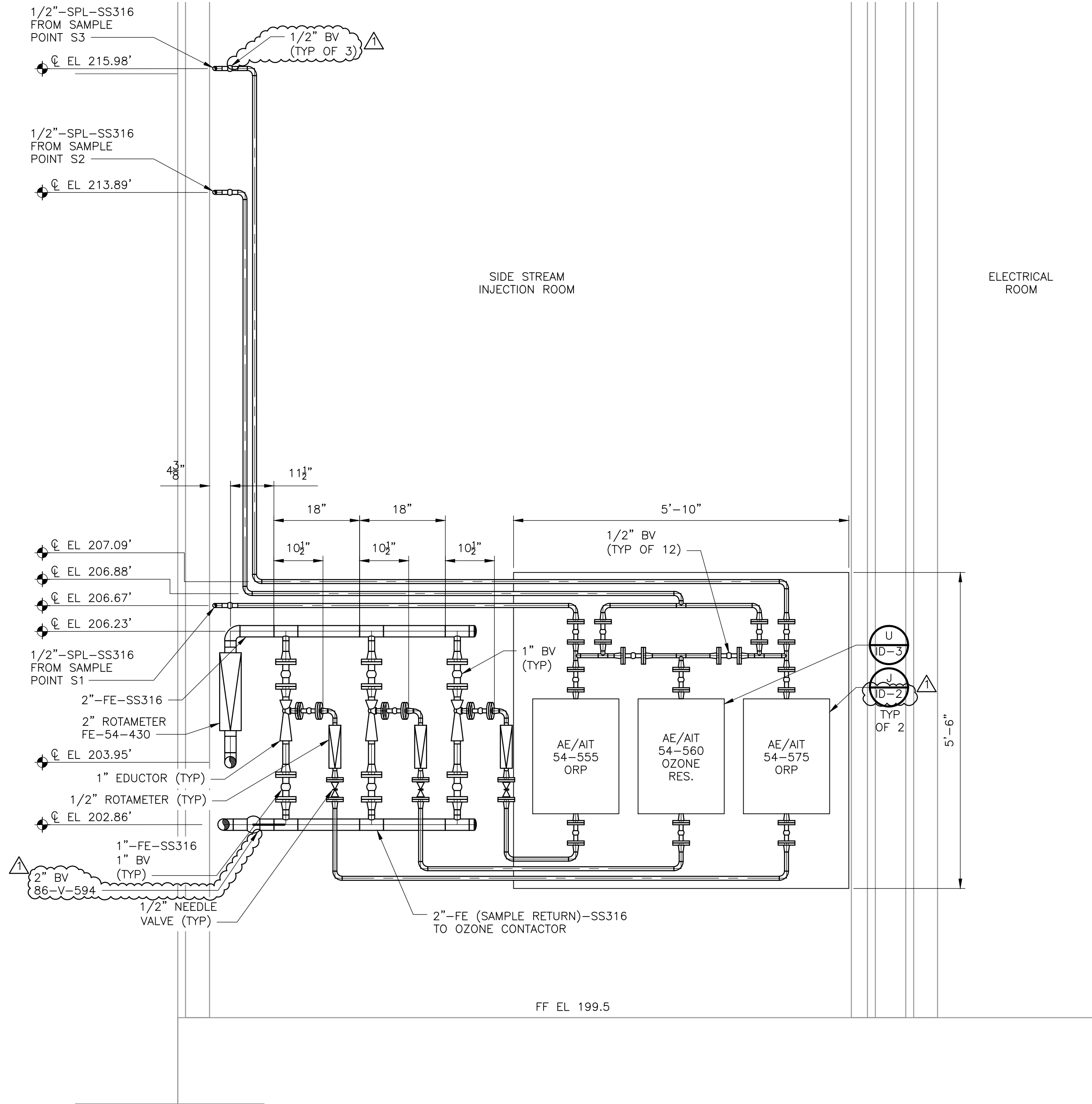
SECTION 2

3/8" = 1'-0"

M-18

DESIGNED BY: C. STILLWELL
 DRAWN BY: M. RUSH
 SHEET CHK'D BY: C. STILLWELL
 CROSS CHK'D BY: B. ZUIDERVLIT
 APPROVED BY: B. FLINT
 DATE: NOVEMBER 2022

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 10560 Arrowhead Drive, Suite 500
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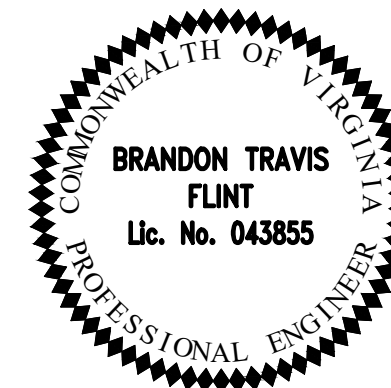
SECTION 3

3/4" = 1'-0"

