

ADDENDUM NO. 2
TO
PROCUREMENT AND CONTRACTING REQUIREMENTS
FOR
Speedway WWTP Wet Weather Capacity Expansion
FOR
Town of Speedway
Issue Date: February 26th, 2026

BIDS ARE DUE BY
Thursday March 5th, 2026
02:00 PM (Local Time)
Attn. Grant Kleinhenz, Town Manager, Town of Speedway –
5300 Crawfordsville Road, Speedway, IN 46224

This addendum consists of six (6) pages and the following attachments:

Attachment No. 1: Revised Specifications
Attachment No. 2: Revised Plan Sheets

The following, as additions to and modifications in the Bidding Requirements and Contract Documents, will be included in, and become a part of the **Speedway WWTP Wet Weather Capacity Expansion**. This Addendum forms a part of the Contract Documents. Bidders are, therefore, instructed to take the following into account in rendering any Bid for this work. Acknowledge receipt of this Addendum in the space provided on the Bid Form.

CHANGES TO PRIOR ADDENDA: (N/A)

CHANGES TO PROCUREMENT REQUIREMENTS: See Changes to Specifications section.

CHANGES TO CONTRACTING REQUIREMENTS: (N/A)

CHANGES TO SPECIFICATIONS:

1. Included as an attachment to this addendum (**Attachment 1**) is the updated specification for the following sections:
 - A. 00 41 13 Bid Form
 - i. Included an allowance for excavation of unsuitable soil.
 - ii. Added a mandatory bid deduct for non-domestic steel.
 - B. 01 20 00 Contract Items
 - i. Addition of the clarification that all steel products must be manufactured in the United States as required by Indiana Administrative Code 5-22-15-25(c) in Section 1.2.B.
 - ii. Addition of Contract Item 2 for excavation of unsuitable soils in Section 1.3.
 - iii. Addition of Alternate Item 1 for use of non-domestic steel in Section 1.4.

- C. 07 27 29 Air Barrier Coatings
 - i. Includes removing section 1.7 A.1 requiring the air barrier installed to be ABAA licensed.
- D. 07 41 13 Metal Roof Panels
 - i. Original specification was 07 41 13.19 Batten Seam Metal Roof Panels. This was updated to be 07 41 13 Metal Roof Panels.
 - ii. Revised section 1.2 A to be standing seam metal roof panels.
 - iii. Removed section 1.2 B and 2.3 I as snow guards will not be used.
 - iv. Updated section 2.1 I.1 to uplift rating test criteria to UL 90.
 - v. Added section 2.2 A 2 to list Pertersen Aluminum Tite Loc panels as a basis of design. The listing of other acceptable manufactures was maintained.
 - vi. Removed section 2.2.4
- E. 08 41 13 Aluminum-Framed Entrances and Storefronts
 - i. Added section 2.1 B and Kawneer Trifab VersaGlaze 451T framing system as the basis of design for storefront.
- F. 23 00 00 Heating Ventilating & Air Conditioning (HVAC)
 - i. Changes to listed manufacturers
- G. 40 05 59.33 Slide and Sluice Gates
 - i. Changes to listed manufacturers.
 - ii. Updated performance-based specifications, specifically open and close time requirements for actuators.
- H. 46 46 13 Tipping Sediment Flushing Buckets
 - i. Changes to listed manufacturers and update of performance-based specifications.

CHANGES TO DRAWINGS:

1. Included as an attachment to this addendum (**Attachment 2**) are updated plan sheets:
 - A. C400 WET WEATHER TREATMENT BUILDING – PLAN VIEW
 - i. Modified to reflect scum drain line and associated valve relocation.
 - B. C401, C402 WET WEATHER TREATMENT BUILDING – SECTION VIEWS
 - ii. Modified to reflect scum drain line and associated valve relocation.
 - C. C403 PROPOSED WET WEATHER UV SYSTEM PLAN
 - i. Modified UV channel width from 3'-3" to 2'-11 ¼".
 - ii. Extended cable conduit trench from power distribution center (PDC) to HSC.
 - D. C404 PROPOSED WET WEATHER UV SYSTEM SECTION & DETAILS
 - i. Channel overpour ramp height increased from 2'-4" to 2'-9 ½".
 - E. C501 EXISTING UV SYSTEM IMPROVEMENTS PLAN
 - i. Changed trapezoidal serpentine weir to rectangular serpentine weir.
 - F. C601 LINE SEGMENT S-C
 - i. Modified to reflect scum drain line relocation and added heat trace to electrically actuated valve. Contractors shall include in their pricing any electrical scope needed to serve this valve.
 - G. A-101 FIRST FLOOR PLAN
 - i. Revised floor plan Note #9; trench cover material changed to 1/4" galvanized checker plate.
 - i. Extended cable conduit trench from power distribution center (PDC) to HSC.
 - H. A-102 EQUIPMENT PLATFORM FLOOR PLAN

- i. Revised floor plan Note #9; trench cover material changed to 1/4" galvanized checker plate.
- I. A-103 EXISTING UV TRENCH - NEW CANOPY FLOOR PLAN & ROOF PLAN
 - i. Revised floor plan Note #9; trench cover material changed to 1/4" galvanized checker plate.
- J. AR101 ARCHITECTURAL ROOF PLAN
 - i. Revised roof plan Note #5; removed "stainless" verbiage from pre-engineered stair note.
- K. A-200 OVERALL BUILDING ELEVATIONS
 - i. Revised elevation Note #7; removed "stainless" verbiage from pre-engineered stair note.
- L. A-201 EXISTING UV TRENCH - NEW CANOPY ELEVATION & SECTION
 - i. Revised elevation Note #7; removed "stainless" verbiage from pre-engineered stair note.
- M. A-300 BUILDING SECTIONS
 - i. Added pump room trench cover on Section 4.
- N. A-310 WALL SECTION & DETIALS
 - i. Revised storefront detail components on Details 3, 5 & 6 to reflect 2"x4 1/2" framing size.
- O. A-311 WALL SECTIONS & DETAILS
 - i. Revised storefront detail components on Details 2, 6 & 7 to reflect 2"x4 1/2" framing size.
- P. S101 (sheet not included – verbiage update only)
 - i. Modify Concrete Note #8 to “...the tests shall be performed by an independent testing company at the Contractor’s expense”.
- Q. S401 WET WEATHER TREATMENT BUILDING – FOUNDATION PLAN
 - i. Removable FRP grating added over WW building pipe trench.
 - ii. New enlarged plan 2/S401 depicting grating with grating support angles.
- R. S404 WET WEATHER TREATMENT BUILDING - SECTIONS
 - i. Removable FRP grating added over WW building pipe trench.
- S. S405 WET WEATHER UV SYSTEM – PLANS AND SECTIONS
 - ii. Modified UV channel width from 3’-3” to 2’-11 ¼”.
- T. S406 WET WEATHER UV SYSTEM – SECTIONS AND DETAILS
 - i. Modified UV channel width from 3’-3” to 2’-11 ¼”.
 - ii. Channel overpour ramp height increased from 2’-4” to 2’-9 ½”.
- U. P210 PLUMBING PLANS
 - i. Added backwater valve on sanitary main to trench drain.
 - ii. Upsized and relocated sanitary branch and mains.

CHANGES TO MISCELLANEOUS DOCUMENTS: (N/A)

SUBMITTED QUESTIONS/REQUESTS & RESPONSES:

I. Pre-Bid Meeting Questions (SEE ADDENDUM 1)

II. Emailed Questions

1. Q: Does the city require a development license for the Wonderware and/or Rockwell PLCs to be turned over to them at the conclusion of the project?

- A. *City already has license for existing Wonderware SCADA package. Programming PLC software will not be required.*
2. Q: If the city requires upgrades to the existing Wonderware license, can the city provide the Wonderware version for the city's current license and/or the serial number for the software?
A. *17.3.000*
3. Q: Does the current CSO Storage Tank #1 PLC have Ethernet/IP communications capability?
A. *The existing CSO Storage Tank #1 PLC is a AB CompactLogix.*
4. Q: Alternate Pump Manufacturers
A. *Pumps will not be added to the project manual during the bidding process, but DCCM is open to evaluating or-equal products during the construction phase.*
5. Q: Will the general contractor (GC) perform all electrical excavation and backfill needed for conduits, grounding, site lighting, utility work, and re-feeds?
A. *Electrical contractor to provide all trenching and backfill efforts. Concreted encased duct banks are not required. Duct banks to be sand filled with marking tape and earth topsoil per details.*
6. Q: Will the GC provide all concrete pads required for electrical equipment, generator, etc.?
A. *Biding GC to answer and have in overall bid price.*
7. Q: Will the GC be providing the Division 25 Integrator scope?
A. *Typically, electrical contractor installs panels, conduit and wiring external to control panels. Integrator to supply all internal wiring in controls panels and instruments. GC shall coordinate and provide all pricing in their scope with their subcontractors.*
8. Q: The Invitation for Bid Publication section calls for bidders to hold their bid for 90 days however the Instructions for Bidders Article 8.03 calls for 61 days. Please confirm which is correct.
A. *Bid hold is 90 days.*
9. Q; On sheet E107A, electrical note #11 calls for the UV manufacturer to provide the Disk Filter Control Panel. Please note that the filter manufacturer will provide the filter control panel and programming.
A. *Noted.*
10. Q: Is the contractor responsible to hire an approved testing agency to perform all of the QC testing for this project per Section 01 40 00. Could clarification be provided for the second sentence of note 8 "The tests shall be performed by an independent testing company at the Owner's expense"?
A. *Yes, the contractor is responsible to hire an approved testing agency for QC testing. Note 8 on Sheet S101 will be removed.*
11. Q: Please provide a detail or specification for the required signs in order to obtain a quote (Reference Sheet A-101, General Plan Note 30).
A. *Please see attached sign for an example of what the Town will approve.*
12. Q: Can the bid due date be extended?
A. *No. Extending the bid due date would endanger the Town's loan closing schedule and potentially their compliance plan.*
13. Q: Does Indiana Code 5-16-8-2 apply to this project?
A. *Updates to Specification 01 20 00 have been made to include an alternate contract item to allow for an alternate bid with non-domestic steel.*
14. Q: In reference to sheet S303, what fill material meets the "free draining granular material" in Section 31 23 23 paragraph 2.1?

- A. *Any of the following (defined in Specification Section 31 23 23) are generally considered free draining and could be used.*
- i. *Structural fill: Coarse aggregate #8*
 - ii. *Granular fill: B-borrow sand*
 - iii. *Select fill: No. 53 aggregate*
 - iv. *The material ultimately supplied for CSO wall backfilling needs to be free from debris and fines.*
15. Q: In reference to Sheet S303, can clean existing excavated sand material be used to backfill the remaining tank excavation above the “free draining granular material” layer?
- A. *The composition of the existing soil on site varies greatly from sand to clay to controlled fill and much of it would be deemed unsuitable for use as structural backfill. Utilization of excavated soil material for structural purposes is contingent upon testing and written certification from a qualified geotechnical engineer.*
16. Q: Are control panels required for the 3 pump systems?
- A. *Sheet E109 indicates that all pumps (diversion structure influent pumps, wet weather influent pumps, and CSO tank effluent pumps) pass overtemp and seal fail signals to the WWF-PLC located in the wet weather treatment building shown on Sheet E107A.*
17. Q: What is the VFD manufacturer?
- A. *VFDs for these pumps shall be provided by ABB or an approved or-equal, as noted in Specification 26 29 23 2.1.B.*
18. Q: For the CSO Vault is a 12’ diameter or a 13’x13’ vault acceptable to replace the called out 13’ manhole?
- A. *A 13’x13’ vault would be an acceptable alternative to the 13’ diameter structure proposed for the CSO valve vault.*
19. Q: What is the RHMI panel in the Maintenance Garage (Section 25 13 00 2.1H)?
- A. *No cell modem is required. Fiber optic connections shall be used. See the network diagram.*
20. Q: Is the Sierra Wireless RV50x in the Maintenance Garage existing?
- A. *See answer to Question 19.*
21. Q: Is the WWSCP in reference to the new Wet Weather Station PLC Control Panel in error?
- A. *Should be “WWF-PLC”.*
22. Q: Does existing clean excavated sand material need to be independently tested to see if it meets the Granular Fill B-borrow backfill or can the clean existing excavated sand material be used for pipe backfill to save the owner costs from importing backfill material?
- A. *Per 2.1 of Specification Section 31 23 23, all granular fill must conform to INDOT standard specifications. Please review INDOT specifications for testing requirements.*
23. Q: What is the flow rate in the existing 42” lime that comes out of the existing UV channel? This line will need to be bypassed to install the 96” effluent doghouse manhole and abandon/plug and seal the 34’ of 42” west of structure SA-3.(reference Sheet C201 and C600).
- A. *3.9 MGD average with peak daily flows around 10 MGD according to 2025 MRO data.*
24. Q: Sheet E102 calls out multiple runs of spare conduits (COND-SPARE-2, COND-SPARE-4). This sheet has cut points but does not show the origin or destination for these cuts. The conduit schedule on Sheet E111A also does not list an origin or destination for these spares. Please provide where these spare conduits need to be ran.

- A. *Spare conduits should be run from CSO2 Storage Tank Control Panel to PB-4 through PB-3 and back to wet facility and stubbed/capped inside for future use.*
25. Q: The geotechnical report mentions tie-down anchors or pressure relief valves for the CSO tank slab to resist uplift. The geotechnical report also mentions that 6" granular stone thickness is needed under slabs. Can you confirm both of these items.
- A. *The CSO tank was evaluated for buoyancy under the condition of an empty tank with the exterior water level at the 100-year flood elevation. Note that the 100-year flood elevation rises partway up the tank wall and does not reach the top of the wall. The resulting uplift force is resisted by a combination of the tank's self-weight, and the weight of the surrounding backfill. The base slab was designed to resist the uplift pressures from buoyancy, and the interior tank walls were designed to assist in transferring these forces to the exterior walls and surrounding soil for resistance. The same approach applies to the Diversion Tank. The tank was evaluated for buoyancy and can resist uplift forces through a combination of its self-weight and the weight of the surrounding backfill. The UV channel and wet weather tank do not extend as deeply into the soil and are able to resist buoyancy using their self-weight along.*
26. Q: Can the earth retention system stay in place after construction if cut down 3 feet below grade? It would be removed as needed for CSO valve vault and any other piping through retention system.
- A. *Earth retention systems may stay in place if cut down 6 feet below grade.*
27. Q: What are the flow rates for the 72" effluent pipe and existing UV effluent pipe?
- A. *Our modeling indicates that the peak flow in the existing 72" interceptor will be 39.5 MGD during a 10-year, 1-hour storm. The UV effluent pipe will have 3.9 MGD average with peak daily flows around 10 MGD according to 2025 MRO data.*
28. Q: Is discharging dewatering to the existing outfall structure acceptable?
- A. *Yes.*
29. Q: Can you verify the scale for E107A, E107B, and E108?
- A. *Scale for the drawings is 1" = 3.332'*
30. Q: Would it be an option to change the routing of the relocation of the Merrell Brothers force main? As of now, the force main will be in the excavation limits of the CSO tank.
- A. *Yes, routing of the relocation can be considered during construction.*

+ + **END OF ADDENDUM** + +

PLEASE ACKNOWLEDGE THIS ADDENDUM IN THE BID FORM YOU SUBMIT.



Certified: _____

Engineer

Date: 02/26/2026

TOWN OF SPEEDWAY LOGO (COLOR LOGO) LOCATED IN UPPER LEFT CORNER OF CONSTRUCTION SIGN. ALLOCATE 2'-6" WIDE X 2'-0" TALL SPACE FOR LOGO

1 1/2" TALL LETTERS, ARIAL FONT, BLACK TEXT

3/4" EXTERIOR GRADE PLYWOOD. MOUNT TO (2) 4X4 P.T. WOOD POSTS



1 1/2" TALL LETTERS, ARIAL FONT, BLACK TEXT

3" TALL LETTERS, ARIAL FONT, BOLD, BLACK TEXT

3/4" TALL, ARIAL FONT, BLACK TEXT, TYP.

1" TALL LETTERS, ARIAL FONT, BLACK TEXT, TYP.

VERIFY COUNCIL MEMBER NAMES AND TITLES WITH OWNER PRIOR TO FABRICATION

PROVIDE COLOR LOGOS FOR CM & DESIGN TEAM. ALLOCATE 1'-0" WIDE X 3 1/2" TALL SPACES FOR CM & DESIGN TEAM LOGOS

**WET WEATHER CAPACITY EXPANSION
CONSTRUCTION SIGN**



ATTACHMENT NO. 1: REVISED SPECIFICATIONS

BID FORM

Speedway, IN

Speedway Wastewater Treatment Plant Expansion

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

***Speedway Indiana (C/O Grant Kleinhenz)
5300 Crawfordsville Road, Speedway, IN 46224***

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2)

the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Item No.	Description	Unit	Bid Price
1	Speedway WWTP Expansion Project	LS	
2	Excavation of Unsuitable Soils	ALLOW	\$100,000.00

Bidder acknowledges that each Bid Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for the project.

Total Base Bid Price \$ _____

Alternate Item No.	Description	Unit	Alternate Price
1	Use of Non-Domestic Steel (DEDUCT)	LS	

Total Alternate Price \$ _____

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

- A. Required Bid security;
- B. List of Proposed Subcontractors;
- C. List of Proposed Suppliers;
- D. List of Project References;
- E. Bidder’s License No.: _____ demonstrating evidence of authority to do business in the state of Indiana.
- F. Required Bidder Qualification Statement (Form 96) with supporting data;

- G. E-Verify Affidavit;

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____
(where applicable)

NO TEXT ON THIS PAGE

SECTION 01 20 00 - CONTRACT ITEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Section includes the Contract Items for the Project.

1.2 CONTRACT ITEM 1 – WASTEWATER TREATMENT PLANT EXPANSION, COMPLETE

- A. Description: The Work under this Contract Item includes providing all labor, materials, equipment, supplies and services, and performing all Work for installation, maintenance, testing, and placing into the trouble-free operation the designed combined sewer overflow tank and wet weather filtration system along with all associated equipment, UV disinfection unit, structures, pumps, and other conveyance equipment. The Work includes, but may not be limited to, all general, architectural, structural, mechanical, plumbing, electrical and instrumentation and control work complete in place, together with all appurtenant Work as shown and specified.

- B. Clarification: All steel products must be manufactured in the United States as required by Indiana Administrative Code 5-22-15-25(c).

- C. Payment: Payment under Item 1 will be made as a Contract Lump Sum Price.

1.3 CONTRACT ITEM 2 – Excavation of Unsuitable Soils

- A. Description: The Work under this Contract Item includes providing all labor, materials, equipment, supplies and services, and performing all Work for removal of unsuitable soils in the project. Identification and excavation of unsuitable soils, and fill, will be in accordance with the attached geotechnical report and technical specification section 31 23 16 Excavation. Disposal of unsuitable materials will be in accordance with the geotechnical report, and restoration are included in this contract item. The Work includes, but may not be limited to, all general, architectural, structural, mechanical, plumbing, electrical and instrumentation and control work complete in place, together with all appurtenant Work as shown and specified.

- B. Payment: Payment under Item 2 will be made as an Allowance at a per cubic yard of unsuitable soil excavated.

1.4 ALTERNATE ITEM 1 – Use of Non-Domestic Steel

- A. Description: The Work under this Alternate Item includes all material costs to furnish non-domestic steel for the project.

END OF SECTION 01 20 00

(NO TEXT FOR THIS PAGE)

SECTION 07 27 29 - AIR-BARRIER COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes vapor-permeable air-barrier coatings.
- B. Related Requirements:
 - 1. Section 061600 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.

1.3 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessory materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier assemblies.
 1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 2. Include details of interfaces with other materials that form part of air barrier.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer. Include list of ABAA-certified installers and supervisors employed by the Installer, who work on Project.
- B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
- C. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by the manufacturer.
- B. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.
 1. Build integrated mockups of exterior wall assembly as shown on Drawings, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - a. Coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
 - b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Protect stored materials from direct sunlight.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air-barrier manufacturer.
 1. Protect substrates from environmental conditions that affect air-barrier performance.
 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
- B. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.
- C. Low-Emitting Materials: Air barriers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 PERFORMANCE REQUIREMENTS

- A. General: Air barrier shall be capable of performing as a continuous vapor-retarding permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 283, ASTM E 783 or ASTM E 2357.