M-18

UPPER OCCOQUAN SERVICE AUTHORITY
 MILLARD H. ROBBINS, JR.
 WATER RECLAMATION PLANT
 OZONE BIOFILTRATION SYSTEM

SIDESTREAM INJECTION ROOM 86
 SECTIONS

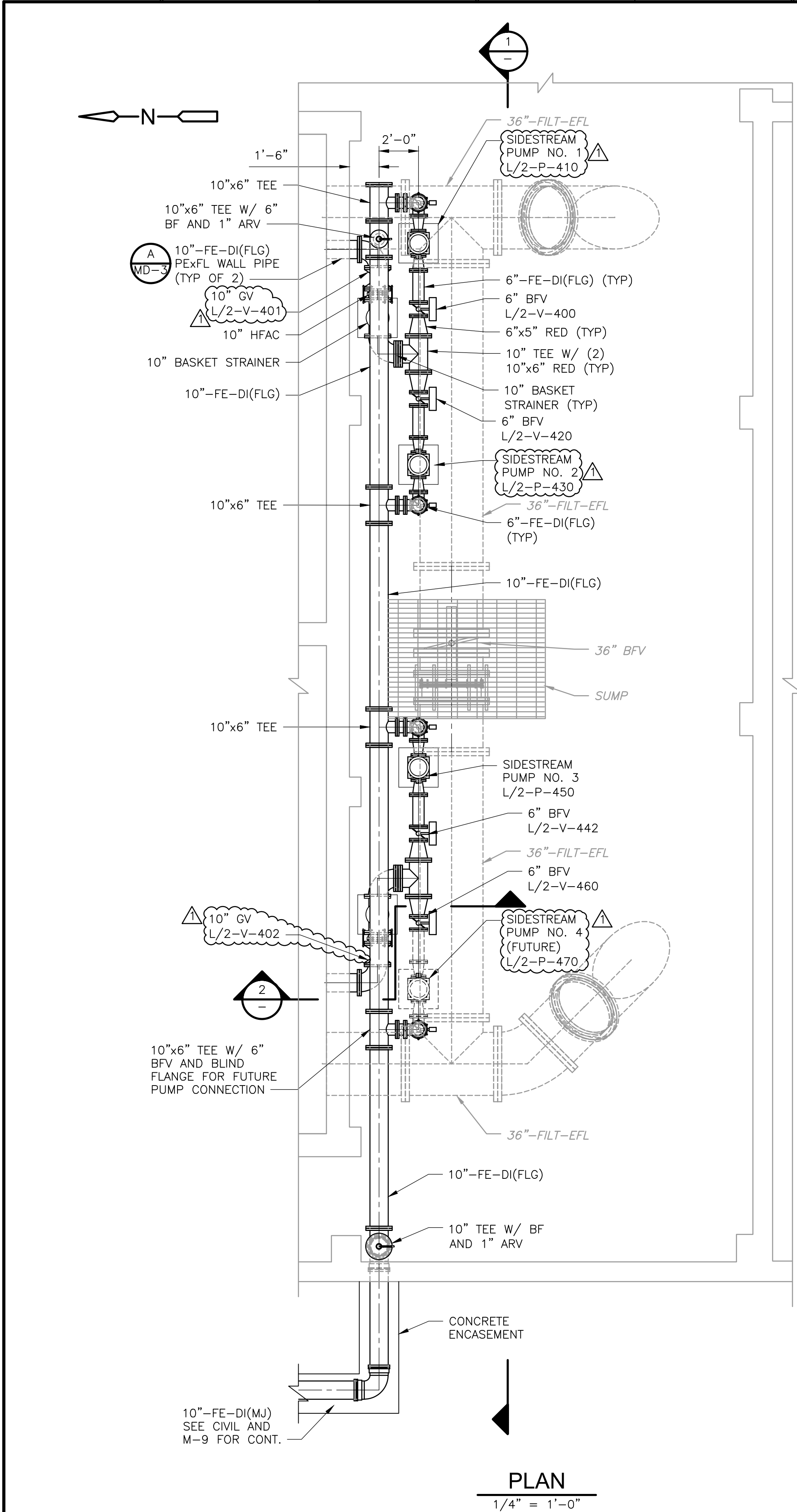


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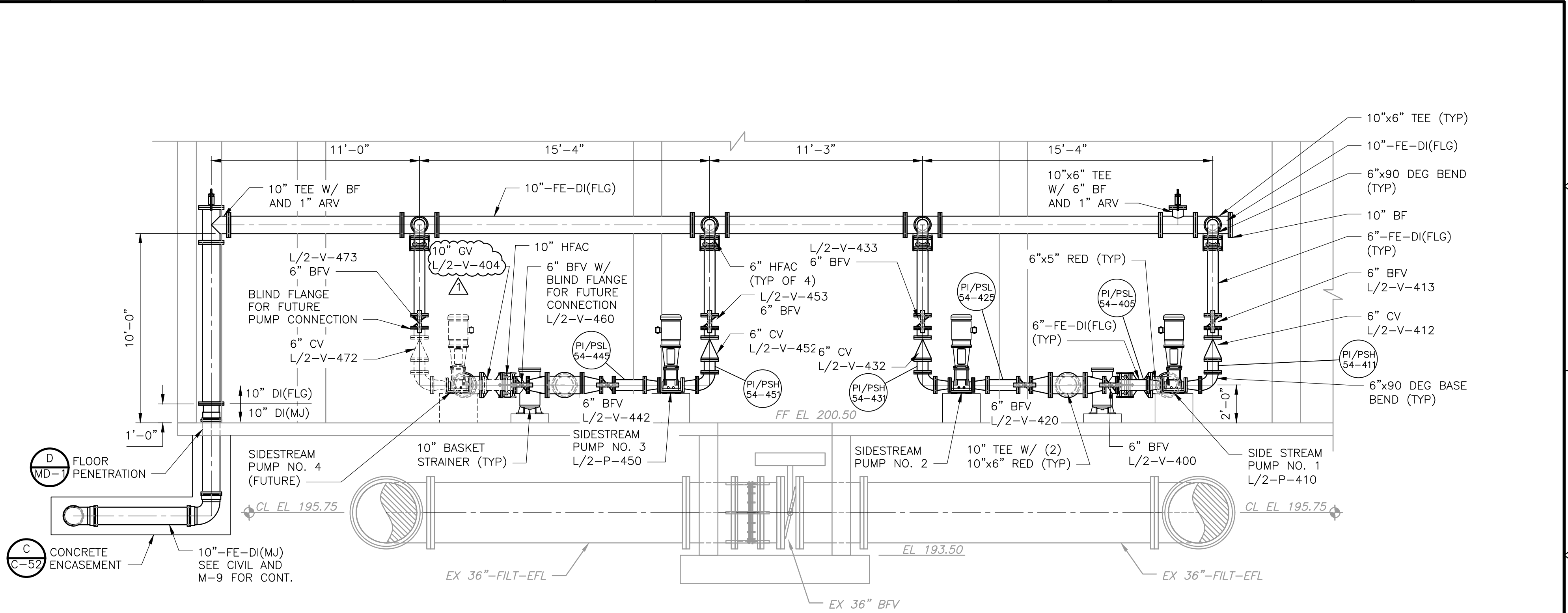
SHEET NO.