2.3 VAPOR-PERMEABLE, AIR-BARRIER COATING

- A. Vapor-Permeable, Air-Barrier Coating: Synthetic polymer membrane.
 - 1. Products: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Prosoco, Inc.; R-Guard Spray Wrap in two-component, System II R-Guard Spray Wrap in three-component, System I R-Guard MVP in two-component, System II R-Guard MVP in three-component, System I assembly.
 - b. Protective Coatings Technology, Inc.; Poly-Wall Airloc Flex VP.
 - c. Sto Corp.; Emerald Coat Gold Coat in two- three-component assembly.
 - 2. Physical and Performance Properties:
 - a. Air Permeance: Maximum [0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft.] pressure difference; ASTM E 2178.
 - b. Vapor Permeance: Minimum [5.7 perms]; ASTM E 96/E 96M.
 - c. Ultimate Elongation: Minimum [500] percent; ASTM D 412, Die C.
 - d. Fire Propagation Characteristics: Passes NFPA 285 testing in approved assemblies.

2.4 ACCESSORY MATERIALS

- A. General: Accessory materials recommended by air-barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material.
- B. Primer: Liquid waterborne solvent-borne primer recommended for substrate by air-barrier material manufacturer.
- C. Butyl Strip: Vapor retarding, 30 to 40 mils thick, self-adhering; polyethylene-film-reinforced top surface laminated to layer of butyl adhesive with release liner backing.

- D. Joint Reinforcing Fabric: Air-barrier manufacturer's nonwoven, reinforcement fabric.
- E. Joint Reinforcing Strip: Air-barrier manufacturer's self-adhering glass-fiber-mesh tape.
- F. Substrate-Patching Membrane: Manufacturer's standard trowel-grade substrate filler.
- G. Adhesive and Tape: Air-barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.
- H. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, 0.0187 inchthick, and Series 300 stainless-steel fasteners.
- I. Sprayed Polyurethane Foam Sealant: One- or two-component, foamed-in-place, polyurethane foam sealant, 1.5- to 2.0-lb/cu. ft density; flame-spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.
- J. Modified Bituminous Transition Strip: Vapor retarding, 40 mils thick, smooth surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil- thick polyethylene film with release liner backing.
- K. Elastomeric Flashing Sheet: ASTM D 2000, minimum 50- to 65-mil-thick, cured sheet neoprene with manufacturer-recommended contact adhesives and lap sealant with stainless-steel termination bars and fasteners.
- L. Preformed Silicone-Sealant Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 123 Silicone Seal.
 - b. Momentive Performance Materials Inc.; US11000 UltraSpan.
 - c. Pecora Corporation; Sil-Span.
 - d. Tremco Incorporated, an RPM company; Spectrem Simple Seal.
 - e. Approved equal
- M. Joint Sealant: ASTM C 920, single-component, neutral-curing silicone; Class 100/50 (low modulus), Grade NS, Use NT related to exposure, and, as applicable to joint substrates indicated, Use O. Comply with Section 079200 "Joint Sealants."
- N. Termination Mastic: Air-barrier manufacturer's standard cold fluid-applied elastomeric liquid; trowel grade.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 - 2. Verify that concrete has cured and aged for minimum time period recommended by air-barrier manufacturer.
 - 3. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.3 JOINT TREATMENT

- A. Concrete and Masonry: Prepare, treat, grout, and fill joints and cracks in substrate according to ASTM C 1193 and air-barrier manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D 4258 before coating surfaces.

1. Prime substrate and apply a single thickness of air-barrier manufacturer's recommended preparation coat extending a minimum of 3 inches along each side of joints and cracks. Apply a double thickness of air-barrier coating material and embed joint reinforcing in preparation coat.
- B. Gypsum Sheathing: Fill joints greater than 1/4 inch with sealant according to ASTM C 1193 and air-barrier manufacturer's written instructions. Apply first layer of air-barrier coating material at joints. Tape joints with joint reinforcing after first layer is dry. Apply a second layer of air-barrier coating material over joint reinforcing.

3.4 TRANSITION STRIP INSTALLATION

- A. General: Install strips, transition strips, and accessory materials according to air-barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.
 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 2. Install butyl modified bituminous transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier coating material on same day. Reprime areas exposed for more than 24 hours.
 1. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- C. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- D. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- E. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply modified bituminous transition strip elastomeric flashing sheet preformed silicone-sealant extrusion so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames with not less than 1 inch of full contact.

1. Modified Bituminous Transition Strip: Roll firmly to enhance adhesion.
 2. Elastomeric Flashing Sheet: Apply adhesive to wall, frame, and flashing sheet. Install flashing sheet and termination bars, fastened at 6 inches o.c. Apply lap sealant over exposed edges and on cavity side of flashing sheet.
 3. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and air-barrier material.
- G. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.
- H. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

3.5 AIR-BARRIER COATING INSTALLATION

- A. General: Apply air-barrier coating to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions. Apply air-barrier coating within manufacturer's recommended application temperature ranges.
1. Apply primer to substrates at required rate and allow it to dry.
 2. Limit priming to areas that will be covered by air-barrier coating on same day. Reprime areas exposed for more than 24 hours.
 3. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.
- B. Air-Barrier Coatings: Apply a continuous unbroken air-barrier coating to substrates according to the following thickness. Apply an increased thickness of air-barrier coating in full contact around protrusions such as masonry ties.
1. Vapor-Retarding, Air-Barrier Coating: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements
 2. Vapor-Permeable, Air-Barrier Coating: Total dry film thickness as recommended in writing by manufacturer to meet performance requirements.
 3. Apply additional coats as needed to achieve void- and pinhole-free surface.
- C. Apply strip and transition strip over cured air-barrier material overlapping 3 inches onto each surface according to air-barrier manufacturer's written instructions.
- D. Do not cover air barrier until it has been tested and inspected by Owner's testing agency.

- E. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Continuous structural support of air-barrier system has been provided.
 - 3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 4. Site conditions for application temperature and dryness of substrates have been maintained.
 - 5. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 6. Surfaces have been primed, if applicable.
 - 7. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
 - 8. Termination mastic has been applied on cut edges.
 - 9. Strips and transition strips have been firmly adhered to substrate.
 - 10. Compatible materials have been used.
 - 11. Transitions at changes in direction and structural support at gaps have been provided.
 - 12. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 - 13. All penetrations have been sealed.
- C. Tests: As determined by Owner's testing agency from among the following tests:
 - 1. Qualitative Air-Leakage Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186, smoke pencil with pressurization or depressurization.
 - 2. Quantitative Air-Leakage Testing: Air-barrier assemblies will be tested for air leakage according to ASTM E 783.
 - 3. Adhesion Testing: Air-barrier assemblies will be tested for minimum air-barrier adhesion of 30 lbf/sq. in. according to ASTM D 4541 for each 600 sq. ft. of installed air barrier or part thereof.
- D. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

3.7 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. If exposed to these conditions for more than [30] days, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed membrane according to air-barrier manufacturer's written instructions.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION 07 27 29

SECTION 07 41 13 - METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes standing-seam metal roof panels.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 5. Review structural loading limitations of deck, purlins and rafters during and after roofing.
 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 8. Review temporary protection requirements for metal panel systems during and after installation.
 9. Review procedures for repair of metal panels damaged after installation.
 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches .
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
 - 1. Include similar trim samples and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 - 1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical roof area and eave, including fascia, and soffit as shown on Drawings; approximately 48 inches square by full thickness, including attachments, underlayment, and accessories.
 - 2. Build mockups for typical roof area only, including accessories.
 - a. Size: 12 feet long by 6 feet.
 - b. Each type of exposed seam and seam termination
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- B. Solar Reflectance Index (SRI): Three-year-aged SRI not less than 64 or initial SRI not less than 82 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

- C. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for low-slope roof products.
- D. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:
 - 1. Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
 - 2. Three-year, aged Solar Reflectance Index of not less than 64 when calculated according to ASTM E 1980.
- E. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings
 - 3. Deflection Limits: For wind loads, no greater than 1/180 of the span.
- F. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E 1680 or ASTM E 283 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 1.57 lbf/sq. ft.
- G. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646[or ASTM E 331] at the following test-pressure difference:
 - 1. Test-Pressure Difference: 2.86 lbf/sq. ft.
- H. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- I. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 - 1. Uplift Rating: UL 90.
- J. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - 1. Fire/Windstorm Classification: Class 1A-90
 - 2. Hail Resistance: MH.
- K. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces

2.2 METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panel assembly designed to be installed by covering vertical side edges of adjacent panels with battens and mechanically attaching panels to supports using concealed clips. Include battens and accessories required for weathertight installation.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Basis-of-Design Product not to exclude Others: Tite-Loc Panel by Peterson Aluminum.
 - a. Petersen Aluminum, a PAC-CLAD Company.
 - 1) Website: <https://www.pac-clad.com/>
 3. Other Acceptable Manufacturers, subject to compliance with requirements:
 - a. AEP Span; A BlueScope Steel Company.
 - b. Architectural Building Components.
 - c. ATAS International, Inc.
 - d. CENTRIA Architectural Systems.
 - e. Fabral.
 - f. Fashion, Inc.
 - g. Firestone Metal Products, LLC.
 - h. Garland Company, Inc. (The).
 - i. IMETCO.
 - j. McElroy Metal, Inc.
 - k. Merchant & Evans Inc.
 - l. Metal Sales & Service, Inc.
 - m. Metal Sales Manufacturing Corporation.
 - n. Metal-Fab Manufacturing, LLC.
 - o. Petersen Aluminum Corporation.
 - p. Ryerson Tull, Inc.
 - q. Ultra Seam Incorporated.
4. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50 prepainted by the coil-coating process per ASTM A 755/A 755M.
 - a. Color: As selected by Architect from manufacturer's full range Insert color.
 - b. Thickness: 24 GA
 - c. Panel Surface: Smooth with striations in pan
 - d. Exterior Finish: Modified silicone-polyester two coat system
 - e. Panel Width: 16 inches
 - f. Panel Seam Height: 2 inches
 - g. Joint Type: Mechanically seamed

2.3 METAL ROOF PANEL ACCESSORIES

- A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in manufacturer's standard profiles. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.
- C. Panel Clips: Provide panel clip of type specified, at spacing indicated on approved shop drawings.
 - 1. Two-piece Floating: ASTM C 645, with ASTM A 653/A 653M, G90 hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
 - 2. Single-Piece Fixed: ASTM A 653/A 653M, G90 hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
- D. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.
- E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 - 1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
 - 2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
- F. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 hot-dip galvanized zinc coating.
- G. Light Transmitting Panel: Manufacturer's standard UV-resistant translucent panel, 16 inch wide, white, with haze value of not less than 90 percent when measured per ASTM D 1003.
- H. Roof Accessories: Approved by metal roof panel manufacturer. Refer to Section 07 72 00 "Roof Accessories" for requirements for roof accessories.

2.4 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
 3. Products: Subject to compliance with requirements available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Carlisle Residential; a division of Carlisle Construction Materials; WIP 300HT.
 - b. Grace Construction Products; W.R. Grace & Co. -- Conn.; Grace Ice and Water Shield HTUltra.
 - c. Henry Company; Blueskin PE200 HT.
 - d. Kirsch Building Products, LLC; Sharkskin Ultra SA.
 - e. Metal-Fab Manufacturing, LLC; MetShield.
 - f. Owens Corning; WeatherLock Specialty Tile and Metal Underlayment.
- B. Felt Underlayment: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felts.
- C. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.5 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.6 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal roof panel manufacturer for application, but not less than thickness of metal being secured.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle-free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches . Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.
1. Apply over the entire roof surface.
 2. Apply over the roof area indicated below:
 - a. Roof perimeter for a distance up from eaves of 24 inches beyond interior wall line.
 - b. Valleys, from lowest point to highest point, for a distance on each side of 18 inches .Overlap ends of sheets not less than 6 inches .
 - c. Rake edges for a distance of 18 inches .
 - d. Hips and ridges for a distance on each side of 12 inches
 - e. Roof-to-wall intersections for a distance from wall of 18 inches .
 - f. Around dormers, chimneys, skylights, and other penetrating elements for a distance from element of 18 inches
- B. Felt Underlayment: Apply at locations indicated on Drawings, in shingle fashion to shed water, and with lapped joints of not less than 2 inches .
1. Apply over the entire roof surface.
 2. Apply on roof not covered by self-adhering sheet underlayment. Lap over edges of self-adhering sheet underlayment not less than 3 inches , in shingle fashion to shed water.
- C. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.
- D. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.4 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Shim or otherwise plumb substrates receiving metal panels.
 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 3. Install screw fasteners in predrilled holes.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.

5. Install flashing and trim as metal panel work proceeds.
 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 2. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
 3. Copper Panels: Use copper, stainless-steel, or hardware-bronze fasteners.
 4. Stainless-Steel Panels: Use stainless-steel fasteners.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- E. Batten-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each batten-seam joint at location, spacing, and with fasteners recommended by manufacturer.
1. Install clips to supports with self-drilling fasteners.
 2. Apply battens to metal roof panel seams, fully engaged to provide weathertight joints.
 3. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Clipless Metal Panel Installation: Fasten metal panels to supports with screw fasteners at each lapped joint at location and spacing recommended by manufacturer.
- G. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal roof panel manufacturer.
- H. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- I. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13.19

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SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes aluminum-framed storefronts including aluminum and glass doors and frames.

1.2 REFERENCES

- A. Aluminum Association:
 - 1. AA ADM 1 - Aluminum Design Manual.
- B. American Architectural Manufacturers Association:
 - 1. AAMA 501 - Methods of Test for Exterior Walls.
 - 2. AAMA 502 - Voluntary Specification for Field Testing of Windows and Sliding Glass Doors.
 - 3. AAMA 503 - Voluntary Specification for Field Testing of Metal Storefronts. Curtain Wall and Sloped Glazing Systems.
 - 4. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 5. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
 - 6. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 7. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - 8. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
 - 9. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
 - 10. AAMA MCWM-1 - Metal Curtain Wall Manual.
 - 11. AAMA SFM-1 - Aluminum Store Front and Entrance Manual.
- C. American Society of Civil Engineers:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- D. ASTM International:
 - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

5. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
6. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
7. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
8. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
9. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
10. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
11. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
12. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
13. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
14. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
15. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

E. Green Seal:

1. GC-03 - Anti-Corrosive Paints.

F. National Fenestration Rating Council Incorporated:

1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

G. National Fire Protection Association:

1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

H. SSPC: The Society for Protective Coatings:

1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

I. Underwriters Laboratories Inc.:

1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 PERFORMANCE REQUIREMENTS

- A. System Design: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall, including building corners.

1. As calculated in accordance with applicable code, as tested in accordance with ASTM E330.
- B. Wind-Borne Debris Loads: Design and size glass located less than 60 feet (18.288 m) above grade to withstand the following loads:
 1. Glass Within 30 feet (9.144 m) of Grade: ASTM E1886 and ASTM E1996; large missile impact test.
 2. Glass Within 60 feet (18.288 m) of Grade: ASTM E1886 and ASTM E1996; small missile impact test.
- C. Deflection: Limit mullion deflection to 1/175 for spans under 13'-6" (4.115 m) and 1/240 plus 1/4 inch (6.35 mm) for spans over 13'-6" (4.115 m) of span; with full recovery of glazing materials.
- D. System Assembly: Accommodate without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.
- E. Air Infiltration: Limit air leakage through assembly to 0.06 cfm/min/sq ft (0.0003 cu m/s/sq m) of wall area, measured at reference differential pressure across assembly of 1.57 psf (75 Pa) as measured in accordance with AAMA 501.
- F. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.
- G. Water Leakage: None, when measured in accordance with AAMA 501 with test pressure difference of 20 percent of design pressure, with minimum differential of 2.86 lbf/sq ft (136.85 N/sq m) and maximum of 12.00 lbf/sq ft (574.2 N/sq m).
- H. Thermal Transmittance of Assembly (Excluding Entrances): Maximum U Value of 0.69 Btu/sq ft per hour per deg F when measured in accordance with AAMA 1503.
- I. Expansion / Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F (95 degrees C) over 12 hour period without causing detrimental effect to system components and anchorage.
- J. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details.

- C. Product Data: Submit component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, [door hardware,] and internal drainage details.
- D. Samples: Submit two samples 12 x 12 inches (300 x 300 mm) in size illustrating finished aluminum surface, glass units, glazing materials.
- E. Design Data: Indicate framing member structural and physical characteristics, calculations, dimensional limitations.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with AAMA SFM-1 and AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- B. Surface Burning Characteristics:
 - 1. Foam Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84, NFPA 255, UL 723.
- C. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

1.6 QUALIFICATIONS

- A. Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum three years documented experience and with service facilities within 100 miles of Project.
- B. Design structural support framing components under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect finished aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements.

- B. Do not install sealants nor glazing materials when ambient temperature is less than 40 degrees F (5 degrees C) during and 48 hours after installation.

PART 2 PRODUCTS

2.1 ALUMINUM-FRAMED STOREFRONTS

- A. Manufacturers:
 - 1. EFCO Corp.
 - 2. Kawneer Co., Inc.
 - 3. Traco.
 - 4. Vistawall Architectural Products.
 - 5. YKK AP America.
 - 6. Tubelite, Inc.

- B. Basis of Design:
 - 1. Basis of Design not to exclude others: Kawneer Trifab VersaGlaze 451T Framing System with standard 2" x 4 1/2" thermal framing.

- C. Product Description:
 - 1. Aluminum Frame: Thermally broken; flush glazing stops; drainage holes; internal weep drainage system. Frames for interior glazing need not to be thermally broken.
 - 2. Mullions: Profile of extruded aluminum with internal reinforcement of aluminum or shaped steel structural section.
 - 3. Doors: Aluminum framed glass doors; 1-3/4 inches thick, square glazing stops, wide stile standard entrance.

2.2 COMPONENTS

- A. Extruded Aluminum: ASTM B221; 6063 alloy, T5 temper typical, 6061 alloy, T6 temper for extruded structural members.
- B. Sheet Aluminum: ASTM B209, 5005 alloy, H15 or H34 temper.
- C. Sheet Steel: ASTM A653/A653M; galvanized to minimum G90.
- D. Steel Sections: ASTM A36/A36M; shaped to suit mullion sections, galvanized.
- E. Glass: Specified in Section 08 80 00.
- F. Glazing Materials: Storefront manufacturer's standard types to suit application and to achieve weather, moisture, and air infiltration requirements.
- G. Hardware: Furnish manufacturer's standard door hardware for types of doors and applications indicated, and as specified below.
 - 1. Weather Stripping: Wool pile, continuous and replaceable.
 - 2. Sill Sweep Strips: resilient seal type, of neoprene compound.

3. Threshold: Extruded aluminum, one piece for each door opening, non-slip surface.
 4. Pivots: Center type; top, intermediate, and bottom.
 5. Push/Pull: Style as selected from manufacturer's full range of available push/pulls.
 6. Panic Device: Narrow profile concealed vertical rod device, push pad type.
 7. Closer/Opener: Hardware to match hardware specified in Section 08 71 00
 8. Finish: Exposed hardware to match hardware finishes specified in Section 08 71 00
 9. Lock Cylinders: Specified in Section 08 71 00
- H. Flashings: Minimum 0.032 inch (0.8 mm) thick aluminum
- I. Fasteners: Stainless steel.

2.3 FABRICATION

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Arrange fasteners and attachments to conceal from view.
- E. Reinforce interior horizontal head rail to receive blind track brackets and attachments.
- F. Prepare components with internal reinforcement for door hardware.
- G. Reinforce framing members for imposed loads.

2.4 SHOP FINISHING

- A. Color: To be selected from manufacturers full range of colors
- B. Concealed Steel Items: Galvanized to ASTM A123/A123M; minimum 1.2 oz/sq ft coating thickness; galvanize after fabrication.
- C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar metals.
- D. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.
 1. Interior Anti-Corrosive Paints: Maximum volatile organic compound content in accordance with GC-03.
- E. Extent of Finish:

1. Apply factory coating to surfaces exposed at completed assemblies.
2. Apply finish to surfaces cut during fabrication so no natural aluminum is visible in completed assemblies, including joint edges.
3. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify dimensions, tolerances, and method of attachment with other Work.
- C. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this Section.

3.2 INSTALLATION

- A. Install wall system in accordance with AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent Work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent Work to form water tight dam.
- G. Coordinate attachment and seal of perimeter air and vapor retarder materials.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Install integral flashings and integral joint sealers.
- J. Coordinate installation of glass with Section 08 80 00; separate glass from metal surfaces.
- K. Coordinate installation of perimeter sealants with Section 07 90 00.

3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements} Tolerances.
- B. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft , whichever is less.
- C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 ADJUSTING

- A. Section 01 70 00 - Execution Requirement: Testing, adjusting and balancing.

3.5 CLEANING

- A. Section 01 70 00 - Execution Requirements: Final cleaning.
- B. Remove protective material from pre-finished aluminum surfaces.
- C. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- D. Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution Requirements: Protecting installed construction.
- B. Protect finished Work from damage.

END OF SECTION 08 41 13

SECTION 23 00 00 - HEATING, VENTILATING & AIR CONDITIONING (HVAC)

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The work covered in this Section consists of furnishing all labor, equipment, and materials required to install building HVAC systems.

1.02 RELATED SECTIONS

- A. Section 01 30 00 – Administrative Requirements

1.03 REFERENCE STANDARDS

- A. Applicable codes and standards shall include, but not be limited to, the most recent edition with the latest revisions, supplements, and amendments of the applicable codes and standards of the following:
 1. Local Ordinances and Statutes
 2. National Fire Protection Association (NFPA)
 3. Indiana Building Code (IBC)
 4. Indiana Mechanical Code (IMC)
 5. American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE)
 6. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 7. Underwriters Laboratories (UL)

1.04 SUBMITTALS

- A. The Contractor shall furnish the manufacturer's certification that the equipment and materials proposed for use are in compliance with the specification requirements and include copies of supporting tests and previous use documentation.
- B. Shop drawings shall be submitted for the following equipment:
 1. Air Distribution Devices
 2. Air Conditioning Equipment (Fan coils and Condensing units)
 3. Exhaust Fans
 4. Vibration and Noise Control Devices
 5. Air Balance Report
 6. Sheet Metal Duct Shop Drawings
 7. Duct Insulation / Pipe insulation
- C. All submittals shall conform to the requirements of Section 01 30 00

1.05 CONTRACTOR QUALIFICATIONS

- A. The subcontractor used on this project shall furnish information in the form of a

notarized letter on company letterhead stating that the firm has successfully been installing sheet metal air conditioning and ventilation systems for at least 2 years prior, to ordering equipment and beginning work. The information provided shall contain the cost and size of project along with dates, persons to contact, and telephone numbers.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials shall be new and free from defects and shall be of the best quality available in each specified grade or class. Materials shall be installed in strict accordance with the manufacturer's recommendations.
- B. All products to be provided with a minimum of a 1 year labor/workmanship warranty and a 5 year parts/material warranty at minimum.

2.02 GALVANIZED DUCTWORK

- A. All ducts shall be fabricated from lock forming quality galvanized sheet steel with 1-1/2 oz. of zinc total per square foot unless indicated or specified otherwise.
- B. Construction shall be to the standards outlined in the latest edition of the ASHRAE "Guide" and the Sheet Metal and Air Conditioning Contractors' National Associations "Low Pressure Duct Construction Standards", Latest Edition, Section 1 - Basic Duct Construction.
- C. Duct metal gauges shall be to the standards listed above except where indicated otherwise on the drawings, and acceptable to the Engineer for the location and support characteristics.
- D. Duct panels over 12-inches wide shall be cross-broken or beaded on 12-inch centers. Cross-breaking shall be outward on positive pressure ducts and inward on negative pressure ducts.
- E. All duct panels shall be braced or reinforced as necessary, in addition to the minimum requirements in the ASHRAE Guide, to eliminate vibration and noise and to prevent deflection from the indicated shapes and dimensions.
- F. Duct joints and seams shall be as follows:
 - 1. Longitudinal seams shall be Pittsburgh Lock, button punch, snap, lock or grooved.
 - 2. Transverse joints shall be in accordance with the Specified SMACNA Standards.
 - 3. Drive Slips: Use on the short side up to 18-inch dimensions. Gauge shall be at least same gauge as duct. Bend drive slip over at least 3/4-inch at corners.
 - 4. Corner closures shall be as required to provide for minimum leakage.
- G. Elbows and tees shall be as follows: Long radius vaned, with throat radius equal to the width of duct and full heel radius, or:
 - 1. Square with single thickness turning vanes, one nominal gauge heavier than duct

- elbow, size and spacing as shown in the "Low Pressure Duct Construction Standards".
2. Provide the type indicated on Drawings or required by field conditions.
 3. Provide specific elbows or tees fabricated per details where indicated.
- H. Transformations, rises, and drops: Fabricate with a horizontal or vertical slope not exceeding 1-inch in 7-inches.
1. Connections to equipment shall be straight and leak tight.
 2. Provide as required to make connection to equipment, louvers, grilles or duct collars.
- I. Dampers: Provide manually operated, opposed blade dampers where required to balance the system, or where indicated on drawing.
1. Dampers shall be multiple blade type.
 2. Provide accessible self-locking quadrant type controls with handle. Mark final balanced damper position permanently on duct or shaft. Shaft shall be 5/16" on 12" damper, 3/8" on larger.
- J. Fire Dampers: Provide fire damper when indicated.
- K. Hanger materials shall be galvanized steel bands where approved by the Engineer or galvanized steel rods to supporting angles.
1. One-inch x 1/8-inch bands or approved alternate for ducts up to 36-inches wide, and trapeze type with rods for larger ducts. Spacing consistent with SMACNA Duct Construction Standards
 2. Coordinate with the hangers for ceilings, light fixtures, etc.
- L. Flexible Connections: Provide flexible duct connections at air conditioning unit connections.
1. Connections shall be 30-ounce UL approved Neoprene coated woven glass fabric, at least 4" wide and installed with 1" slack.
- M. Spiral Duct: Spiral ductwork, where specified on A/C supply, shall be pre-manufactured, galvanized steel duct. Steel gage on 36 inch and smaller, 20 gage, on 37 inches or larger, 18 gage. Spiral duct fillings shall be pre-manufactured at factory. All flanges, accessories and transitions shall be pre-manufactured.

2.03 AIR DISTRIBUTION DEVICES

- A. Select grilles, diffusers, and registers with neck velocities and noise ratings equal to or less than those used for design.

- B. All supply air devices shall be designed to diffuse the specified air quantities uniformly throughout the conditioned space with a 25 °F cooling temperature differential between average room temperature and supply air temperature.
- C. Shall be aluminum with anodized aluminum finish.
- D. Provide duct adapters as required for indicated duct sizes.
- E. Provide aluminum opposed blade dampers for all supply registers. Provide model, size and type as required.
- F. Make and model numbers for registers shall be the listed manufacturers below or approved equal.
 - 1. Titus
 - 2. Price
 - 3. Krueger
 - 4. Metalaire
- G. Provide factory assembled galvanized aluminum air extractors at all supply air branch take-offs. Extractors shall have two-inch blade spacing, gang operated parallel blades fully adjustable from wide open to full closed and shall provide even air distribution into branch duct.

2.04 DUCTWORK INSULATION

- A. Insulate with 2 inch flexible blanket external duct insulation, with vapor barrier. Insulate continuously and seal all joints.
- B. Insulation shall be rigid fiberglass, 1.5 pcf density, Johns-Manville "Microlite", or approved equal, where exposed in mechanical rooms. Maximum thermal conductivity (k): 0.15 at 75 °F mean temperature.
- C. Double wall duct insulation shall be fiberglass, as manufactured by United McGill Corporation, Acousti-K-28 duct or approved equal (where indicated).
- D. Secure to bottom of rectangular ducts 18-inches wide and larger with Graham welded mechanical pins and tin coated metal discs spaced on not more than 12-inch centers.
- E. Vapor barrier: UL approved reinforced aluminum foil and fire resistant Kraft paper. All parts of the indoor supply ductwork and its supports and attachments, that are subject to moisture condensation, shall be protected with external insulation with vapor barrier.
- F. Finish shall be continuous. Lap all seams in joints 2-inches and cement tight or cover seams with 4-inch strips of like facing material adhered in place with vapor barrier adhesive.
- G. Exterior duct shall be fully coated with United McGill Duct Seal or approved equal.

2.05 VIBRATION ISOLATION

- A. Rubber in shear isolators shall be provided on AHU's

2.06 PTAC UNITS

- A. Unit to be wall mounted packaged DX cooling with electric heating. Unit to have hot gas reheat for dehumidification.
- B. Equipment by Bard or approved equal.
- C. System components to match the performance scheduled on drawings and include all options and accessories indicated on drawings, schedules, and required by local codes.
- D. Split systems to be provided with a combination thermostat/humidistat located where shown on plans.
- E. Provide 5 year compressor warranty.
- F. Provide factory mounted disconnect.
- G. Install unit per manufacturer guidelines.

2.07 EXHAUST FANS

- A. Provide axial wall exhaust fans by Greenheck or approved equal.
- B. Provide accessories and options as listed on schedules.
- C. Fans to be direct drive ECM fans.

2.08 LOUVERS

- A. Provide 6" drainable blade stationary louvers by Greenheck or approved equal.
- B. Provide with factory finish option as selected by architect.
- C. Provide options and accessories as scheduled, with free area and velocity as scheduled.

PART 3 - EXECUTION

3.01 GENERAL

- A. Prior to commencing work, verify all measurements at the building site. Submit all discrepancies for clarification before proceeding with the work.
- B. All installation shall be in accordance with manufacturer guidelines and all local codes and regulations.
- C. Furnish all common and skilled labor, tools, rigging equipment, scaffolding shims, dowels, and all other materials and equipment necessary to make a complete installation of the

material and equipment specified and indicated, including but not limited to the following:

1. Examine equipment and material for concealed damage and report any damage to the Engineer.
2. Be responsible for the safety and protection from loss or damage of all equipment and material.
3. Learn of the design loadings of the various floors or roofs in the buildings and avoid overloading.
4. Protect all equipment and material during storage and prior to start-up which shall include the covering of all openings, protection against rust and other damage, etc. Equipment may be stored outdoors only when approved.
5. Furnish and install grout, shim material and the miscellaneous steel necessary for brackets, anchors, or supports required in the installation of the equipment.
6. Spot paint all equipment where the shop paint has been damaged.
7. Furnish all bolts, studs, nuts and gaskets for make-up of all connections to the equipment and replace any manhole or other gaskets damaged during storage, inspection, cleaning or placing into service.
8. Lubricate apparatus before start-up.
9. Field check for clearances and interferences before fabrication or installation and relocate material and equipment furnished as required to eliminate interferences.
10. Install systems as indicated; however, because of the small scale, all offsets, fittings, reducers, duct transition sections, etc., and accessories that may be required are not indicated. Coordinate any deviation with the Engineer, verbally as a minimum, prior to re- routing.
11. Installation shall equal or exceed the minimum requirements of the applicable codes and these specifications; however, where the local codes and ordinances are more stringent, they shall govern.
12. Include offsets, duct transitions, piping, fittings and accessories required to eliminate interferences.
13. Include all material, labor and changes occasioned by the Contractor's choice of equipment.
14. Assemble all shipped sections and pieces of equipment as received from the manufacturer.
15. Install piping, duct work, equipment, etc., at times as required to meet the construction schedule, and as necessary to move equipment into place without delaying erection of structures.
16. Disassemble and reassemble any parts of sections of equipment made necessary by obstructions or other limitations encountered in moving equipment to the final location indicated.
17. All construction methods and tools shall comply with local ordinances, applicable codes and standards and commonly accepted standards for safety and health of personnel engaged on construction work.

3.02 AIR CONDITIONING SYSTEM INSTALLATION

- A. Contractor shall be responsible for any change in duct work or arrangement of equipment due to a change in type of equipment furnished.
- B. All changes in layout or arrangement of equipment shall be approved by the Engineer prior to beginning work.

- C. Verify all elevations and make all routing and elevations changed required to avoid conflicts, including rises, drops, transitions, and offsets as necessary.
- D. Place in satisfactory final operation all systems and equipment, including all systems modified or reworked as part of this contract.
- E. Install all items which require operation, adjustment, or periodic maintenance in an accessible location. Provide access for all dampers, controls, and other items requiring maintenance or adjustment.
- F. Duct work installation shall conform in all respects to SMACNA low velocity duct construction standards, and installation criteria as defined by ASHRAE (American Society of Heating Refrigerating and Air Conditioning Engineers).

3.03 CUTTING AND PATCHING

- A. Cut and patch as necessary for the installation of this work. Seal all openings in walls, ceiling and roof. Work shall be performed by a tradesman for whom specific finish has been cut or damaged (i.e., stucco repairs performed by a stucco tradesman).

3.04 ACCESSIBILITY

- A. Be informed regarding the peculiarities and limitations of space available for installation of all materials and equipment under this contract. See that filters, controls, dampers, and other apparatuses shall be easily accessible. The foregoing shall also apply to all parts of the system that must be reached for maintenance.

3.05 COORDINATION

- A. Coordinate the installation of the AC unit with other discipline and building elements. Adjust air distribution and return devices as required to accommodate the establishment of a proper and uniform grid for the ceiling tile provided.

3.06 TESTING AND BALANCING

- A. Engage a qualified testing and balancing professional to test/balance fan systems, grilles, cooling equipment and airflow openings.
- B. Refer to spec section 23 05 93 for additional requirements.

END OF SECTION

(NO TEXT FOR THIS PAGE)

SECTION 40 05 59 – SLIDE AND SLUICE GATES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for furnishing and installing all gates and operators.
1. Where gate operators are installed in NEC Class I, Group D, Division 1 or 2 hazardous locations as specified, provide operator-related electrical equipment and appurtenances that are UL, Inc. approved for use in such areas.
 2. Provide gate operators complete, including a suitable enclosure, with all appurtenances necessary for the operator to perform its intended function. Such appurtenances include, but are not limited to, anchor bolts and other mounting hardware, control switches, limit switches, pressure switches, torque switches, gauges, control valves, electrical supply connections, internal electric wiring and controls, terminal blocks, air supply piping, solenoid valves, miscellaneous valves, regulating controls, push button controls, miscellaneous controls, local and remote indicators, operating nuts, purge water service with all associated piping, indicating lights, and other such items.

This gate specification applies to both sluice gates and slide gates. Where specific requirements differ between the two, appropriate distinguishing terminology will be used.
 3. For each gate provide the type of operator specified for the gate in the Gate Schedule.

1.2 REFERENCES

- A. Codes and standards referred to in this Section are:
1. ASTM A 27/A27M - Specification for Steel Castings, Carbon, for General Application
 2. ASTM A 29/A29M - General Requirements for Specification for Steel Bars, Carbon and Alloy, Hot Wrought and Cold Finished
 3. ASTM A 48 - Specification for Grey Iron Castings
 4. ASTM A 126 - Specification for Grey Iron Castings for Valves, Flanges, and Pipe Fittings

- | | | |
|-----|------------------|---|
| 5. | ASTM A 276 | -Specification for Stainless and Heat Resisting Steel Bars and Shapes |
| 6. | ASTM A 395 | -Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures |
| 7. | ASTM A 572/A572M | - Specification for High Strength Low Alloy Columbium Vanadium Structural Steel |
| 8. | ASTM A 536 | - Specification for Ductile Iron Castings |
| 9. | ASTM A 582 | - Free Machining Stainless and Heat Resisting Steel Bars, Hot Rolled or Cold Finished User |
| 10. | ASTM A 707 | - Specification for Forged Carbon and Alloy Steel Flanges for Low-Temperature Service |
| 11. | ASTM B 21 | - Specification for Naval Brass Rod, Bar, and Shapes |
| 12. | ASTM B 98 | - Specification for Copper Silicon Alloy Rod, Bar, and Shapes |
| 13. | ASTM B 148 | - Specification for Aluminum Bronze Sand Castings |
| 14. | ASTM B 584 | -Specification for Copper Alloy Sand Castings for General Applications |
| 15. | ASTM D 2000 | - Specifications for Rubber Materials |
| 16. | ASTM D 4020 | - Specification for Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials |
| 17. | AWWA C501 | - Sluice Gates |
| 18. | AWWA C540 | - Power-Actuating Devices for Valves and Sluice Gates |

1.3 SYSTEM DESCRIPTION

A. Design Requirements:

1. Provide all gates from one manufacturer.

2. Provide gates that meet the requirements of AWWA C561, except as otherwise specified.
3. Design slide and sluice gates for seating or unseating pressures as specified, measured to the center of the gate.

1.4 SUBMITTALS

- A. General: Provide all submittals, including the following, as specified in Division 1.
- B. Shop Drawings: Submit shop drawings, including arrangement and erection drawings of the gates, operators and control equipment; structural design data, if requested; schematic control diagrams, electrical connection diagrams, and complete description of the control system; and operating characteristics. Submit certified shop test report for the hydraulic power unit.
- C. Quality Control:
 1. Submit manufacturer's certified performance and material specifications, as specified.
 2. Submit manufacturer's certified physical test reports of the fiberglass gates, if specified.
 3. Submit an affidavit of compliance with all applicable provisions of AWWA C561 (if C561 is specified) and additions as specified.
 4. If requested, submit complete calculations for each size of motor operator indicating the force required to operate the gate, the operator force provided, full load and locked rotor current, and horsepower.
- D. Operation and Maintenance Manuals: Submit operation and maintenance manuals for the slide and sluice gates and gate operators.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle all products and materials as specified in Division 1.

1.6 SPARE PARTS

- A. Provide the following spare parts.
 1. For each size cylinder:
 - a. One set of packing.
 - b. One set of cup leathers or O-rings.
 - c. One needle valve (if used).

- d. One check valve (if used).
 - e. One oil fog unit (if used).
 - f. One hose (for swiveling type cylinders).
 - g. One solenoid control valve.
2. For electric motor operators:
- a. One motor of each size.
 - b. One torque switch of each size.
 - c. One limit switch assembly of each size.
 - d. Six push buttons.
 - e. Six color caps of each color.
 - f. Twenty indicating lamps.
 - g. One reversing starter of each size.
 - h. One overload relay of each size.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Acceptable manufacturers are listed below. Other manufacturers of equivalent products may be submitted.