M-19

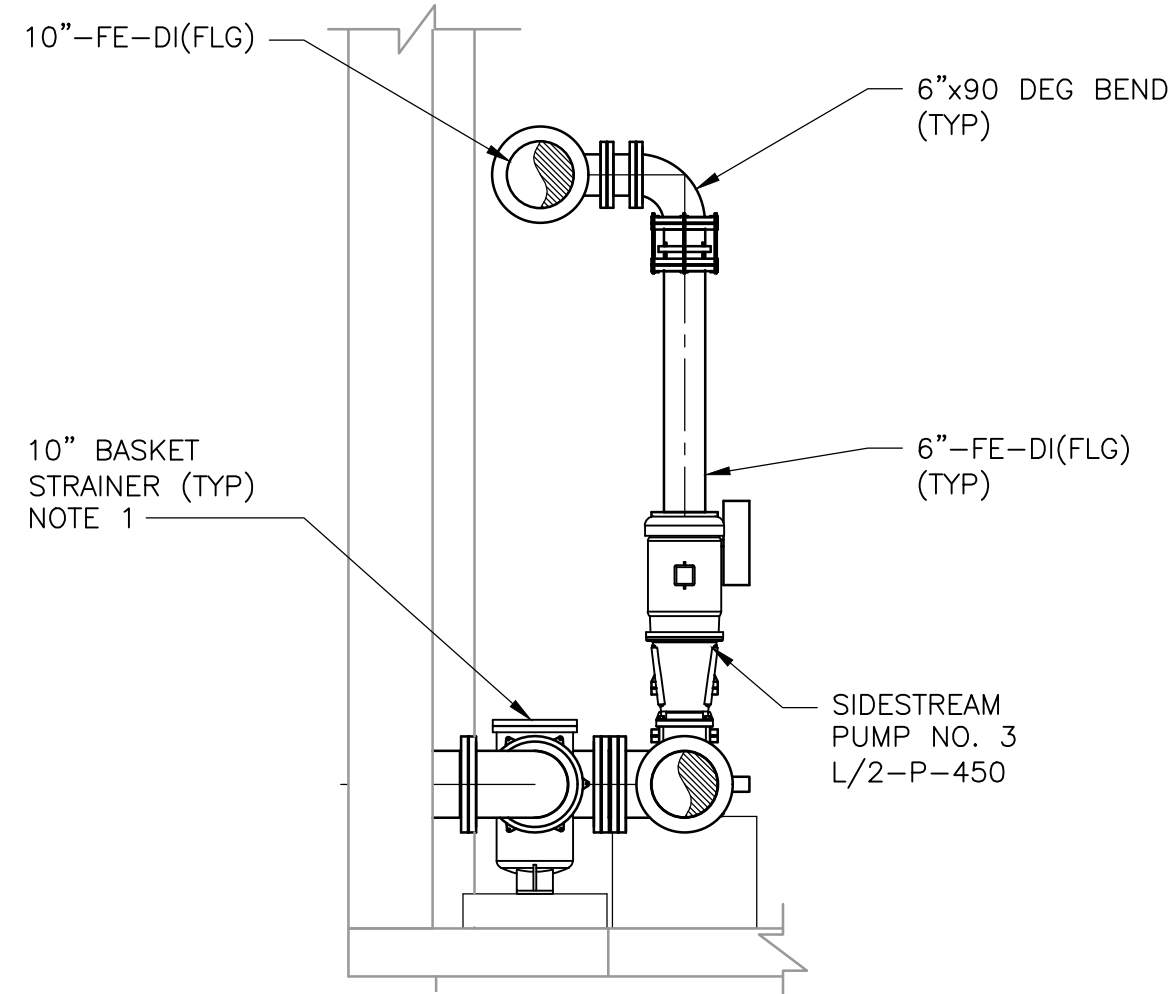
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PLAN
1/4" = 1'-0"



SECTION 1
1/4" = 1'-0"



SECTION 2
3/8" = 1'-0"

- NOTES:
- SUBMIT SHOP DRAWINGS FOR BASKET STRAINER SHOWING ALL NECESSARY WORKING CLEARANCES FOR STRAINER ACCESS AND CLEANING. PIPING LAYOUT SHALL BE ADJUSTED IF NECESSARY TO ACCOMMODATE NECESSARY CLEAR SPACE FOR STANDARD MAINTENANCE.
 - ALL EXISTING INFORMATION MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO SUBMITTAL. FABRICATION, INSTALLATION, AND CONSTRUCTION OF EQUIPMENT AND MATERIALS. THE CONTRACTOR MUST REVIEW AND VERIFY DIMENSIONS SHOWN ON ALL DRAWINGS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE EQUIPMENT AND MATERIALS. SHOULD DISCREPANCIES APPEAR, THE CONTRACTOR MUST NOTIFY THE ENGINEER IN WRITING TO OBTAIN ENGINEER'S CLARIFICATION BEFORE COMMENCING WORK.



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	12/23	MAR	BWZ	ADDENDUM 2. ADD CALLOUTS.