- 1. Gates
 - a. Rodney Hunt Company
 - b. Waterman Industries
 - c. Golden Harvest Model GH-100
 - d. Whipps, Inc.
 - e. Or -equal
- 2. Electric Motor Operator - Nonmodulating:
 - a. E-I-M Company
 - b. Limitorque Corporation
 - c. Rotork, Inc.
 - d. Auma
 - e. Or -equal
- 3. Electric Motor Operator - Modulating:
 - a. E-I-M Company
 - b. Limitorque Corporation
 - c. Rotork, Inc.
 - d. Auma
 - e. Or -equal

4. Rubber Hose for Swiveling Type Pneumatic Cylinder:
 - a. Type 88 by B.F. Goodrich Co.
 - b. "Superhose" by Chicago Pneumatic
5. Model #12-002 Filter by C.A. Norgren Co., Englewood, CO, for Pneumatic Cylinder
6. Model #11-002 Pressure Regulator by C.A. Norgren Co., Englewood, CO for Pneumatic Cylinder
7. Model #10-002 Oil Fog Unit by C.A. Norgren Co., Englewood, CO for Pneumatic Cylinder
8. Speed Control Valves for Air-Oil Cylinder Operator:
 - a. Ace Controls, Inc., Farmington, MI
 - b. Hanna Company, Chicago, IL
9. Portable Operator
 - a. Golden Harvest Model GH-1000
 - b. Or -equal
10. Speed Control Unit for High Pressure Hydraulic Cylinder:
 - a. Parker Hannifin Model No. F1200-S-10
 - b. Ortman-Miller Machine Co.,
11. Motor-Driven Oil Pump for High Pressure Hydraulic Cylinder:
 - a. Parker Hannifin Series 41
 - b. Ortman-Miller
12. Directional Valves for High Pressure Hydraulic Cylinder:
 - a. Parker Hannifin Model No. 116-01-B-61-AYD
 - b. Ortman-Miller
13. Pressure-Reducing Valves for High Pressure Hydraulic Cylinder:
 - a. Parker Hannifin Model MPRN-12P-1AA
 - b. Ortman-Miller
14. Pilot-Operated Check Valves for High Pressure Hydraulic Cylinder:
 - a. Parker Hannifin Model CP-1200-S-4-M-10
 - b. Ortman-Miller
15. Accumulators for High Pressure Hydraulic Cylinder:

- a. Parker Hannifin Model A7J2310A1
 - b. Ortman-Miller
16. Accumulator Charging and Gauging Assembly for High Pressure Hydraulic Cylinder:
- a. Parker Hannifin Model 1539-542094
 - b. Ortman-Miller
17. Manual 4-Way Control Valves for Pneumatic and Low Pressure Hydraulic Cylinder:
- a. Unitite by Hanna Company, Chicago
 - b. Series 53 by Modernair Corporation

2.2 MATERIALS

A. General: Fabricate the various equipment components of materials that meet the following requirements.

B. Gates

- | | | |
|----|--|---|
| 1. | Slide, Spigot, Frame, Stiffeners, Yoke, Guide Angles, Fasteners: | ASTM A 276 Type 304 |
| 2. | Stems: | |
| a. | Bronze | ASTM B 21 Alloy 464 or ASTM B 98 |
| b. | Stainless Steel | ASTM A 276 Types 302, 303, 304
ASTM A 582 Type 303 |
| 3. | Side and Top Seals, Invert Seal, Bottom Seal | Neoprene ASTM D 2000 |
| 4. | Bearing Bars, Guides, Stem Guide Liner: | |
| a. | Polyethylene | ASTM D 4020 |
| 5. | Threaded Stem, Stem Guides: | |
| a. | Stainless Steel | ASTM A 276 Type 304 |
| 6. | Pedestal: | |
| a. | Cast Iron | ASTM A 126 Class B |
| b. | Mild Steel | ASTM A 36 |
| 7. | Lift and Stop Nut: | |
| a. | Manganese Bronze | ASTM B 584 Alloy 865 |
| 8. | Stem Cover | |
| a. | Polycarbonate | ASTM A 707 |

C. Slide and Sluice Gate Operators

2.4 GATE ELECTRIC MOTOR OPERATORS - NONMODULATING

- A. General: Provide nonmodulating electric motor operators of the close-coupled, electric motor-driven, worm gear type, complete with floor stand, motor, gearing, limit switches and auxiliary contacts, torque switches, position indicator, handwheel, integral controller, and all required appurtenances. Design the operators to lift gates from the fully closed to the fully open position and back. Provide operators that complete each operation in the time specified. Provide operators that hold the gates in any position from fully open to fully closed without vibration.
- B. Operator Mounting: Design the operator to be mounted on the floorstand, unless otherwise shown or specified.
- C. Standard: Except as otherwise specified, provide operators meeting AWWA C540.
- D. Open and Close Time Periods: Unless otherwise specified, provide operators that move the gate at approximately 12 inches per minute in either direction when the differential pressure is the maximum specified and the voltage at the terminal is within 15 percent of the nominal voltage. Design the operator to operate the gate through two consecutive opening and closing cycles or for a period of 15 minutes, whichever is longer, during every 60-minute period, at specified ambient temperature conditions under full differential pressure.
- E. Temperature Range: Design the operator for outdoor operation and for an ambient temperature range of -20 to 140 degrees F.
- F. Torque: Design the operator to exert an unseating torque of at least 50 percent in excess of the required disc seating torque at the specified voltage, neglecting hammer-blow effect.
- G. Power Gearing: Provide power gearing consisting of helical or spur gears and worming gearing. Fabricate helical and spur gears of accurately machined hardened alloy steel. Provide a hardened alloy steel worm with threads ground and polished after heat treating. Provide a nickel or manganese bronze worm gear. Use antifriction bearings throughout. Grease pack or oil bath lubricate the operator. Provide lubricants suitable for the ambient temperatures specified.
- H. Lost-Motion Device: Design operators to include a lost-motion device that will permit the motor to attain full speed, and then impart a hammer blow to the stem nut to start movement of the disc in both the opening and closing directions. Do not include this feature if the valve is for modulating service.
- I. Handwheel-Manual Operation: Provide a handwheel for manual operation with a maximum rim pull of 40 pounds. Design the handwheel so that it does not rotate during electrical operation and the motor does not rotate during manual handwheel operation. Provide an operator that is arranged so that motor or motor gearing failure does not prevent

manual operation. Arrange the operator to automatically change from manual operation to electrical operation when its motor is energized and to continue electric operation until the operator is reset to manual operation. Provide a means for locking the drive in either manual or motor operation. Provide removable handwheels. Provide an adaptor key or drive nut to permit operation by a portable operator.

J. Declutching Mechanism: Provide a declutching mechanism to disengage the motor mechanically but not electrically from motor to handwheel operation. If the clutch is of the external lever type, arrange it such that the lever does not move when the motor is energized.

K. Position Indication: Provide an operator-mounted gate position indicator of the mechanical or indicating light type. For OPEN-CLOSED service, indicate the fully open, fully closed and intermediate gate position either mechanically or by lights. For modulating or throttling service, provide continuous gate position indication between the fully open and fully closed positions. Provide electrical contacts as required for remote indication of gate position.

L. Electric Motor Design: Provide an operator motor of the high torque, ball or roller bearing, squirrel-cage type designed for continuous gate duty. Provide motor rated for 15 minute duty cycle or three complete opening and closing gate strokes, whichever is longer, during a 60 minute period under full differential pressure at 40 degrees C ambient. Design the motor for use on a nominal 480 volts, 3-phase, 60-hertz electrical service. Provide motor windings and leads with Class F or better insulation with built-in thermal overload protection. In other respects, provide motors meeting the requirements of Division 26.

M. Housing: Provide housings for controls, gears, and motors with integrally cast flanges. Fully machine and template drill the flanges and their mating surfaces. Provide joints which are metal-to-metal or gasket or O-ring sealed as required.

N. Control and Motor Enclosures: Provide NEMA 4 control and motor enclosures, except as otherwise specified. Provide NEMA 7 enclosures where explosion-proof construction is shown or specified. Provide the controller with mechanical interlocks and mount as an integral part of the operator. For explosion-proof enclosures which are dependent upon metal-to-metal faces for weatherproofing, include explosion-proof breathers and drains with desiccant type dehumidification and with sufficient silica gel desiccant for 6 months service without requiring renewal. Include instructions for renewal of the desiccant. Provide a 2-year supply of desiccant.

O. Electrical Compartment Heater: Provide electrical compartment heaters, unless otherwise specified.

P. Electrical Requirements: Provide electrical controls for the operator as shown or specified. Design operators for 480-volt, 3-phase, 60-hertz service. Design all control circuits for 120- volt, single-phase, 60-hertz ac. Provide an integral 480/120-volt control transformer with fused secondary.

Q. Reversing Controller, Overload Protection and Internal Wiring: Provide a NEMA rated reversing controller, or an approved special duty rated reversing controller, complete with mechanical interlocks and controls as an integral part of the operator. Provide adequate

overload protection in the controller or embedded in the motor windings. Install an overload device in each phase. If overload devices are installed in the motor windings, provide devices of the (bimetallic automatic reset type) (manual reset type with remote-indication) with the contacts in the control circuit. Arrange the internal wiring in the operator so that the opening and closing coils cannot be energized simultaneously at any time, regardless of external wiring conditions.

R. Push Buttons and Selector Switches: Where operators are 7 feet or closer to the floor and in an accessible location, mount OPEN- STOP-CLOSE push buttons or a selector switch as shown on the operator housing. Also mount red and green position indicator lights and, where shown or required, an amber ready light or MANUAL-AUTO mode selector on the operator housing. Where the operators are located over 7 feet from the floor or in an inaccessible location, connect all internal control and indication wiring to a terminal block within the operator enclosure and provide a separate control station for remote mounting. Provide the remote control station with the same NEMA rating as the operator.

S. Limit and Torque Switches: Provide the operator with limit and torque switches, either direct or gear driven. Provide adjustable limit and torque switches with auxiliary contacts that are operative in either direction of travel. Provide limit switches that are "in step" with torque switches at all times, whether in motor or manual operation. Equip the operator with limit switches to stop movement in each direction and torque switches for protection against mechanical overload and to stop movement in either direction if an obstruction is encountered. Provide the number, function and arrangement of limit switches as shown, specified or required.

T. Additional Accessories: Provide additional limit switches, indicating lights, position transmitters and remote position indicators, remote operating controls and other accessories and controls as shown, specified or required.

U. Control Components, Operator Housing and Operator Wiring: Provide control components and operator housing that meets the requirements of Section 26 05 00. Provide operator wiring that meets the requirements of Section 26 05 19.

Table 2.1 Gates requiring Nonmodulating Operators

Gate	Location and Function
6	Proposed CSO structure, associated with 36" proposed gravity sewer

2.5 GATE ELECTRIC MOTOR OPERATORS - MODULATING

A. General: Provide modulating motor operators that meet the requirements for nonmodulating operators, except as specified herein. In addition to the other equipment specified for nonmodulating operators, provide an electronic control module and a solid state reversing starter.

B. Control Module: Provide a solid-state type control module with a comparator circuit which senses the error between the input command signal and the position feedback signal. Mount the control module within the operator switch compartment.

Accept a 4-20 mAdc input command signal. Provide zero and span adjustments to align minimum and maximum gate position with zero and 100 percent values of the input command signal. Provide deadband adjustment from 0.16 to 1.0 percent to eliminate excessive motor movement due to minor variation in the process variable signal.

Activate the solid state reversing starter to drive the actuator in the proper direction necessary to reduce the error to zero. Provide proportional band adjustment from 5-40 percent. When the error is outside the proportional band, run the actuator motor continuously toward set point. When the error is within the proportional band, pulse the actuator motor toward set point to prevent overshoot.

Provide actuator to open the gate when command input signal increases.

On loss of command input signal, have gate fail in last position, unless otherwise indicated by controls specifications or controls engineer. On loss of feedback signal, have gate fail in last position.

C. Selector Switch and Push Buttons: Where the operator is 7 feet or less from the floor and in an accessible location, integrally mount a 3-position AUTO-OFF-MANUAL selector switch plus two push buttons marked OPEN and CLOSE on the operator housing. Where the operator is located more than 7 feet from the floor or in an inaccessible location, connect all internal control and indication wiring to a terminal block and provide a separate control station for remote mounting.

D. Auto and Manual Operations: Provide operators that, when in the AUTO position, will respond to the automatic signal as described above. Provide operators that, when in the MANUAL position, will be operable by either push buttons or handwheel.

E. Open and Close Time Periods: Unless otherwise specified, provide operators that move the gate at approximately 6 inches per minute in either direction when the differential pressure is the maximum specified and the voltage at the terminal is within 15 percent of the nominal voltage. Design the operator to operate the gate through two consecutive opening and closing cycles or for a period of 15 minutes, whichever is longer, during every 60-minute period, at specified ambient temperature conditions under full differential pressure.

F. Motor Design: Design the motor specifically for gate operator service and to be continuous rated for continuous modulating duty. Provide motor insulation of at least Class H.

Table 2.2 Gates requiring Modulating Operators

Gate	Location and function
7	Proposed flow diversion structure, associated with 72" existing sewer.

2.6 CONTROL VALVES

A. Manual Operated: For manually operated 4-way control valves associated with pneumatic and low pressure hydraulic cylinders, provide disc, packless type valve for valves 1-1/4 inches and less in size and eccentric plug valves that meet the requirements of Section 40 05 20 for valves larger than 1-1/4 inches in size.

B. Solenoid-Operated: Provide 4-way, differential-operated, packless, poppet seat type solenoid-operated control valves with all parts rustproof and noncorrosive. Provide coils of the molded type, Class B insulated, in NEMA Type 4 Enclosure for nonhazardous areas and NEMA Type 7 for hazardous areas, designed for operation using 120-volt, 60-hertz current. Provide single-solenoid type valves. Arrange the solenoid such that when energized it positions the 4-way valve to open the cylinder-operated valve and when de-energized, it positions the 4-way valve to close the cylinder-operated gate. Arrange the 4-way valves for manual operation independent of and without disturbing the electrical control.

2.7 PORTABLE OPERATOR

A. Provide a portable operator of the electric drill type with a reversing switch and safety hold-down ON-OFF switch incorporated in the handle. Provide a heavy-duty electric drill that drives through an overload release clutch of the positive, spring loaded, hand type which instantly releases at a preset torque. Provide adaptors to fit the pinion shafts on the floor stands and other operators. Furnish a heavy-duty cord that is compatible with the specified equipment and of sufficient length to allow direct connection to nearby standard wall outlet without the need for additional extension devices. Provide an explosion-proof plug that is compatible with the convenience outlets specified under Section 26 27 26. Mount the unit on a tripod which has an adjustable height. Provide a unit that operates using 120-volt, 60-hertz current. (Provide explosion-proof equipment for all electrical components of the operator.)

2.8 SOURCE QUALITY CONTROL

A. Hydraulic Power Unit Shop Test: Prior to shipping the fluid power unit, conduct a shop test that demonstrates that the unit fulfills the operating requirements of the Specifications.

PART 3 PART EXECUTION

3.1 INSTALLATION

A. General: Install slide and sluice gates in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1.

B. Floor and Bench Stands: Accurately center floor and bench stands over the gate. Solidly bolt stands to the floor or support structure, with through-bolts wherever possible. Place approximately 3/4 inch of nonshrink cement grout beneath stands mounted on concrete or similar construction to assure uniform support. For stands installed within the area of a

removable type floor, platform, or grating, securely mount them on their own support structure independent of the removable element, unless otherwise shown or specified.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Furnish the services of a qualified representative of each of the various manufacturers to provide instruction on the proper installation of the equipment, inspect the completed installation, make any necessary adjustments, participate in the startup of the equipment, participate in the field testing of the equipment and place the equipment in trouble-free operation, as specified in Division 1.

B. Tests:

1. After installation of the gates, control equipment and all appurtenances, subject the units to a field running test, as specified in Division 1, under actual operating conditions.
2. Test gates for leakage, strength, and opening and closing against the maximum heads practicable to obtain under operating conditions. Stop any leaks around the thimbles, frames or gates. Provide sluice gates for which leakage around discs does not exceed the amounts allowed by AWWA C501. Provide slide gates for which leakage around discs does not exceed the amounts allowed by AWWA C561.

3.3 OPERATION DEMONSTRATION

A. Manufacturer's Field Quality Control Services: Furnish the services of a qualified representative of each manufacturer to demonstrate the proper operation and instruct (plant) (pump station) personnel in the equipment's operation and maintenance, as specified in Division 1.

3.4 CLEANING AND PAINTING

A. Paint slide and sluice gate in accordance with the requirements in Section 09 96 00. Do not paint bright or rubbing surfaces, but protect and leave bright.

3.5 POST STARTUP SERVICES

A. Manufacturer's Post Startup Services: Furnish post startup services for the equipment, as specified in Division 1.

END OF SECTION

(NO TEXT FOR THIS PAGE)

SECTION 46 46 13 - TIPPING SEDIMENT FLUSHING TANKS (TIPPING BUCKETS)

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes: Requirements for furnishing and installing a tipping sediment flushing tank (called a tipping bucket hereafter) system in the storage tank including tipping buckets, tipping bucket anchors, and appurtenances necessary for a complete installation.
- B. Related Work Specified in Other Sections Includes, But is Not Limited to, the Following:
1. Section 03 30 00 – Cast-In-Place Concrete
 2. Section 05 12 00 – Structural Steel Framing

1.2 SYSTEM DESCRIPTION

- A. This section is for the supply, installation, and testing and commissioning of the automatic flushing system as herein specified and as shown in the drawings. The automatic flushing system shall be of the “**Automatic Tipping Bucket**” type and shall be suitable for flushing accumulated solids and debris from the proposed tank or sewer floor using only one flush under normal loading conditions. The flushing media shall be treated effluent, in-situ tank water or potable water. The automatic flushing system shall include, but not be limited to the following:

1. Four (4) Grande Water Management Systems ACU-TIP Tipping Buckets, model GAT-45 with 45 gallons of flush water per foot of bucket length. Also acceptable are VEOLIA Hydrovex Tipping Buckets.
2. Eight (8) side wall supports and anchoring system
3. Eight (8) stainless steel 316 housing EXTREME BEARINGS end bearings. If VEOLIA tipping buckets are selected, submersible anodized aluminum casings shall be used instead.

1.3 OPERATION

- A. The automatic tipping bucket flushing system shall operate as follows:
1. Under normal dry weather conditions, the system shall be inoperative.
 2. When the proposed storage tank has been used and subsequently emptied, following a wet weather event, the operator will start the flushing sequence. Once the automatic tipping bucket is filled, the bucket becomes unstable, resulting in a shift in its center of gravity, and tips thereby causing its water content to spill along the back wall and the floor of the tank. The resulting high celerity wave will wash all debris, which were deposited on the tank floor into the flushing water trough (tank sump) located at the opposite end of the tank. The unit thereafter returns automatically to its stable upright position.
 3. The tank sump is then allowed to before proceeding with the operation of the second tipping bucket. This sequence is repeated for the second and consecutive tipping buckets.
 4. The system returns to its normal stand-by condition once all buckets are operated.
- B. The automatic tipping bucket flushing system shall be designed to remove debris from the floor of the proposed tank using **one flush**, under normal loading conditions. The centerline of the

tipping bucket shall be placed at the exact distance from the back wall of the tank and height from the tank floor, as recommended by the manufacturer and shown in the project drawings. The rotation of the automatic tipping bucket shall be limited to 100 degrees so that the flush water is properly directed to the back wall of the tank. There will be a radial concrete fillet between the back wall of the tank and the floor of the flush way to insure that the flush water transitions from a vertical to a horizontal direction while minimizing the transitional losses, the radius of the fillet will be as per the manufacturer's recommendation, in this case xx". Systems that drop the flush water directly onto the floor of the tank shall not be considered for this project.

- C. Equipment furnished and installed shall be fabricated, assembled, tested, erected and placed in proper operating condition in full conformity with detail drawings, specifications, engineering data, instruction and recommendations of the equipment manufacturer as reviewed by the ENGINEER.
- D. The Contractor shall ensure that the structure is dimensionally correct to accept the selected equipment as noted herein. The Contractor shall note that the basis of design is based on the first named manufactured, Grande Water Management Systems ACU-TIP tipping bucket, and that any and all modifications required due to improper dimensioning or to accommodate equipment other than that specified shall be at the expense of the CONTRACTOR.
- E. The automatic tipping bucket system shall be assembled, balanced and tested in North America at the place of manufacture prior to shipment. The ENGINEER's representative shall have access to witness the balancing and testing procedure should it be desired.

1.4 SUBMITTALS

- A. Submit shop drawings for all equipment in accordance with submittals section.
- B. The CONTRACTOR shall provide detailed shop drawings of the automatic tipping bucket system including detailed drawings of the automatic tipping buckets, their supports, bearings and anchoring details, drawings showing layout of units in the basin, their identification numbers and any other pertinent information. In addition, if requested by the ENGINEER, the manufacturer shall provide the following information:
 1. The calculated "Free Board" available at the moment the unit begins to tip
 2. The distance from the centerline of the unit to the back wall of the tank based on the trajectory of the flush water
 3. The static, dynamic and buoyancy forces (if applicable)

1.5 QUALITY ASSURANCE

- A. The automatic tipping bucket system to be furnished hereunder shall be provided by a North American manufacturer regularly engaged in such work and who has furnished at least twenty (20) similar installations and products and has had them in successful and continuous operation for a minimum of five (5) years in North America.
- B. Each tipping bucket shall be factory assembled, balanced and tested. The ENGINEER shall have access and ample notice (minimum of two weeks) to witness these procedures at their

discretion.

1.6 DELIVERY AND HANDLING

- A. General: Deliver and handle all products and materials as specified in Division 1.
- B. Care: Use every precaution to prevent damage to the tipping buckets during transportation and delivery to the site. Take extreme care in loading and unloading the tipping buckets and accessories. Deliver in undamaged condition in manufacturer's unopened containers or packaging, dry, with identifying labels intact and legible.
- C. Arrange deliveries of products with proper sequencing and scheduling in accordance with the approved Official Project Construction Schedule. Allow time for inspection prior to installation.
- D. Damaged Tipping Buckets: If, in the process of transportation or handling, any tipping bucket is damaged, replace or repair such tipping bucket(s). Have all repairs made by the manufacturer or manufacturer's representative to the satisfaction required.

1.7 WARRANTY

- A. All mechanical components of the specified equipment shall be guaranteed against manufacturing and design defects for a period of two years from the date of substantial completion or three years from the date of installation, whichever is less. Any and all electrical or electronic components (control panel, proximity switches, etc...) shall be guaranteed for a period of one year from the date of substantial completion or eighteen (18) months from the date of installation, whichever is less. Should the device or one of its components prove to be defective, the manufacturer shall be responsible for the modification or replacement at the discretion of the manufacturer of the defective equipment only.
- B. The manufacturer of the Automatic Tipping Bucket System also warrants that the flushing system will effectively remove the sediments deposited on the storage facility floor using only one flush under normal loading conditions.

PART 2 PRODUCT

2.1 MANUFACTURERS

- A. Acceptable manufacturers are as listed. Manufacturers of equivalent products may be submitted.
 1. Grande Water Management Systems, Inc.
 2. Veolia
 3. Approved Equal
- B. The project specifications and drawings are based on the ACU-TIP flushing system as manufactured and supplied by Grande Water Management Systems of Montreal, Canada, Toll Free: (855) 315-1115, Fax: (450) 315-1355 and represented locally by Jeremy VanErman.
- C. Or Engineer approved equal. Written requests for approval of alternate equipment must be

received no later than fifteen working days prior to the bid opening. The request must be accompanied by all information required by the engineer to evaluate the suitability of the proposed manufacturer to meet the requirements herein specified. It must include a complete set of fabrication drawings, approval documents including volume requirement calculations, load calculations at each support for static, dynamic & buoyancy forces, detailed installation drawings showing any changes from the project drawings and specifications and a complete reference installation list with end user contact names.

- D. The manufacturer shall have at least five (5) years' experience in sizing, designing, fabricating and installing the equipment specified herein and shall have a minimum of ten (10) North American installations in operation for a minimum of five years. The buckets shall be manufactured in North America and all components shall meet North American standards.
- E. The contractor shall be responsible for any changes, modifications or additions to the contract drawings as a result of using equipment from a manufacturer other than the named manufacturer in Section 2.1.A.

2.2 DESIGN AND CAPACITY

- A. Automatic tipping buckets complete with two (2) tipping bucket end bearings and side wall support systems, the tipping buckets shall be sized for the following:
 - 1. Four (4) units
 - 2. Flushing length = 96 feet
 - 3. Flush way width = 26.67 feet
 - 4. Tank floor slope = 3.125%
 - 5. Height to Unit centerline (from floor slab) = 18.0 feet
 - 6. Minimum flush water volume = 45 gallons per foot of bucket length; (Each tipping bucket shall hold a total flush volume = 1130 gallons) to be verified on site.
- B. Automatic tipping bucket shall be constructed of type 316 L stainless steel and shall be fabricated using continuous TIG or MIG welding. The plate thickness shall be a minimum of 1/8" and designed to withstand both the static and dynamic loading experienced under normal operation and installation conditions.
- C. The supports shall be fabricated entirely of type 316 L stainless steel, and anchored to the top of the wall using embedded threaded rod type anchors. The threaded rods will be of type 316 stainless steel and will be installed into the concrete structure using the HILTI HIT-RE-500 two part chemical anchor. The support and anchoring systems shall be designed to withstand both static and dynamic loads. In addition, the manufacturer shall supply the static and dynamic loads as well as their exact locations to facilitate structural design and verification.
- D. The bearings shall be factory installed and tested and shall be permanently lubricated under normal operating conditions. The bearings should not be submerged and hence are not designed for this eventuality. The bearings shall be stainless steel 316 "split" housing type double roller bearings with locking sleeve and end cap as manufactured by EXTREME BEARINGS Model as recommended by tipping bucket manufacturer. Alternatively, submersible anodized aluminum bearing casings shall be used. Should the bearings be submerged for a prolonged period of time, they must be checked for water intrusion.
- E. The automatic tipping bucket is to be balanced so that it shall return effortlessly and unhindered to the fill position ready for the next flush. The automatic tipping bucket is to be

designed so that no water will be retained in the bucket or in the bucket structural frame once it has tipped.

PART 3 EXECUTION

3.1 GENERAL

- A. General: Install the tipping buckets in the locations shown and in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1.
- B. Certify proper installation and operation of all components.
- C. The tipping bucket shall be shipped to site preassembled and ready to install. The manufacturer's field technician will verify the complete installation, make any necessary mechanical adjustments, and initiate start-up.
- D. The manufacturer's field technician shall prepare a field report and submit the report to the ENGINEER.
- E. The equipment manufacturer shall provide the services of a qualified field technician to instruct the OWNER's personnel in the proper maintenance of the equipment.
- F. The CONTRACTOR shall coordinate the installation of the tipping bucket with the construction of the flushing water structures to ensure satisfactory installation and the successful operation of the sediment flushing tipping bucket's system.
- G. Tests: After installation of the flushing system subject the units to a field running test, as specified in Division 1, under actual operating conditions.

3.2 STORAGE AND PROTECTION

- A. The CONTRACTOR shall comply with the following storage and protection requirements:
 - 1. Use all means necessary to protect products of this Section before, during and after installation and to protect installed work and materials of all other trades.
 - 2. Store all products in strict accordance with the manufacturer's recommendations as approved by the ENGINEER with all labels and seals intact and legible.
 - 3. Provide off-site storage and protection when site does not permit on-site storage or protection.
 - 4. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.
 - 5. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
 - 6. Replacement: In the event of damage to a product during transportation, handling or storage, the CONTRACTOR shall immediately make all repairs and replacements necessary to the approval of the ENGINEER and at no additional cost to the OWNER.

3.3 INSPECTION

- A. Verification of Conditions: The CONTRACTOR shall examine the areas and conditions under which the work of this Section will be installed and correct conditions detrimental to proper and timely completion of the Work. The CONTRACTOR shall not proceed until unsatisfactory conditions have been corrected.

3.4 INSTALLATION

- A. General: Install equipment in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1. Make all necessary adjustments to equipment to provide complete and satisfactory operation upon completion of the installation.
- B. Mount flushing equipment using a side-wall mounting support system in accordance with the manufacturer's recommendations. Provide raised reinforced equipment supports if needed for the proper equipment operation within the space provided on the structure. Place approximately $\frac{3}{4}$ inch non-shrink cement grout beneath the bearing plates to assure uniform support.
- C. Lubrication: Properly lubricate all pieces of equipment, furnished with lubrication fittings, prior to start-up and at recommended intervals before turning equipment over to the OWNER. Attach a linen tag or heavy-duty shipping tag to each piece of equipment showing the date of lubrication and the name and number of lubricants used. Furnish list of each item lubricated and the type of lubricant used.

3.5 TOLERANCE

- A. The CONTRACTOR shall be responsible for any changes, addition or deletions to the dimensions and their tolerances from the drawings which may adversely affect the installation or operation of the sediment flushing tipping bucket system. These dimensions and their tolerances shall be clearly indicated on the manufacturer's shop drawings to be submitted to the ENGINEER for his review and approval.

3.6 FIELD QUALITY CONTROL/TESTING AND TRAINING

- A. Upon completion of the installation, the CONTRACTOR shall furnish all personnel and equipment necessary to test and retest the complete system, making all adjustments required, as specified herein and as specified by the manufacturer. This shall include the inspection of the equipment by the manufacturer with a written field report and certification stating that the sediment flushing tipping bucket system has been properly installed and is operating satisfactorily.
- B. Tests: After installation of the flushing tipping buckets and all appurtenances, subject each unit to a field running test as specified in Division 1, under actual operating conditions.
- C. The equipment manufacturer shall provide the services of a qualified field engineer or technician to inspect and verify the installation of the equipment, as well as to instruct the

contractor's personnel to make any necessary mechanical adjustments, commissioning and start-up for a period of one (1) day for eight (8) hours on site.

- D. The equipment manufacturer shall provide the services of a qualified service engineer to instruct the OWNER's staff in the proper maintenance of the equipment for a period of four (4) hours on one (1) day

END OF SECTION

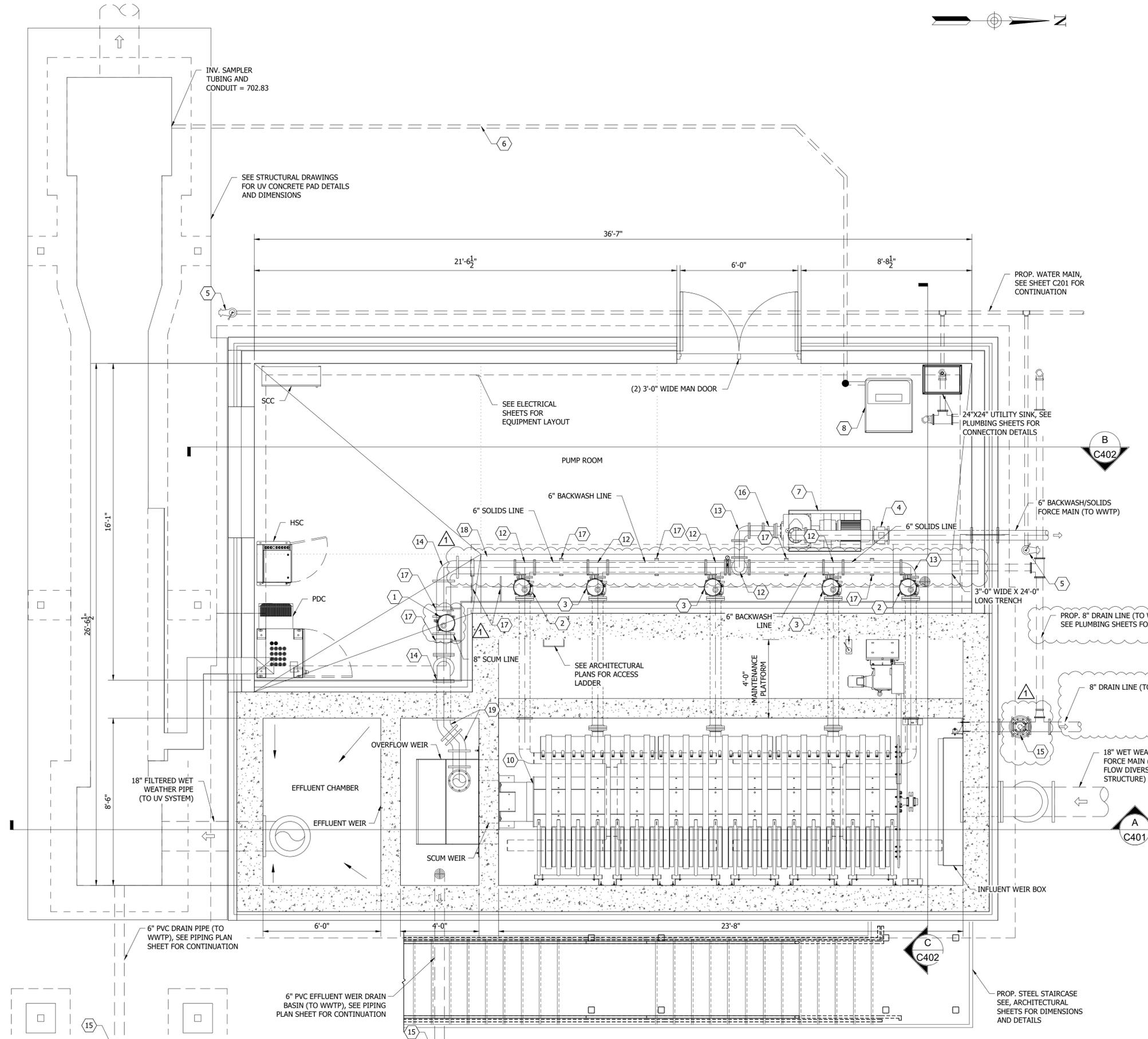
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**ATTACHMENT NO. 2:
REVISED PLAN SHEETS**

BID S
SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION
 SPEEDWAY, IN 46224

KEY NOTES	
1	8" SCUM VALVE (PROVIDED BY FILTER MANUFACTURER)
2	6" SOLIDS VALVE (PROVIDED BY FILTER MANUFACTURER)
3	6" BACKWASH VALVE (PROVIDED BY FILTER MANUFACTURER)
4	6" BACKWASH FLOW METER (PROVIDED BY FILTER MANUFACTURER)
5	PROPOSED YARD HYDRANT
6	2" PVC CONDUIT FOR SAMPLER TUBING
7	BACKWASH/SOLIDS WASTE PUMP WITH PRESSURE GAUGE (PROVIDED BY FILTER MANUFACTURER)
8	COMPOSITE SAMPLER
9	8"X6" REDUCER
10	18 CLOTH MEDIA DISK FILTER (AQUASTORM FILTER MODEL ASDFC-54X18E)
11	6"X6" TEE
12	6"X6" TEE RJ DIMJ
13	6" 90° BEND
14	8" 90° BEND
15	6" PLUG VALVE
16	6"X4" REDUCER
17	PROPOSED PIPE SUPPORT
18	PROPOSED 8"X6" REDUCING 90° BEND
19	PROPOSED 8" 45° BEND

PLAN NOTES	
1.	ALL BELOW GRADE PIPING (OUTSIDE THE BUILDING FOOTPRINT) TO BE INSTALLED AT A MINIMUM OF 54" OF COVER.
2.	ALL BELOW GRADE PIPING (INSIDE THE BUILDING FOOTPRINT) TO BE INSTALLED AT A MINIMUM OF 18" OF COVER.



FOUNDATION AND FIRST FLOOR PROCESS PIPING
SCALE: 3/8" = 1'-0"

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1
 Designed By: WMW
 Drawn By: RLH & JE
 Checked By: ALC
 Date: 02/26/2026



Ricardo Juan Paredes
 3/8" 0 3/8" 3/4"
 GRAPHIC SCALE

WET WEATHER
TREATMENT BUILDING -
PLAN VIEW

C400

PRINT DATE: 2/26/26 PLOT SCALE: 1:186.91
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BID SET

**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**

SPEEDWAY, IN 46224

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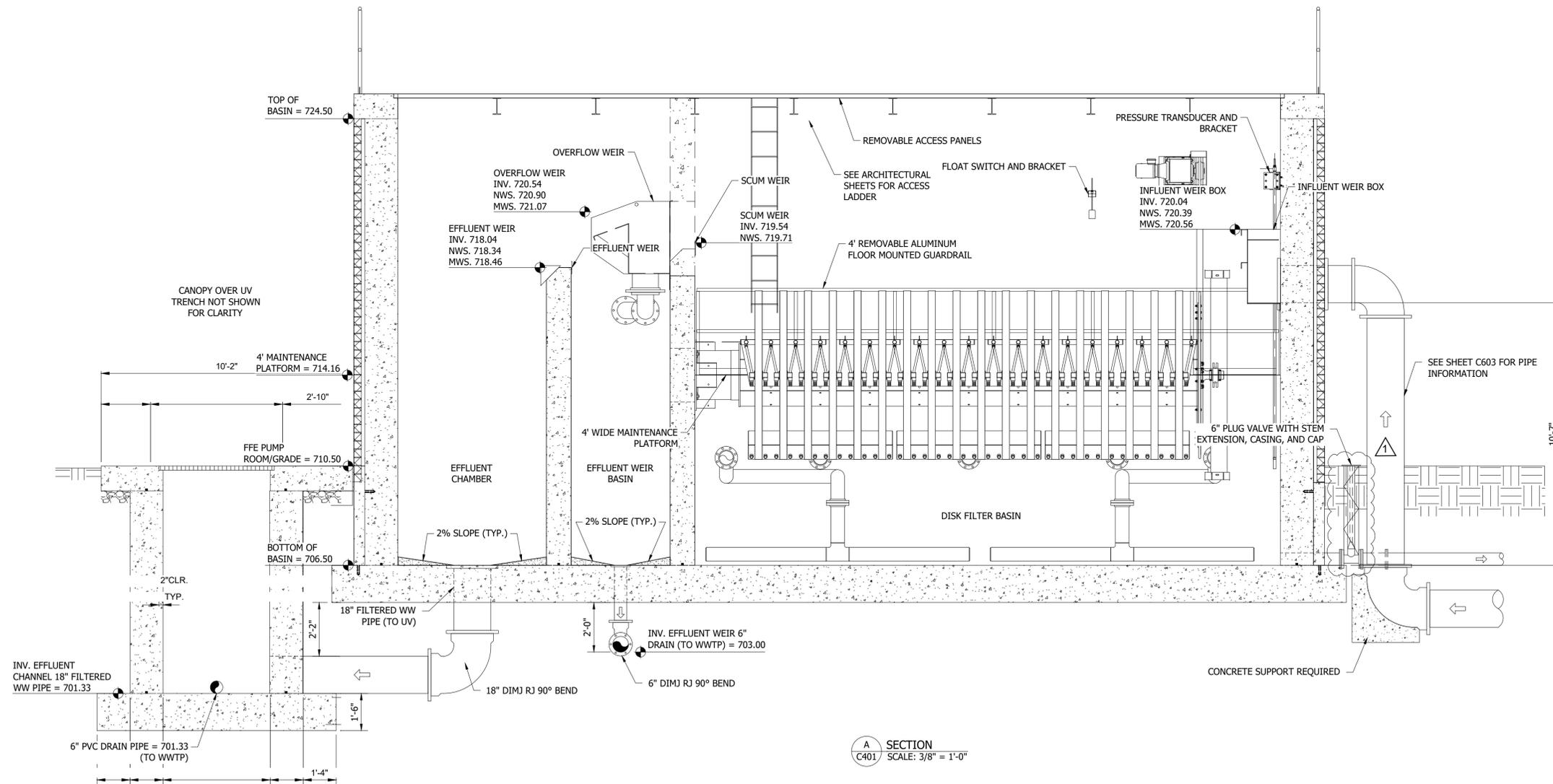