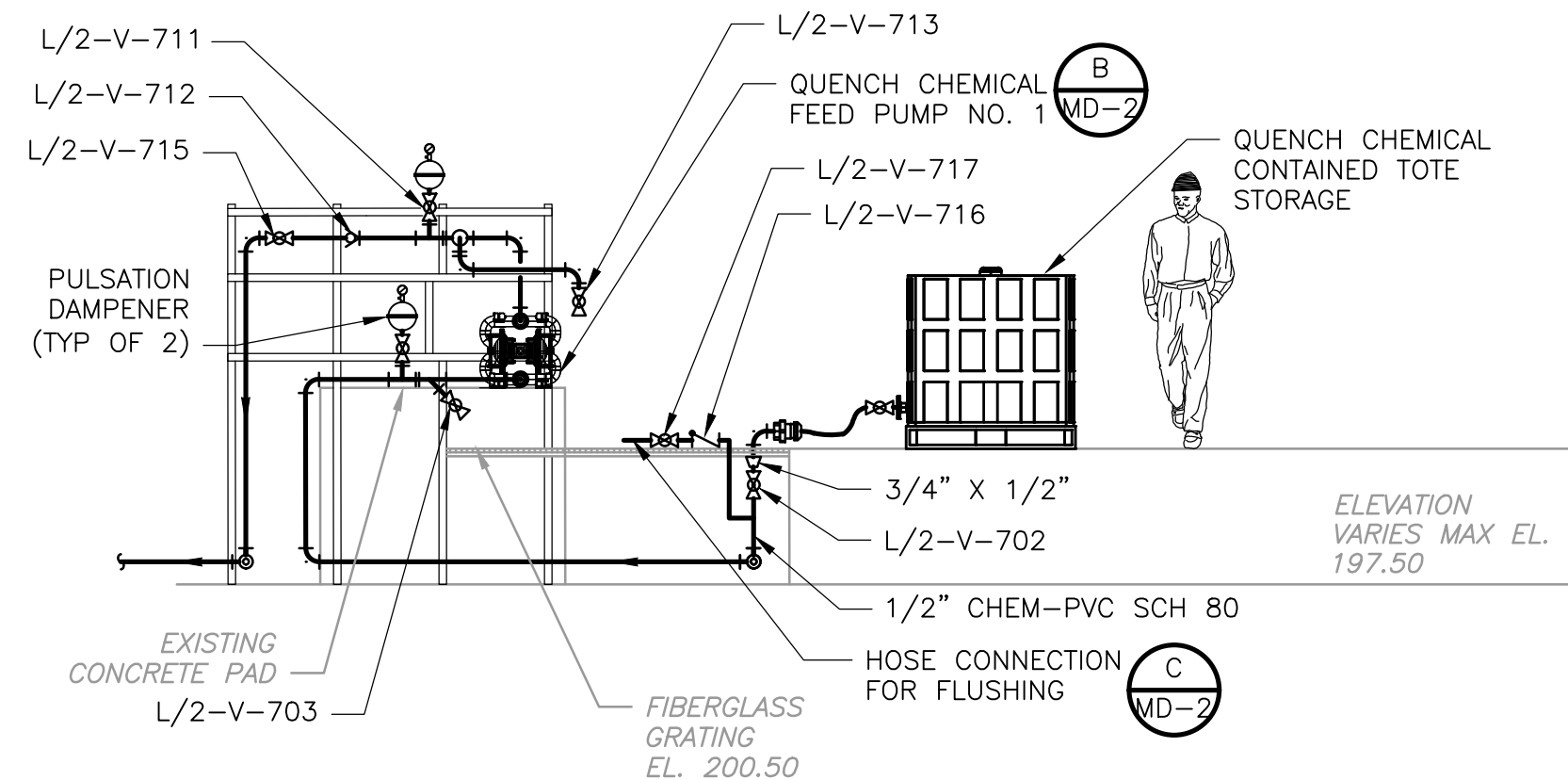
DESIGNED BY: C. STILLWELL	DRAWN BY: M. RUSH
SHEET CHK'D BY: C. STILLWELL	CROSS CHK'D BY: B. ZUIDERVIJLT
APPROVED BY: B. FLINT	DATE: NOVEMBER 2022

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10560 Arrowhead Drive, Suite 500
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Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION PLANT
OZONE BIOFILTRATION SYSTEM

BUILDING L/2 SIDESTREAM
INJECTION PUMPING SYSTEM
PLAN AND SECTION

PROJECT NO. 20885-242778
FILE NAME: M0230CPS.DWG
SHEET NO. M-23



SECTION 2
 $1/4" = 1'-0"$



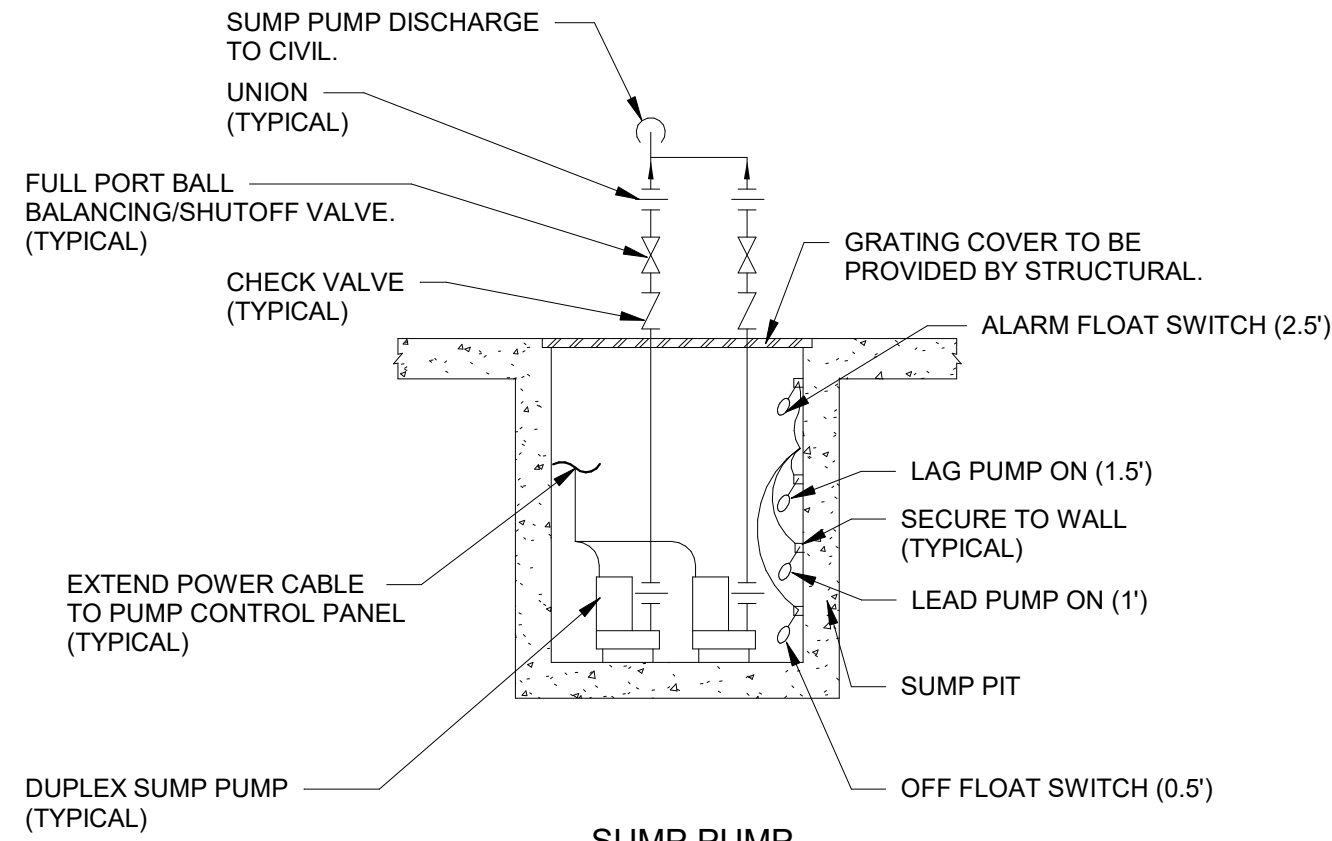
**BRANDON TRAVIS
FLINT**
Lic. No. 043855

COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

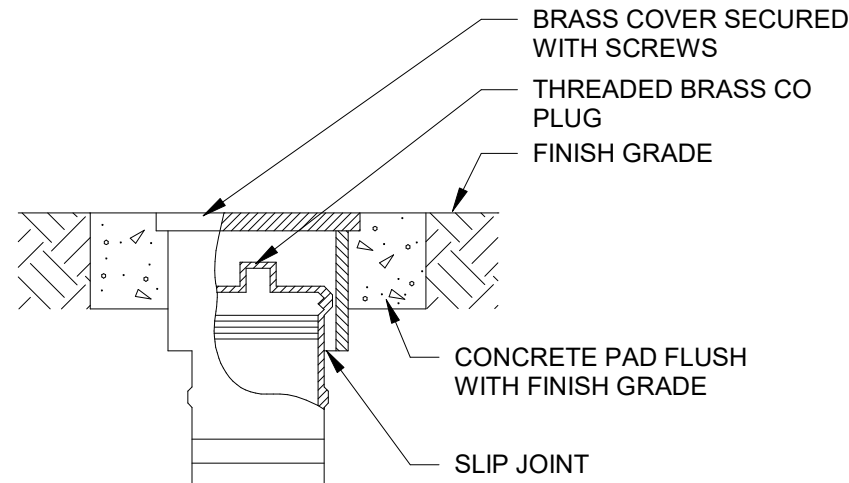
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FILE NAME:	M025L2PL.DWG
SHEET NO.	
M-25	

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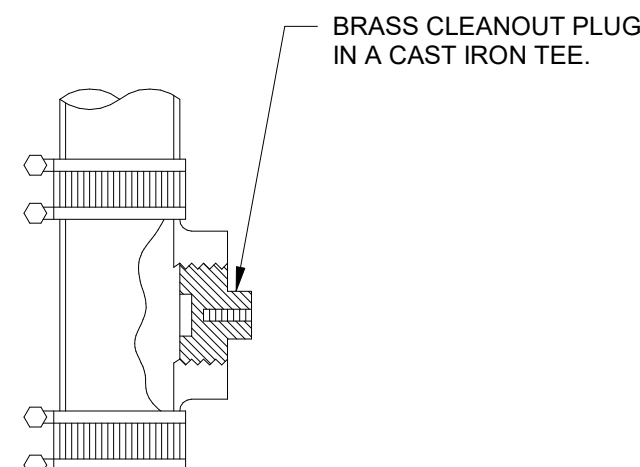
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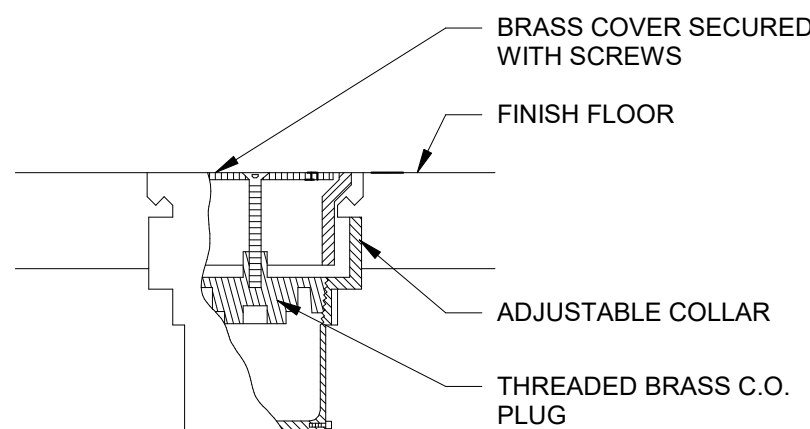
A DETAIL
NTS



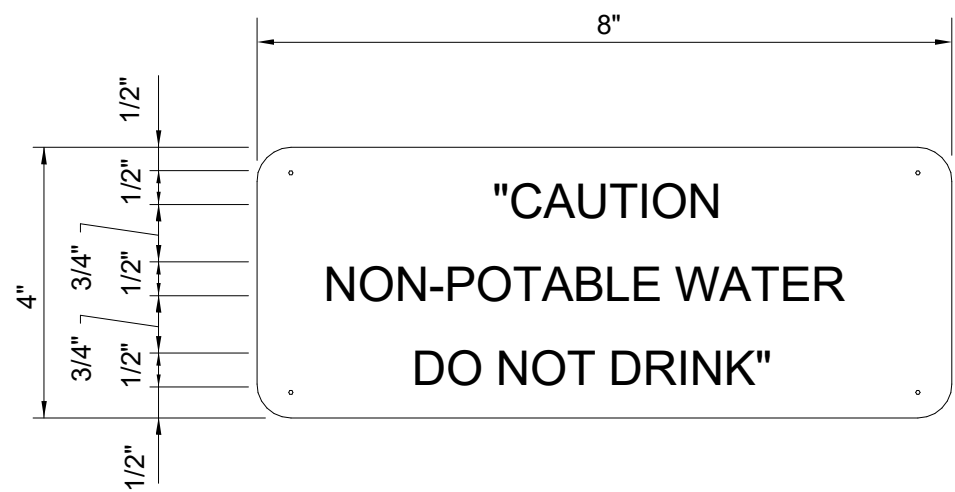
B DETAIL
12" = 1'-0"



C DETAIL
12" = 1'-0"



D DETAIL
12" = 1'-0"