**WET WEATHER
TREATMENT BUILDING -
SECTION VIEWS**

C401

PLAN NOTES

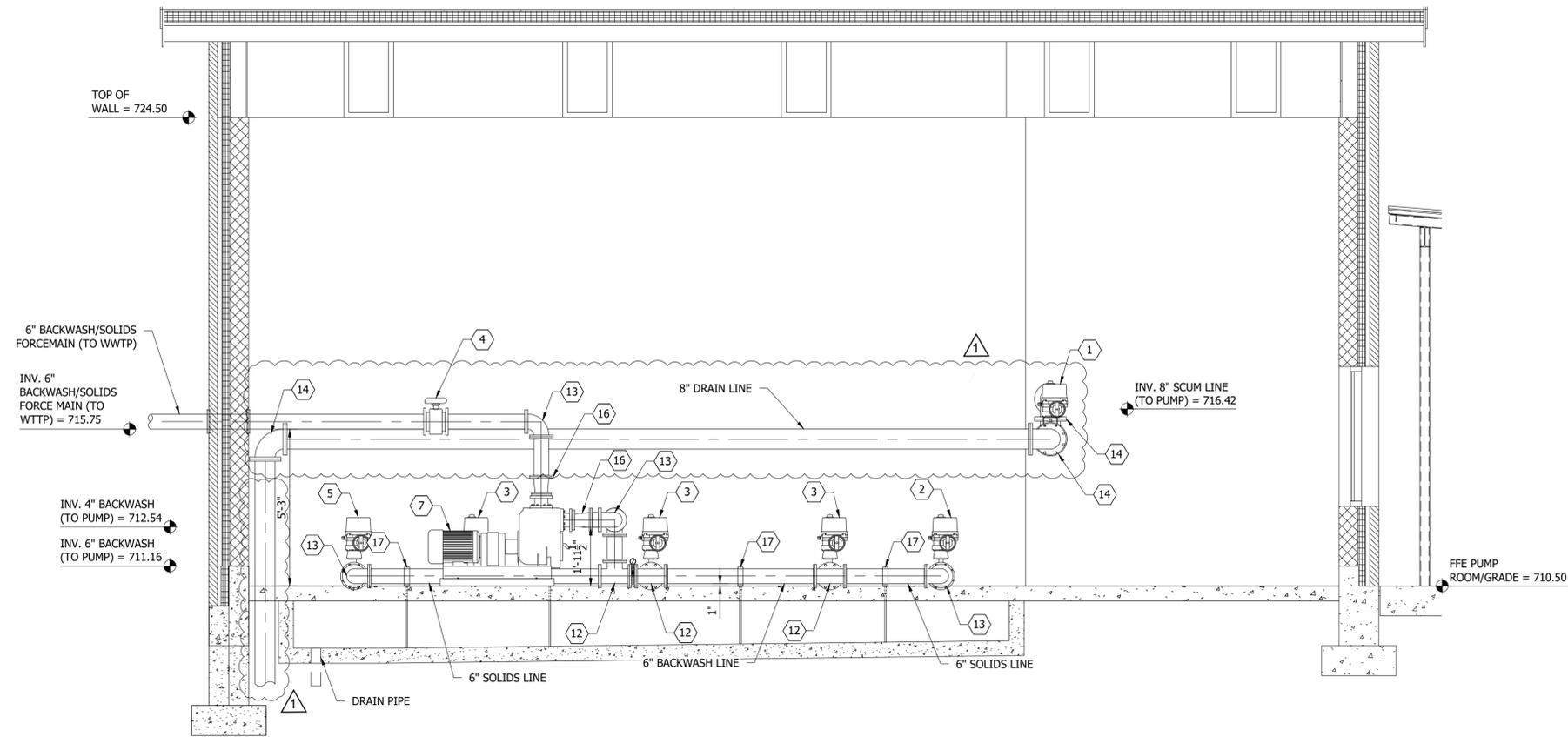
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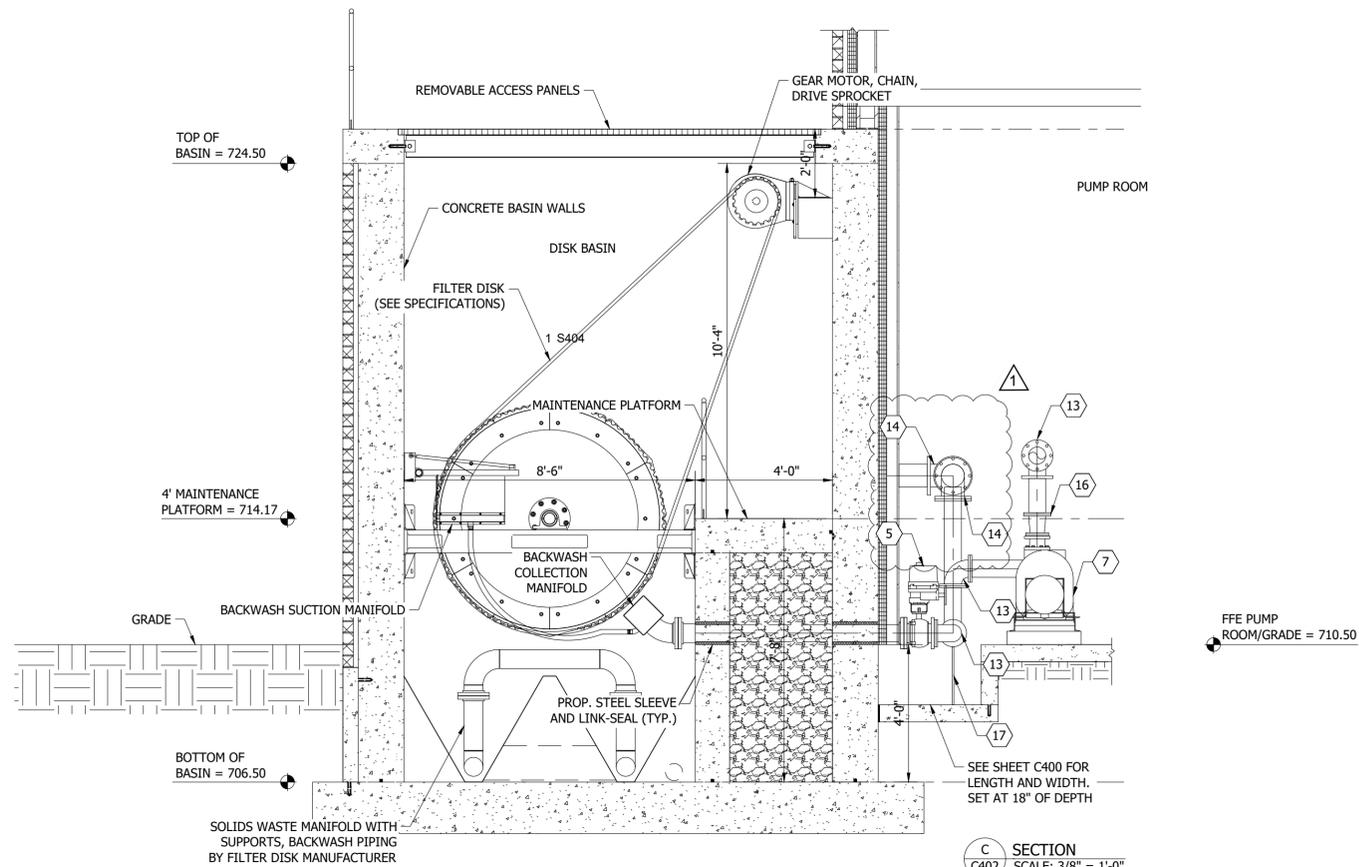
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**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**
SPEEDWAY, IN 46224

BID SET



B SECTION
SCALE: 3/8" = 1'-0"



C SECTION
SCALE: 3/8" = 1'-0"

KEY NOTES

- ① 8" SCUM VALVE (PROVIDED BY FILTER MANUFACTURER)
- ② 6" SOLIDS VALVE (PROVIDED BY FILTER MANUFACTURER)
- ③ 6" BACKWASH VALVE (PROVIDED BY FILTER MANUFACTURER)
- ④ 6" BACKWASH FLOW METER (PROVIDED BY FILTER MANUFACTURER)
- ⑤ PROPOSED YARD HYDRANT
- ⑥ 2" PVC CONDUIT FOR SAMPLER TUBING
- ⑦ BACKWASH/SOLIDS WASTE PUMP WITH PRESSURE GAUGE (PROVIDED BY FILTER MANUFACTURER)
- ⑧ COMPOSITE SAMPLER
- ⑨ 8"x6" REDUCER
- ⑩ 18 CLOTH MEDIA DISK FILTER (AQUASTORM FILTER MODEL ASDFC-54X18E)
- ⑪ 6"x6" TEE
- ⑫ 6"x6" TEE RJ DIMJ
- ⑬ 6" 90° BEND
- ⑭ 8" 90° BEND
- ⑮ 6" PLUG VALVE
- ⑯ 6"x4" REDUCER
- ⑰ PROPOSED PIPE SUPPORT
- ⑱ PROPOSED 8"x6" REDUCING 90° BEND
- ⑳ PROPOSED 8" 45° BEND

PLAN NOTES

1. ALL BELOW GRADE PIPING (OUTSIDE THE BUILDING FOOTPRINT) TO BE INSTALLED AT A MINIMUM OF 54" OF COVER.
2. ALL BELOW GRADE PIPING (INSIDE THE BUILDING FOOTPRINT) TO BE INSTALLED AT A MINIMUM OF 18" OF COVER.

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1

Designed By: WMW

Drawn By: RLH & JE

Checked By: ALC

Date: 02/26/2026



Ricardo Juan Paredes



**WET WEATHER
TREATMENT BUILDING -
SECTION VIEW**

C402

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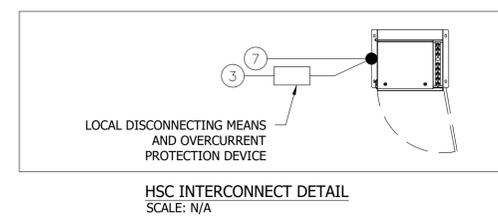
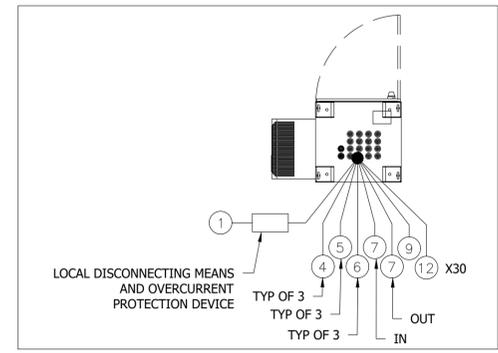
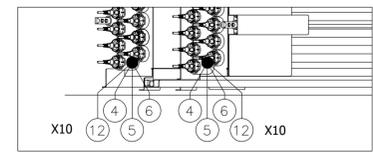
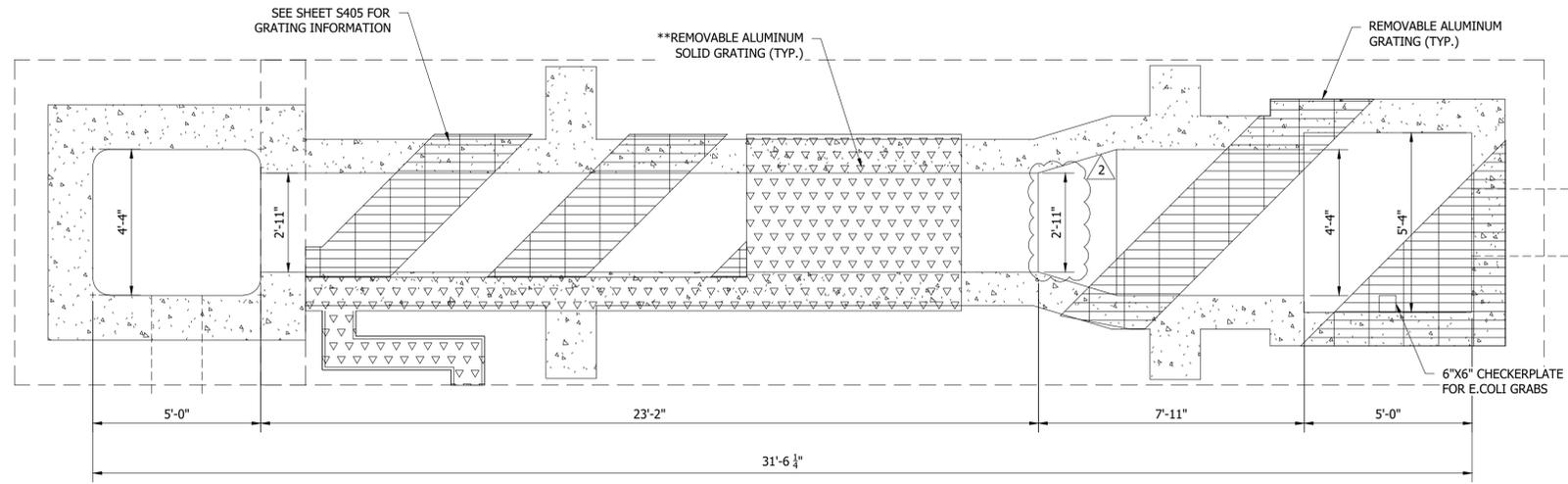
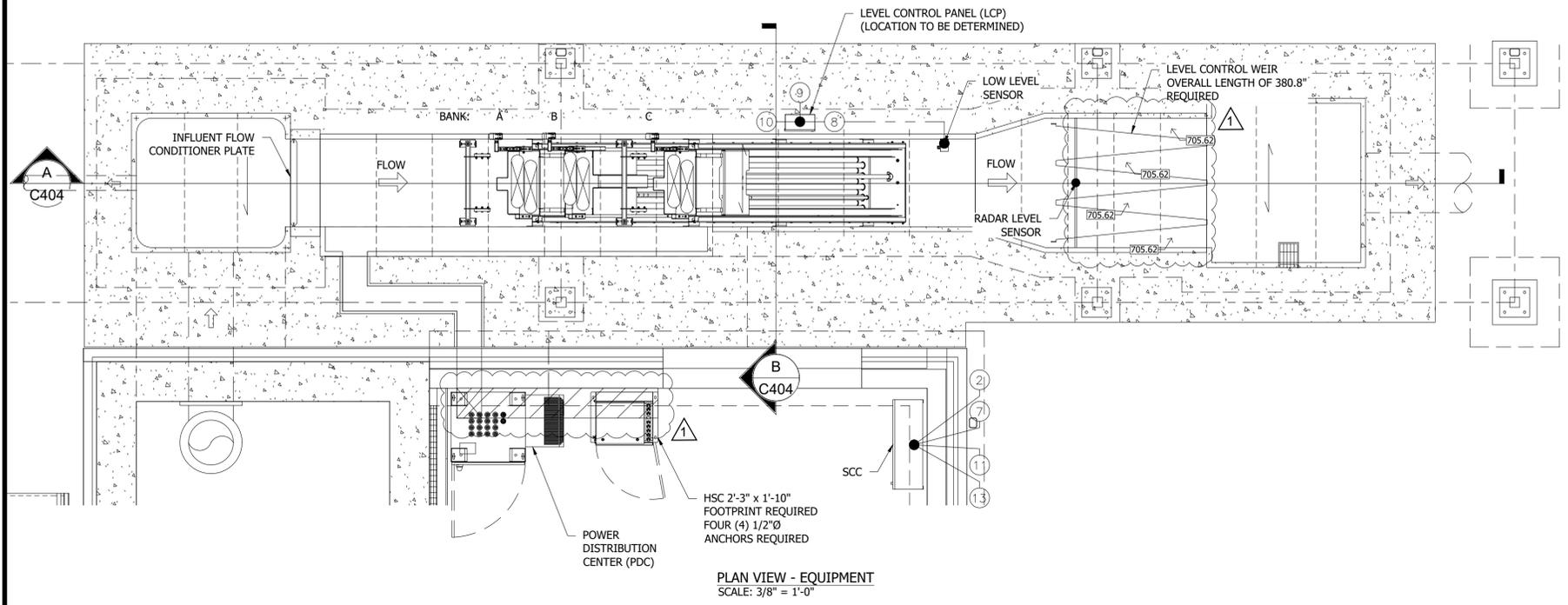
**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**
 SPEEDWAY, IN 46224

BID SET

EQUIPMENT INTERCONNECTIONS

No.	DESCRIPTION	FROM	TO
1	POWER DISTRIBUTION CENTER (PDC)* POWER SUPPLY 480Y/277V, 3 PHASE, 4 WIRE + GROUND 41 AMPS MAXIMUM CURRENT/PHASE 33.8 kVA/PDC POWER DRAW	DISTRIBUTION PANEL (DP) (BY OTHERS) (NOT SHOWN)	PDC (TOP OF PANEL)
2	SYSTEM CONTROL CENTER (SCC)* POWER SUPPLY 120V, 1 PHASE, 2 WIRE + GROUND, 60 Hz 15 AMPS, 1.8 kVA	DP (BY OTHERS) (NOT SHOWN)	SCC
3	HYDRAULIC SYSTEM CENTER (HSC)* POWER SUPPLY 480V, 3 PHASE, 3 WIRE + GROUND, 60 Hz 3 AMPS, 2.5 kVA	DP (BY OTHERS) (NOT SHOWN)	HSC
4	BONDING CONDUCTOR 8 AWG TYPE TWH STRANDED	PDC (UNDERSIDE OF PANEL)	UV BANKS
5	UV INTENSITY 4-20MA ANALOG INPUT (SUPPLIED)	UV BANKS	PDC (UNDERSIDE OF PANEL)
6	BANK IN PLACE PROXIMITY SENSOR 3 CONDUCTOR CABLES (SUPPLIED)	PROXIMITY SENSORS	PDC (UNDERSIDE OF PANEL)
7	MODBUS BELDEN 3106A OR EQUIVALENT (ONE LINE PER CHANNEL)	SCC	HSC & PDC (UNDERSIDE OF PANEL) (DAISY CHAINED)
8	DISCRETE LOW LEVEL SIGNAL 24 VDC - 2 CONDUCTORS	LOW LEVEL SENSOR	LEVEL CONTROL PANEL (LCP)
9	DISCRETE WATER LEVEL SIGNAL 2 CONDUCTORS	LEVEL SENSOR CONTROL BOX (LCP)	PDC (UNDERSIDE OF PANEL)
10	LEVEL CONTROL PANEL (LCP)* POWER SUPPLY 120V, 1 PHASE, 2 WIRE + GROUND, 0.12 kVA	DP (BY OTHERS) (NOT SHOWN)	LEVEL CONTROL PANEL (LCP)
11	FLOW METER 4-20 mA, DC ANALOG INPUT (BY OTHERS)	FLOW METER PANEL (NOT SHOWN) (BY OTHERS)	SCC
12	LAMP CABLES (SUPPLIED BY TROJAN) (ROUTED BY OTHERS)	UV BANK	PDC (UNDERSIDE OF PANEL)
13	ETHERNET/IP COMMUNICATION	SCC	PLANT SCADA (BY OTHERS) (NOT SHOWN)

* GROUND CONNECTION REQUIRED TO PLANT GRID (BY OTHERS).