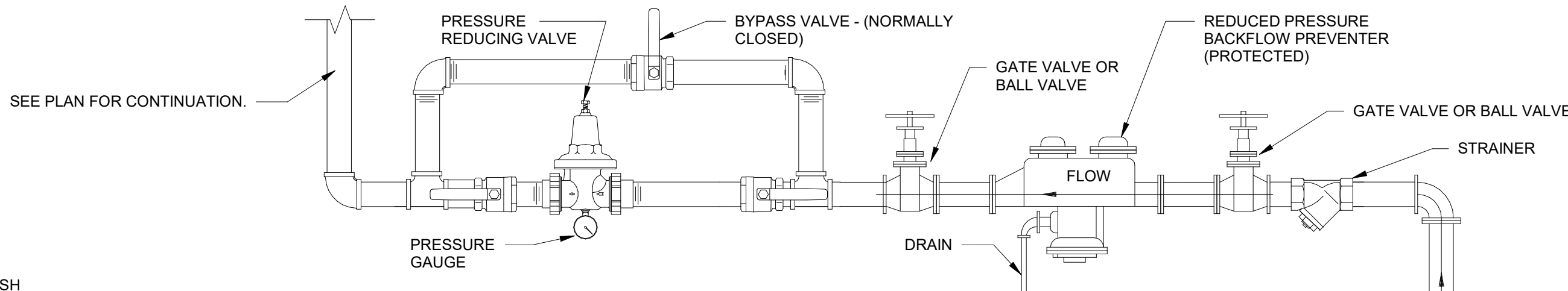


COLORS: BACKGROUND SHALL BE OSHA SAFETY YELLOW, LETTERS SHALL BE RECESSED BLACK

- NOTES:
- FURNISH & INSTALL THE ABOVE SIGN ABOVE ALL HOSE BIBBS, WALL HYDRANTS, AND WASH HOSE STATIONS. ATTATCH THE SIGN TO THE STRUCTURE, GUARDRAIL OR POST WITH STAINLESS STEEL HARDWARE & MOUNTING BRACKET.
 - FURNISH ONE SIGN & RECEIVE APPROVAL FROM OWNER PRIOR TO ORDERING REMAINDER OF SIGNS.

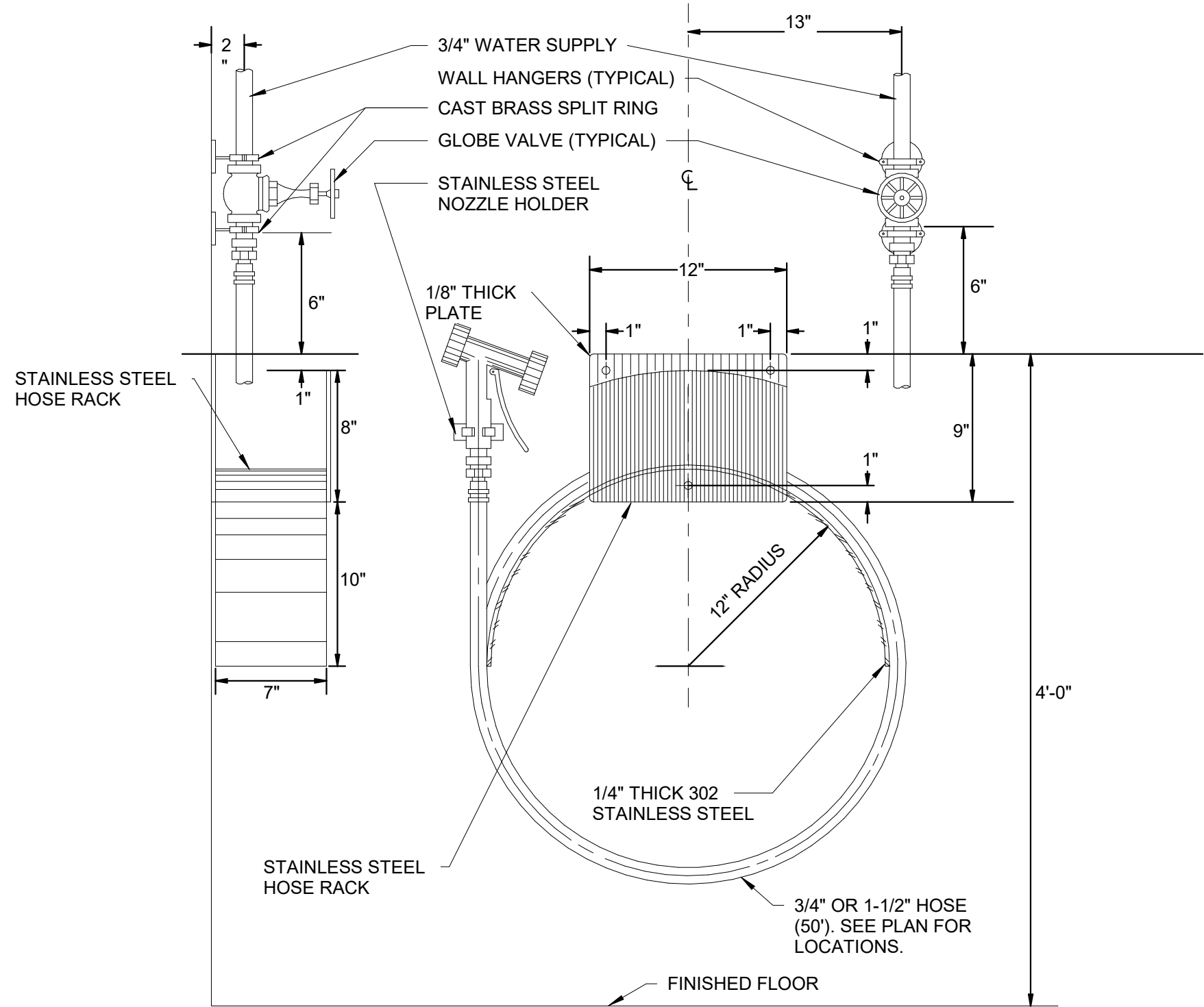
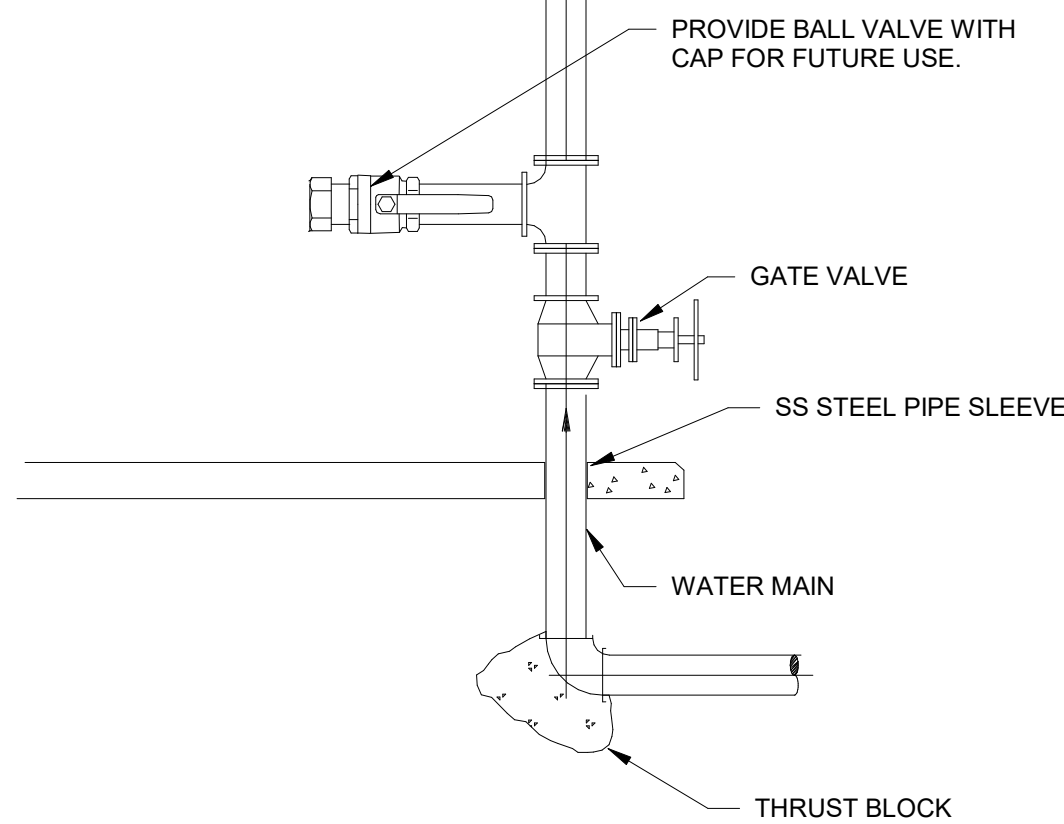
CAUTION SIGN