#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1
 Designed By: WMW
 Drawn By: RLH & JE
 Checked By: ALC
 Date: 02/26/2026



Richard Alan Paredes



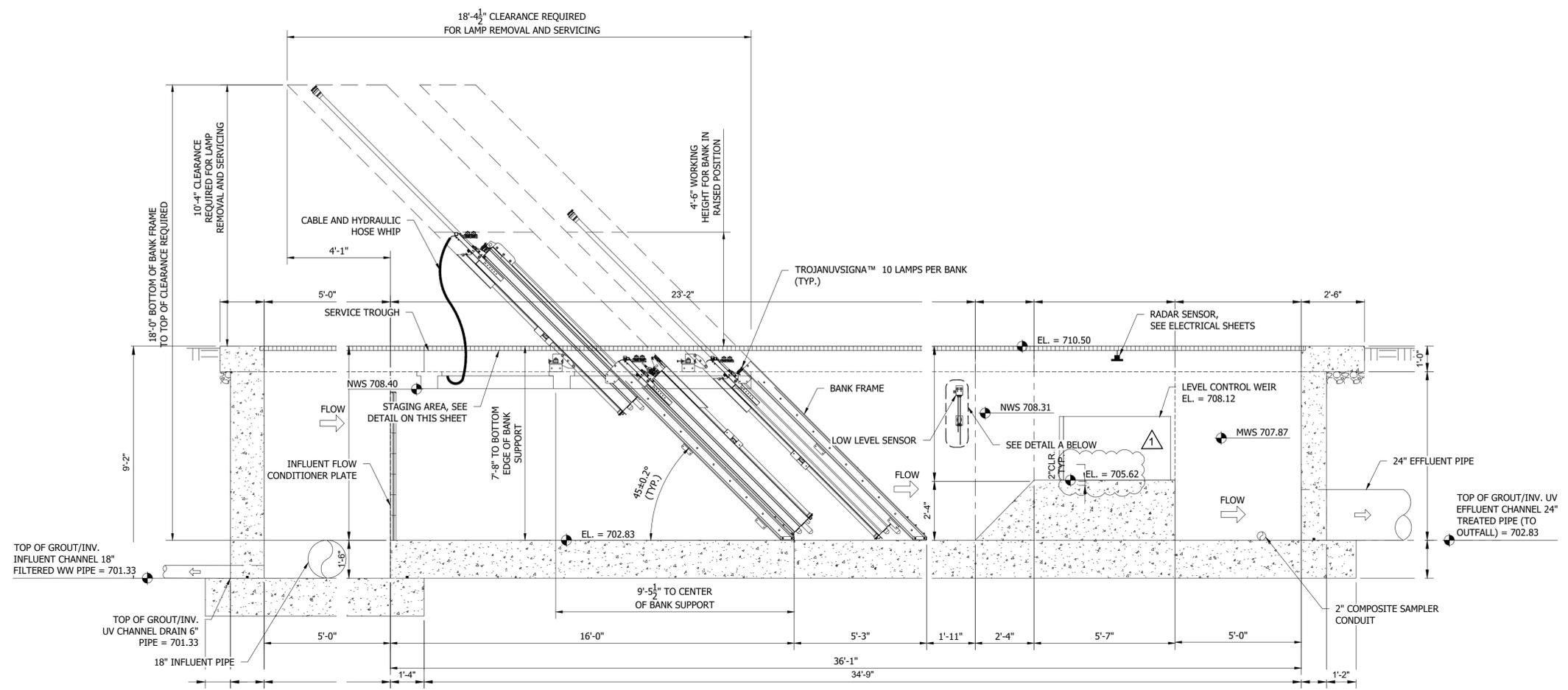
PROPOSED WET WEATHER UV SYSTEM PLAN

C403

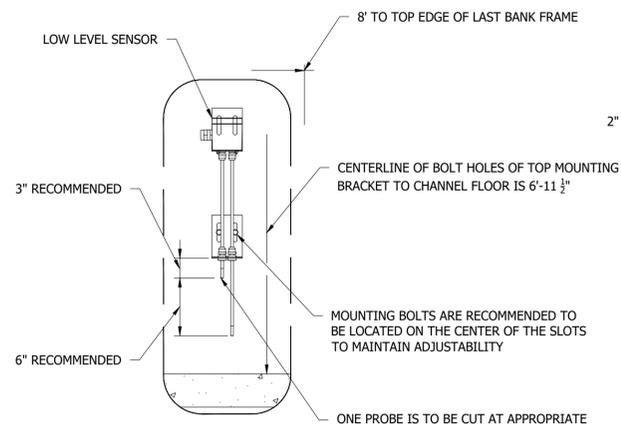
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**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**
SPEEDWAY, IN 46224

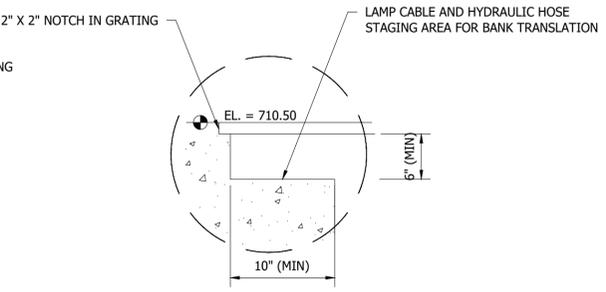
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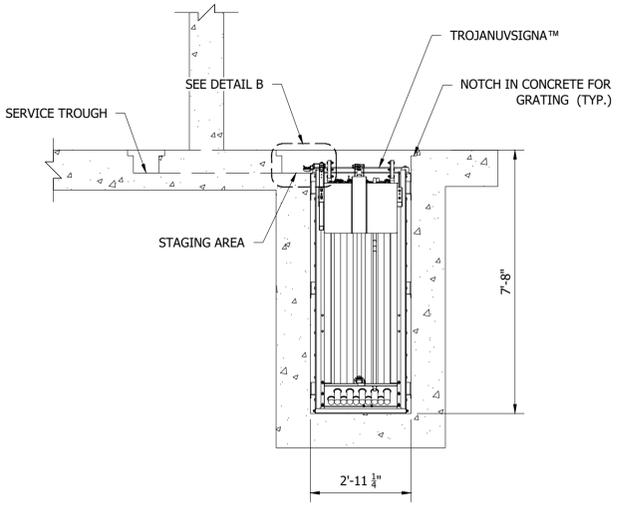
A SECTION
SCALE: 3/8" = 1'-0"



A DETAIL
SCALE: N/A



B DETAIL
SCALE: N/A



C SECTION
SCALE: 3/8" = 1'-0"

NOTES

- DO NOT SLOPE CHANNEL FLOOR.
- CHANNEL WIDTH AND DEPTH MUST BE KEPT WITHIN A TOLERANCE OF + OR - 1/4" AGAINST A COMMON DATUM ELEVATION.
- ANCHOR BOLTS ARE NOT SUPPLIED BY TROJAN TECHNOLOGIES.
- SYSTEM CONDUIT, WIRING, DISTRIBUTION PANELS AND INTERCONNECTIONS BY CONTRACTOR.
- ELECTRICAL REQUIREMENTS SHOWN ARE TO SUPPLY TROJAN UV EQUIPMENT ONLY.
- REMOVABLE GRATING SECTIONS SHALL BE EASILY REMOVED BY ONE PERSON. MAXIMUM WEIGHT OF THE SECTIONS SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE APPLICABLE JURISDICTION.
- CONTRACTOR TO REVIEW ALL TROJAN TECHNOLOGIES INSTALLATION INSTRUCTIONS PRIOR TO EQUIPMENT INSTALLATION.
- EFFLUENT LEVELS SHOWN REFLECT HYDRAULICS ASSOCIATED WITH TROJAN EQUIPMENT ONLY. EFFLUENT LEVELS MAY BE ALTERED DUE TO CHANNEL DEBRIS OR GEOMETRY.
- ANY UPSTREAM AND DOWNSTREAM WL ELEVATIONS BEYOND THOSE SHOWN WITHIN THIS LAYOUT DRAWING ARE OUTSIDE THE SCOPE OF TROJAN TECHNOLOGIES AND ARE THE RESPONSIBILITY OF THE CONSULTING ENGINEER.
- HYDRAULIC HOSE ELEVATIONS NOT TO EXCEED 12" ABOVE HSC MOUNTING ELEVATION.
- INCLUDED CABLE LENGTHS ALLOWS FOR 11.5' ROUTING (RISE + RUN) BETWEEN CABLE/HOSE MANAGEMENT BRACKET AND UNDERSIDE OF PDC. (10.0' ROUTING ASSUMED BASED ON THIS LAYOUT).
- INCLUDED HOSE LENGTH ALLOWS FOR 16.0' ROUTING (RISE + RUN) BETWEEN CABLE/HOSE MANAGEMENT BRACKET AND HOSE CONNECTION ON THE HSC. (13.5' ROUTING ASSUMED BASED ON THIS LAYOUT).
- SITE TO PROVIDE APPROVED (ENGINEERED) ANCHOR POINTS FOR PERSONAL TO USE AS PART OF THEIR FALL RESTRAINT SYSTEM AROUND OPEN CHANNELS. THE ANCHOR POINTS MUST BE POSITIONED SO THAT THE PREFERRED RETRACTABLE LIFELINE OF 8 FEET IS OF SUFFICIENT LENGTH TO ACCESS THE WORK AT THE CHANNEL.
- SOLID GRATING REQUIRED TO BLOCK ULTRAVIOLET (UV) LIGHT.

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1

Designed By: WMW

Drawn By: RLH & JE

Checked By: ALC

Date: 02/26/2026



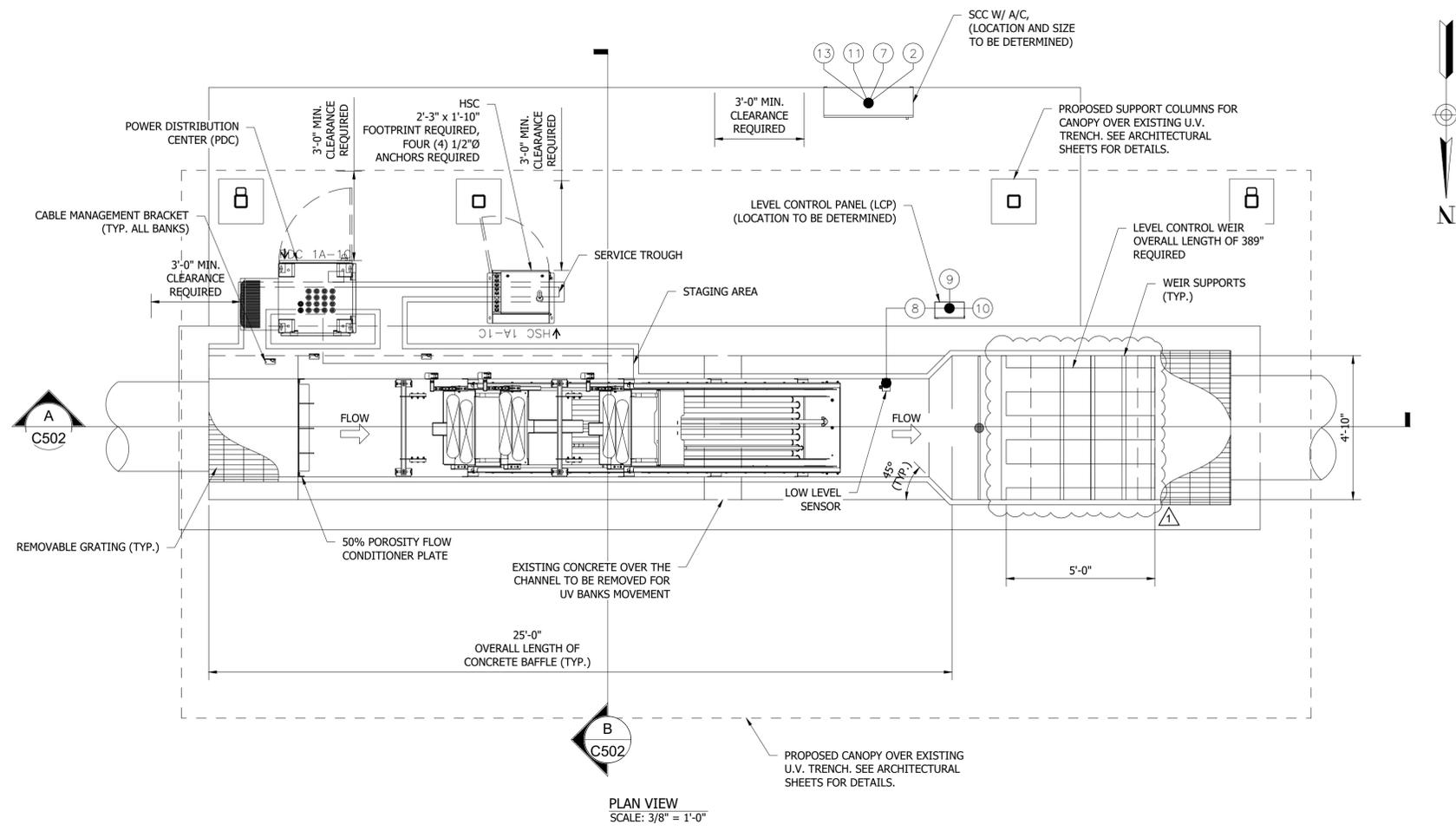
Richard J. Paredes



**PROPOSED WET
WEATHER UV SYSTEM
SECTION & DETAILS**

C404

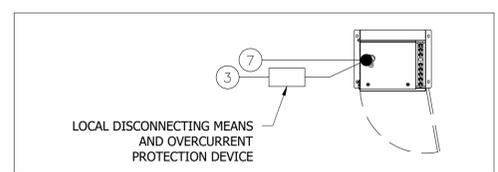
BID SET
SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION
 SPEEDWAY, IN 46224



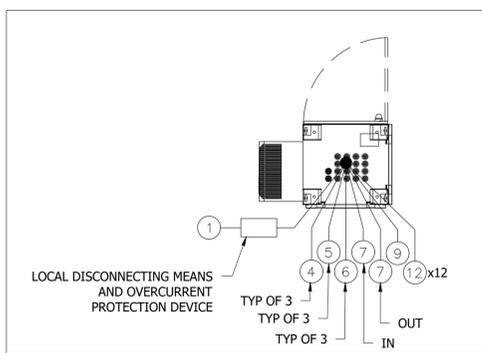
EQUIPMENT INTERCONNECTIONS

No.	DESCRIPTION	FROM	TO
1	POWER DISTRIBUTION CENTER (PDC)* POWER SUPPLY 480Y/277V, 3 PHASE, 4 WIRE + GROUND, 60 Hz 49 AMPS MAXIMUM CURRENT/PHASE 40.2 kVA/PDC POWER DRAW	DISTRIBUTION PANEL (DP) (BY OTHERS) (NOT SHOWN)	PDC(s) (TOP OF PANEL)
2	SYSTEM CONTROL CENTER (SCC)* POWER SUPPLY 120V, 1 PHASE, 2 WIRE + GROUND, 60 Hz 15 AMPS, 1.8 kVA	DP (BY OTHERS) (NOT SHOWN)	SCC
3	HYDRAULIC SYSTEM CENTER (HSC)* POWER SUPPLY 480V, 3 PHASE, 3 WIRE + GROUND, 60 Hz 3 AMPS, 2.5 kVA	DP (BY OTHERS) (NOT SHOWN)	HSC
4	BONDING CONDUCTOR 8 AWG TYPE TWH STRANDED	PDC(s) (UNDERSIDE OF PANEL)	UV BANK(s)
5	UV INTENSITY 4-20MA ANALOG INPUT (SUPPLIED)	UV BANK(s)	PDC(s) (UNDERSIDE OF PANEL)
6	BANK IN PLACE PROXIMITY SENSOR 3 CONDUCTOR CABLES (SUPPLIED)	PROXIMITY SENSOR(s)	PDC(s) (UNDERSIDE OF PANEL)
7	MODBUS BELDEN 3106A OR EQUIVALENT (ONE LINE PER CHANNEL)	SCC	HSC(s) & PDC(s) (UNDERSIDE OF PANEL) (DAISY CHAINED)
8	DISCRETE LOW LEVEL SIGNAL 24 VDC - 2 CONDUCTORS	LOW LEVEL SENSOR	LEVEL CONTROL PANEL (LCP)
9	DISCRETE WATER LEVEL SIGNAL 2 CONDUCTORS	LEVEL CONTROL PANEL (LCP)	PDC(s) (UNDERSIDE OF PANEL)
10	LEVEL CONTROL PANEL (LCP)* POWER SUPPLY 120V, 1 PHASE, 2 WIRE + GROUND, 60 Hz 0.12 kVA	DP (BY OTHERS) (NOT SHOWN)	LEVEL CONTROL PANEL (LCP)
11	FLOW METER 4-20 mA, DC ANALOG INPUT	FLOW METER PANEL (NOT SHOWN) (BY OTHERS)	SCC
12	LAMP CABLES (SUPPLIED)	UV BANKS	PDC (UNDERSIDE OF PANEL)
13	ETHERNET/IP COMMUNICATION	SCC	PLANT SCADA (BY OTHERS) (NOT SHOWN)

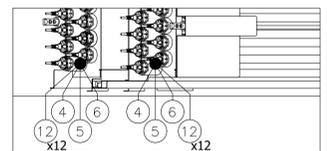
* GROUND CONNECTION REQUIRED TO PLANT GRID (BY OTHERS).



HSC INTERCONNECT DETAIL
SCALE: N/A



PDC INTERCONNECT DETAIL
SCALE: N/A



UV BANK INTERCONNECT DETAIL
SCALE: N/A

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1
 Designed By: WMW
 Drawn By: RLH & JE
 Checked By: ALC
 Date: 02/26/2026



Ricko Juan Paredes

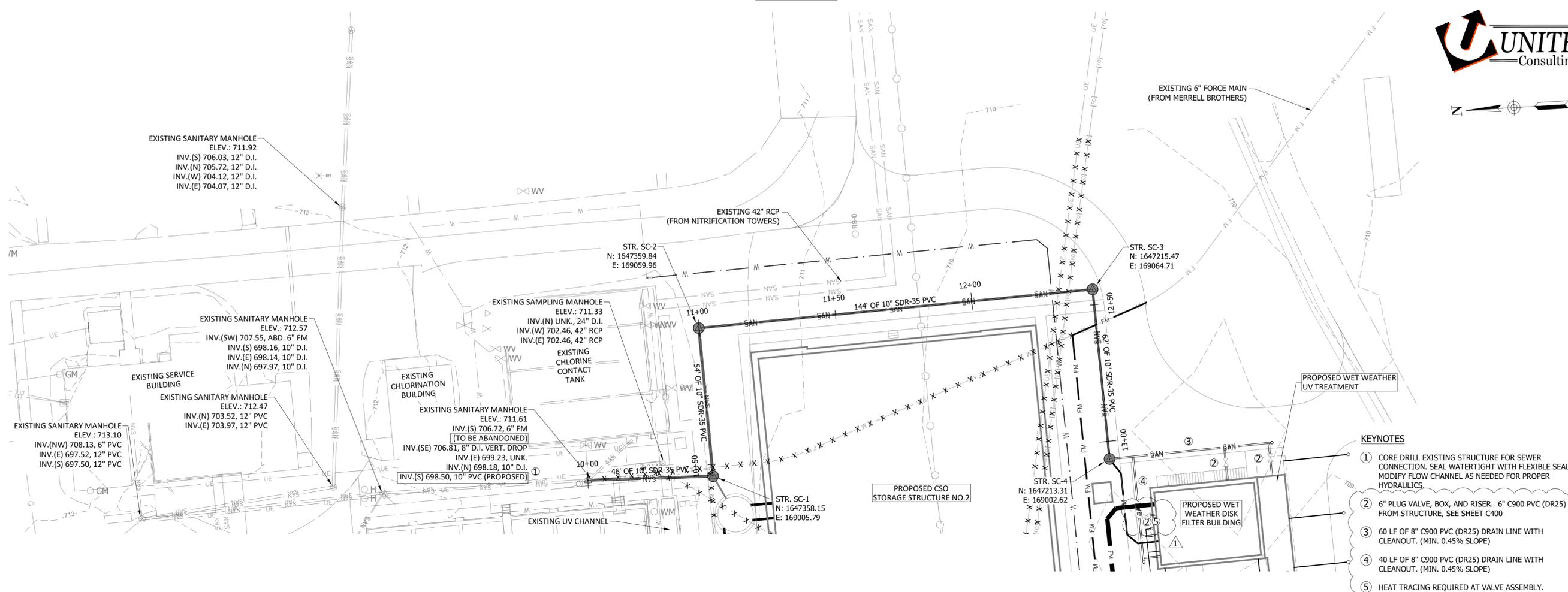


EXISTING UV SYSTEM IMPROVEMENTS PLAN

C501

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LINE SEGMENT 'S-C'



- KEYNOTES**
- ① CORE DRILL EXISTING STRUCTURE FOR SEWER CONNECTION. SEAL WATERTIGHT WITH FLEXIBLE SEAL. MODIFY FLOW CHANNEL AS NEEDED FOR PROPER HYDRAULICS.
 - ② 6" PLUG VALVE, BOX, AND RISER. 6" C900 PVC (DR25) FROM STRUCTURE, SEE SHEET C400
 - ③ 60 LF OF 8" C900 PVC (DR25) DRAIN LINE WITH CLEANOUT. (MIN. 0.45% SLOPE)
 - ④ 40 LF OF 8" C900 PVC (DR25) DRAIN LINE WITH CLEANOUT. (MIN. 0.45% SLOPE)
 - ⑤ HEAT TRACING REQUIRED AT VALVE ASSEMBLY.