F DETAIL
12" = 1'-0"



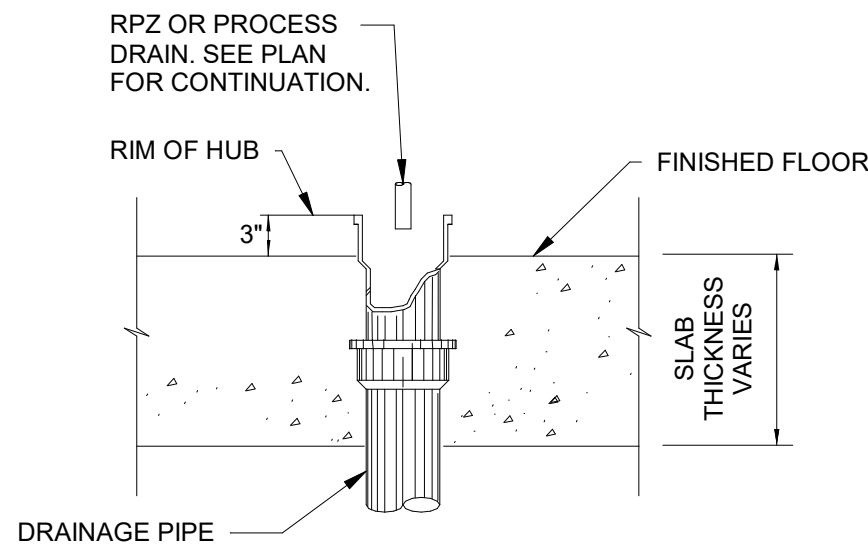
REDUCED PRESSURE BACKFLOW PREVENTER

G DETAIL
NTS



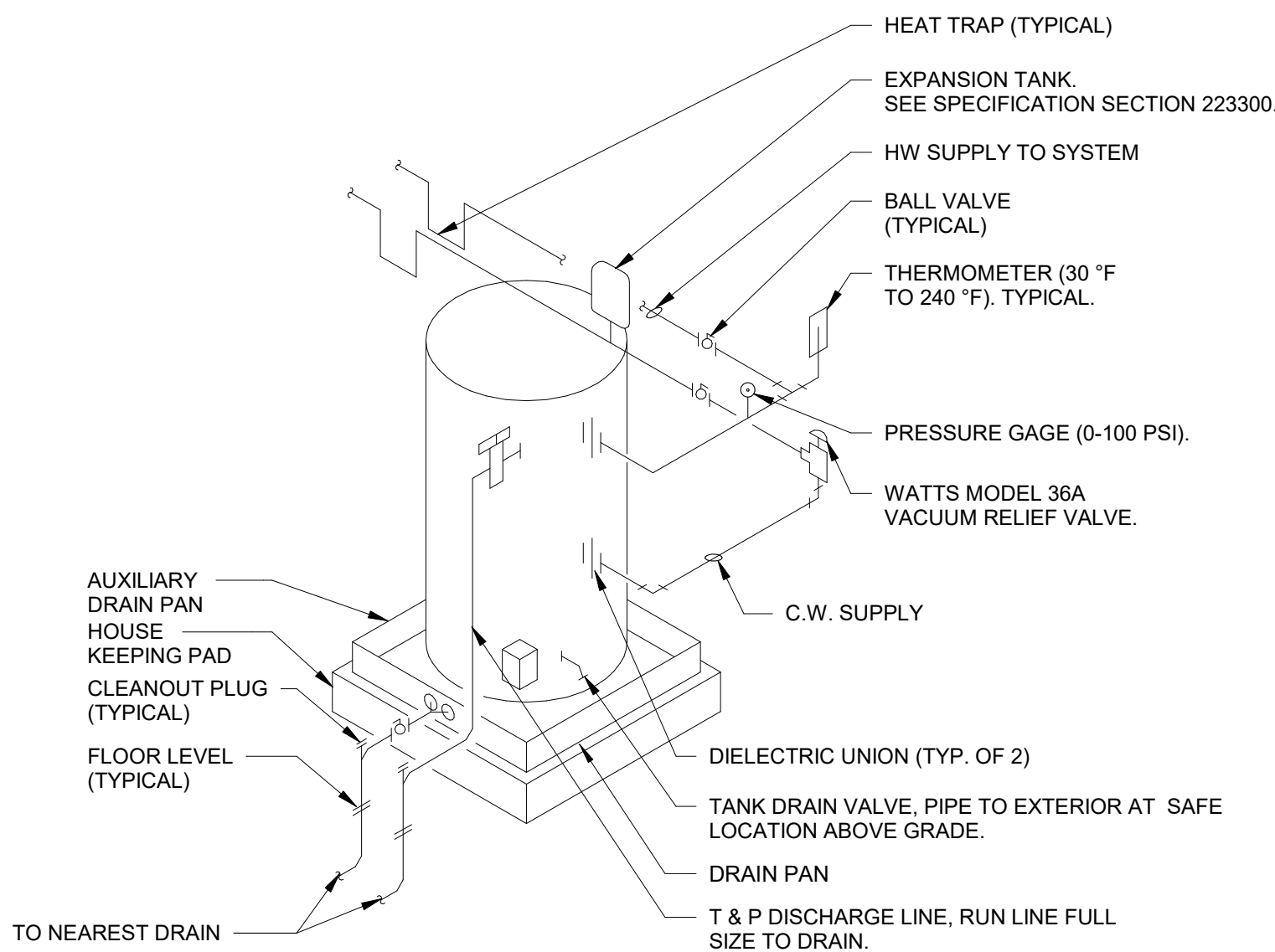
WASH HOSE STATION

E DETAIL
12" = 1'-0"



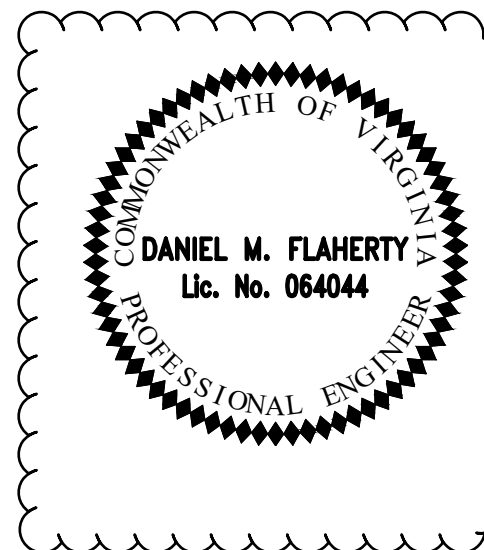
HUB DRAIN

H DETAIL
12" = 1'-0"



TANK-TYPE WATER HEATER PIPING SCHEMATIC

I DETAIL
12" = 1'-0"



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: S. BURDETT
DRAWN BY: F. PYSHNOV
SHEET CHK'D BY: S. TASCARELLA
CROSS CHK'D BY: B. FLINT
APPROVED BY: D. FLAHERTY
DATE: NOVEMBER 2022

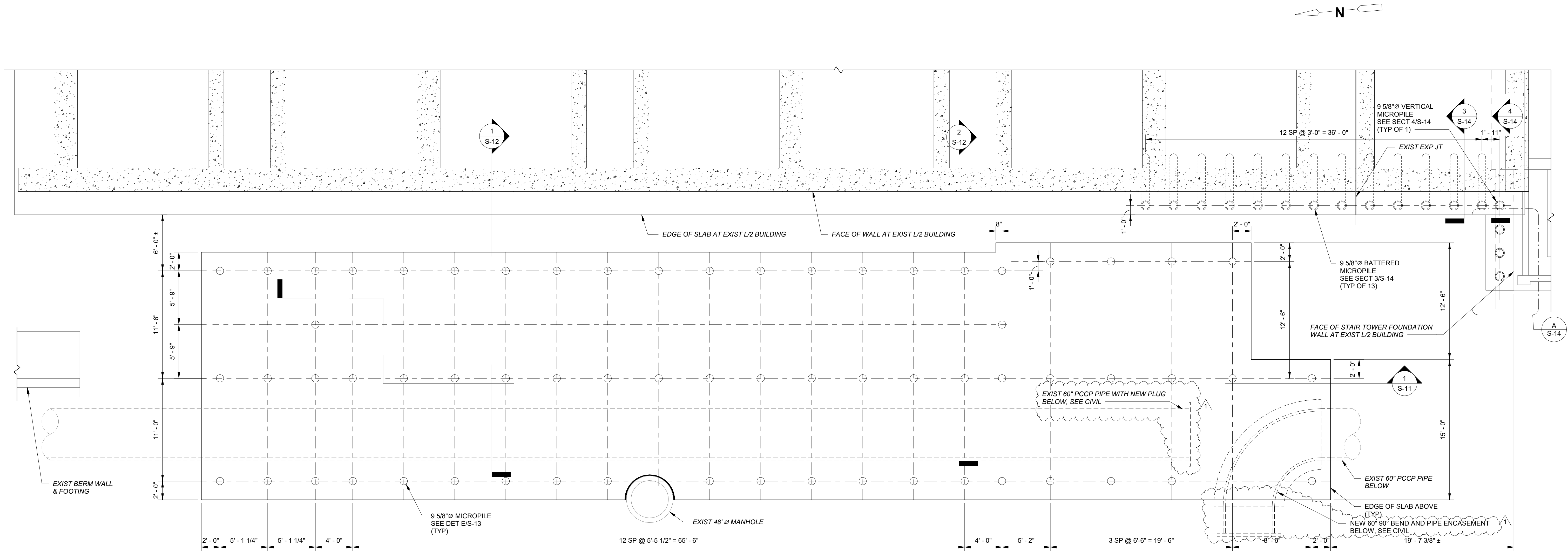
CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 661-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

PLUMBING
DETAILS

PROJECT NO. 20885-242778
FILE NAME: PW2000OB.RVT
SHEET NO.
PD-1

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PILE PLAN
3/16" = 1'-0"

1	12/23	BAB	KMB	REVISED FOR ADDENDUM 2
REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: K. BASILI
DRAWN BY: B. BENNETT
SHEET CHK'D BY: M. CALVINO
CROSS CHK'D BY: B. ZUIDERVLIJET
APPROVED BY: M. CALVINO
DATE: NOVEMBER 2022

CDM Smith
10560 Arrowhead Drive, Suite 500
Fairfax, VA 22030
Tel: (703) 691-6500

UPPER OCCOQUAN SERVICE AUTHORITY
MILLARD H. ROBBINS, JR.
WATER RECLAMATION FACILITY
OZONE BIOFILTRATION SYSTEM

OZONE CONTACTOR 86
PILE PLAN



PROJECT NO. 20885-242778
FILE NAME: SWZ000OC.RVT
SHEET NO.
S-7