BID SET

**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**
SPEEDWAY, IN 46224

#	Revision	Date
1	ADDENDUM #2	02/26/2026

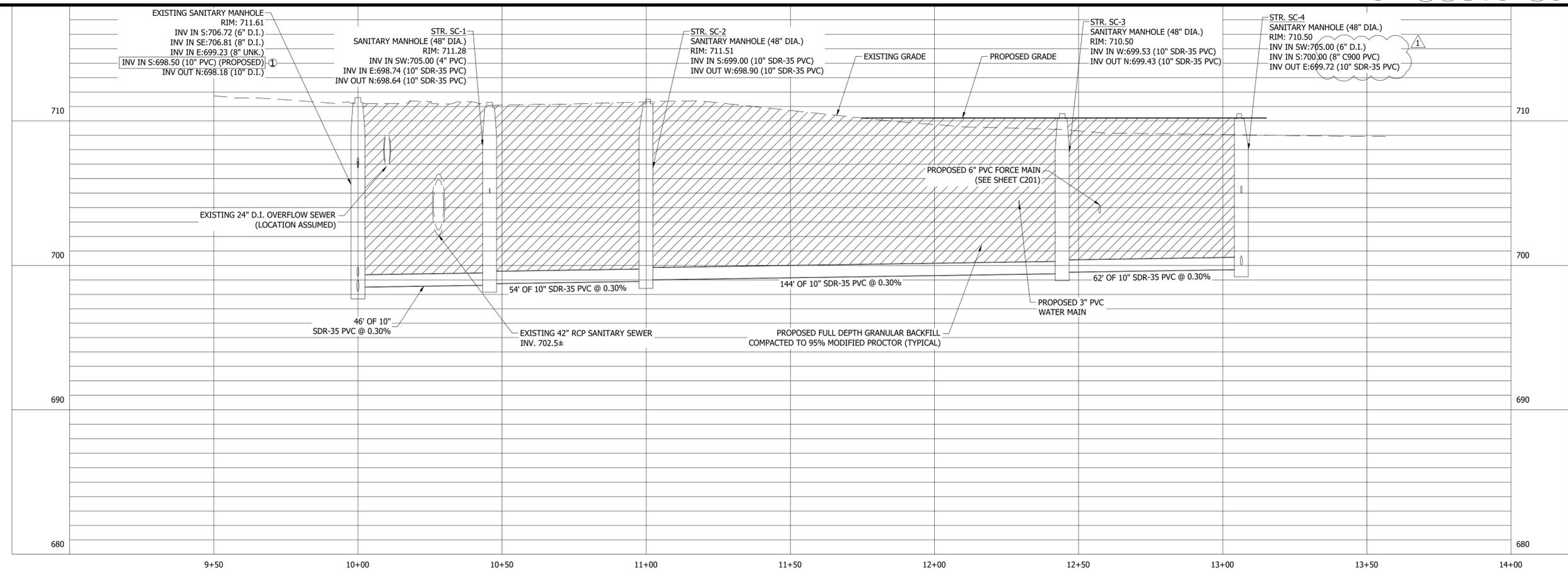
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 Designed By: DCB
 Drawn By: AR
 Checked By: PDG
 Date: 01/15/2026



LINE SEGMENT 'S-C'

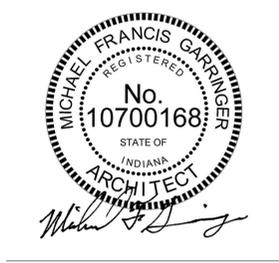
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#	Revision	Date
1	ADDENDUM #2	2/26/2026

Project #: 23-400-353-1
 Designed By: Designer
 Drawn By: Author
 Checked By: Checker
 Date: 02.26.2026

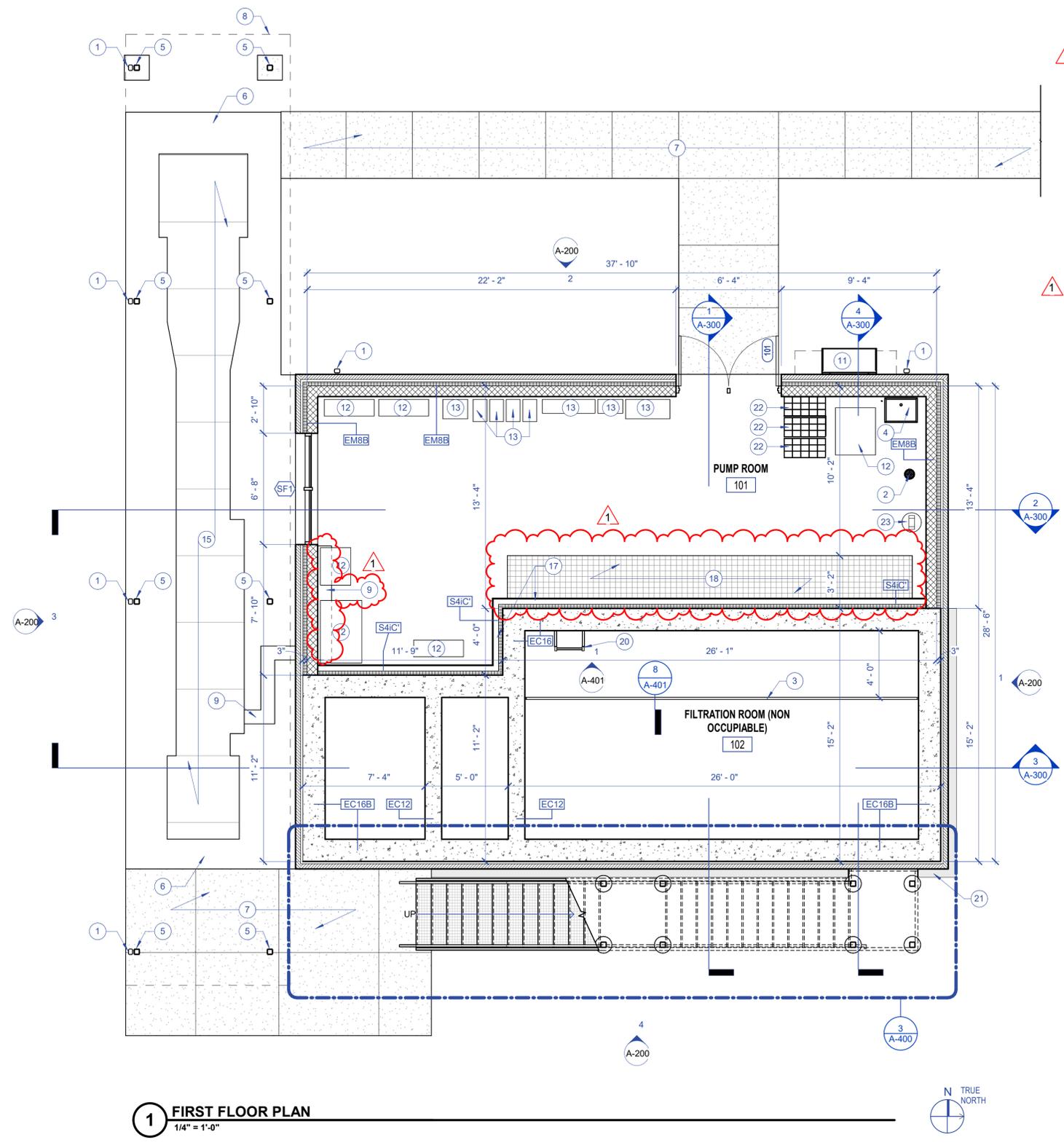


GENERAL PLAN NOTES

1. PLAN NOTES INDICATE ONE GRAPHIC REPRESENTATION TYPICAL. THE CONTRACTOR SHALL USE THE GRAPHIC REPRESENTATIONS FOR THE COUNT, NOT THE KEYED PLAN NOTES. THE ABSENCE OF A KEYED PLAN NOTE ON THE PLAN DOES NOT ABSOLVE THE CONTRACTOR FROM PROVIDING THE FEATURE GRAPHICALLY REPRESENTED ON THE DRAWING.
2. ALL DIMENSIONS SHOWN ARE TO FACE OF STUD OR MASONRY, UNLESS NOTED OTHERWISE. DIMENSIONS DESIGNATED AS "CLR OR "CLEAR" INDICATE A CLEAR DIMENSION FROM FACE OF FINISH TO FACE OF FINISH. DIMENSIONS OF EXTERIOR WALLS ARE TO OUTSIDE EDGE OF FOUNDATION.
3. DIMENSIONS FOR ALL OPENINGS FOR MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL SHALL BE FIRE STOPPED AT EACH FLOOR AND RATED WALL PENETRATION.
4. PROVIDE BRACING AND BLOCKING AS REQUIRED IN WALLS SUPPORTING CASEWORK, TACKBOARDS, MARKERBOARDS, AND RESTROOM ACCESSORIES.
5. ALL DOOR FRAMES ARE LOCATED 4" FROM ADJACENT WALL, UNLESS NOTED OTHERWISE.
6. ALL EXPOSED OUTSIDE CORNERS OF CMU SHALL BE BULLNOSED.
7. SEAL ALL JOINTS BETWEEN DISSIMILAR MATERIALS.
8. ALL GYPSUM WALLBOARD IS 5/8" TYPE "X", UNLESS NOTED OTHERWISE.
9. ALL EXTERIOR WALLS ARE TYPE "ES6B", UNLESS NOTED OTHERWISE.
10. ALL INTERIOR WALLS ARE TYPE "S6ID" (6" METAL STUD TO DECK, WITH SOUND ATTENUATION BATT INSULATION WITH TYPE "X" GYPSUM WALLBOARD ON BOTH SIDES). UNLESS NOTED OTHERWISE.
11. BASE ELEVATION IS 0'-0" = XXX.XX' (UNITED STATES GEOLOGICAL SURVEY DATA). COORDINATE WITH CIVIL DRAWINGS
12. HATCHING WITHIN WALLS SHOWN IN PLANS AND SECTIONS INDICATES NEW CONSTRUCTION.
13. ALL WALLS THAT HAVE THE DESIGNATION "-C", AND ARE IN A SPACE WITH NO CEILING WILL BE 10FT TALL.
14. DRAWINGS ESTABLISH THE DESIGN INTENT OF WORK TO BE PERFORMED. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE HIGHEST INDUSTRY STANDARDS. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL TRADES SHALL CAREFULLY COORDINATE WORK OF ALL OTHER TRADES. ANY DISCREPANCIES OR CONFLICTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT AND THE OWNER PRIOR TO FABRICATION OR INSTALLATION.
15. CONTRACTORS SHALL BE RESPONSIBLE FOR CHECKING THE CONTRACT DOCUMENTS FOR COORDINATION BETWEEN ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, SECURITY AND LANDSCAPING. CONTRACTORS SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS AND FOR VERIFYING THEM WITH THE CONTRACT DOCUMENTS. ANY DISCREPANCY IN THE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECT PRIOR TO ANY FABRICATION OR CONSTRUCTION.
16. ALL CORRIDOR SURFACES SHALL BE FLUSH. AT JUNCTIONS OF MASONRY AND STUD WALLS, MASONRY WALL LOCATIONS SHALL HOLD TRUE AND MTL STUDS SHALL BE MOVED AS REQUIRED TO PROVIDE FLUSH CONNECTION BETWEEN GYP. BD. AND MASONRY. VERIFY NO. OF LAYERS OF GYP. BD. W/ WALL TYPES. RELOCATION OF WALL SHALL BE APPROVED BY ARCHITECT PRIOR TO CONST. AT TRANSITIONS FROM 1 LAYER GYP. BD. TO 2 LAYERS OF GYP. ON MTL. STUDS A MIN. CORRIDOR WIDTH OF 5'-0" FROM FACE OF STUDS SHALL BE MAINTAINED.
17. ALL BUILDING MATERIALS (INCLUDING BUT NOT LIMITED TO METAL FLASHING, VAPOR BARRIERS, AIR/WATER RESISTANT BARRIERS, THRU-WALL FLASHING, ETC.) SHALL BE LAPPED TO SHED WATER TO THE OUTSIDE OF THE BUILDING ENVELOPE.
18. SEE CODE COMPLIANCE PLAN G-100 FOR FIRE RATED WALLS.
19. SEE WALL TYPE LEGEND A-002 FOR WALLS AND CONSTRUCTION REQUIREMENTS.
20. WHEREVER POSSIBLE KEEP MINIMUM SIZE OF CUT MASONRY TO 4" OR GREATER.
21. ALL DIAGONAL WALLS SHALL BE AT 45° (U.N.O.)
22. SEE STRUCTURAL FOR CONTROL/EXPANSION JOINT LOCATIONS.
23. SLOPE CONCRETE SLABS TO FLOOR DRAINS AT 1/16" MIN. PER FT.
24. ALL CMU WALLS WITH EMBEDDED DETENTION EQUIP. TO HAVE WALLS GROUTED SOLID & REINF. W/ 1# 4 BAR @ 16" O.C. FOR MIN. 4'-0" AROUND EMBEDDED EQUIPMENT OR USE STEEL BLOCKS.
25. ALL EXPOSED PIPES, DUCTS CONDUITS IN SECURITY AREAS SHALL BE PROTECTED.
26. ALL DOORS AND BORROWED LITE FRAMES IN SECURITY MASONRY WALLS TO BE FULLY GROUTED. ALL SECURITY DOORS AND BORROWED LITE FRAMES IN MASONRY WALLS TO BE FULLY GROUTED. ALL SECURITY DOORS AND BORROWED LITE FRAMES IN SECURITY STUD WALLS TO HAVE JAMBS FULLY GROUTED UNLESS NOTED OTHERWISE.
27. WHEREVER VOLUME DAMPERS (V.D.) ARE LOCATED ABOVE SECURITY CEILINGS, PROVIDE 2'-0"x2'-0" ACCESS PANELS IN THE CEILING. REFER TO MECHANICAL DRAWINGS FOR NUMBER AND LOCATION. COORDINATE WITH ELECTRICAL DRAWINGS. PANELS SHALL BE SECURITY TYPE TO MATCH ADJACENT CEILING.
28. ALL CHASE WALLS SHALL BE FULL HEIGHT UNLESS NOTED OTHERWISE.
29. ALL INTERIOR AND EXTERIOR EXPOSED STEEL TO BE PAINTED. COLOR TO BE SELECTED BY ARCHITECT.
30. PROVIDE (2) TWO 4'x8' GRAPHIC SITE CONSTRUCTION SIGNS. ARCHITECT TO PROVIDE GRAPHIC CONTRACTOR TO INSTALL
31. ALL EXTERIOR WINDOWS ARE TYPE "XX", UNLESS NOTED OTHERWISE.
32. SUFFIXES WITHIN SPECIFICATION REFERENCES (i.e. 10 11 33.XX or 10 11 33.A1) IN THE DRAWINGS CAN BE IGNORED. THESE SUFFIXES ARE A SORTING MECHANISM USED IN PREPARING THESE DRAWINGS.
33. ALL ROUGH OPENINGS (R.O.) SHALL BE VERIFIED WITH SELECTED WINDOW AND DOOR MANUFACTURER. ANY CHANGES FROM THE BASIS OF DESIGN WILL BE COORDINATED WITH ALL TRADES AND ROUGH OPENINGS ADJUSTED AS REQUIRED. ANY DISCREPANCIES FOUND WILL BE BROUGHT TO THE ARCHITECT PRIOR TO CONSTRUCTION. ANY CHANGES AND REVISIONS WILL BE DONE AT CONTRACTOR'S EXPENSE.
34. ALL CONSTRUCTION AROUND PLUMBING FIXTURES IS REQUIRED TO BE COORDINATED WITH SELECTED MANUFACTURERS. ADJUST WALLS AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF THE SELECTED MANUFACTURERS PLUMBING FIXTURES. ANY CHANGES AND REVISIONS WILL BE DONE AT CONTRACTOR'S EXPENSE.
35. BUILDING ENVELOPE CONTINUITY WILL BE MONITORED BY A COMMISSIONING AGENT. TRANSITIONS BETWEEN BUILDING SYSTEMS (I.E. ROOF TO WALL CURTAINWALL TO EXTERIOR WALL, ETC.) SHALL INCLUDE CONTINUOUS AIRTIGHT AIR BARRIER SYSTEM. ALL PENETRATIONS IN THE BUILDING ENVELOPE (INCLUDING WINDOWS, DOORS, STOREFRONT, ETC.) SHALL BE SEALED WITH AIR TIGHT WEATHER SEALS. AT ANY LOCATION WHERE MASONRY TIES OR OTHER MATERIALS PENETRATE THE AIR BARRIER, EACH PENETRATION SHALL BE SEALED AIRTIGHT.

5.4.110 - FLOOR PLAN NOTES

Key	Note
1	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO UNDERGROUND CONNECTIONS. REFER TO CIVIL FOR ADDITIONAL INFORMATION
2	FLOOR DRAIN. REFER TO PLUMBING FOR ADDITIONAL INFORMATION
3	WALL MOUNTED REMOVABLE, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH KICKPLATE. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
4	FLOOR MOUNTED UTILITY SINK, REFER TO PLUMBING FOR ADDITIONAL INFORMATION
5	STRUCTURAL STEEL CANOPY COLUMN, REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
6	UV FILTRATION EQUIPMENT TRENCH & SLAB. REFER TO STRUCTURAL AND WASTEWATER FOR ADDITIONAL INFORMATION
7	CONCRETE SIDEWALK. REFER TO CIVIL FOR ADDITIONAL INFORMATION
8	DASHED LINE DENOTES EDGE OF CANOPY ROOF OVERHEAD. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
9	1/4" GALVANIZED CHECKER PLATE CONDUIT TRENCH COVER
10	FIBER REINFORCED PLATE GRATING WITH SOLID TOP SURFACE. PANELS TO SPAN BETWEEN STRUCTURAL BEAMS BELOW. REFER TO STRUCTURAL FOR BEAM SPACING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
11	WALL MOUNTED MECHANICAL UNIT, REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
12	UV FILTRATION EQUIPMENT. REFER TO WASTEWATER FOR EQUIPMENT SIZE & SPECIFICATION
13	ELECTRICAL EQUIPMENT. REFER TO E-SERIES FOR ADDITIONAL INFORMATION
14	WALL MOUNTED MECHANICAL EXHAUST FAN. REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
15	REMOVABLE FIBER REINFORCED SOLID PANEL FLOORING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
16	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH KICKPLATE. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
17	HOLD FRAMING AND INSULATION 3'-0" OFF FROM FIRST FLOOR LEVEL AT THESE CURING WALL LOCATIONS. WRAP TILE BACKER BOARD AROUND BASE OF FRAMING
18	EQUIPMENT & PLUMBING TRENCH WITH REMOVABLE FIBERGLASS GRATING. FIBERGLASS GRATING BOD: MCNICHOLS OR EQUAL. SEE STRUCTURAL FOR ADDITIONAL INFORMATION
19	CUT FIBER REINFORCED PANEL AROUND PERIMETER OF ACCESS STAIR
20	WALL MOUNTED ALUMINUM ACCESS LADDER, REFER TO ELEVATIONS AND DETAILS FOR ADDITIONAL INFORMATION
21	PROVIDE 6" WIDE STRIP OF GRAVEL ALONG EDGE OF BRICK BELOW CONCRETE OVERPOUR ABOVE
22	OWNER PROVIDED UV FILTRATION BULB STORAGE RACK
23	OWNER PROVIDED 15 GALLON CAPACITY, HEATED PORTABLE PRESSURIZED EYEWASH UNIT
24	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO SPLASHBLOCK AT BASE
25	EXISTING UV TRENCH, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
26	EXISTING CSO STORAGE STRUCTURE, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
27	EXISTING RAILING ON EXISTING CSO STORAGE STRUCTURE. DEMOLISH AND REPLACE AS REQUIRED TO INSTALL NEW CANOPY. SEE TYPICAL RAILING SECTIONS & ELEVATIONS FOR NEW RAILING INFORMATION
28	PROPOSED CSO TANK VALVE VAULT AND FLOW METER, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
29	DEMOLISH EXISTING SLAB ON GRADE. REER TO C-SERIES DRAWINGS FOR REPLACEMENT SLAB AND UV CONTROL TROUGHS IN REPLACEMENT SLAB
30	EXISTING SIDEWALK TO REMAIN



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

#	Revision	Date
1	ADDENDUM #2	2/26/2026

Project #: 23-400-353-1

Designed By: Designer

Drawn By: Author

Checked By: Checker

Date: 02.26.2026

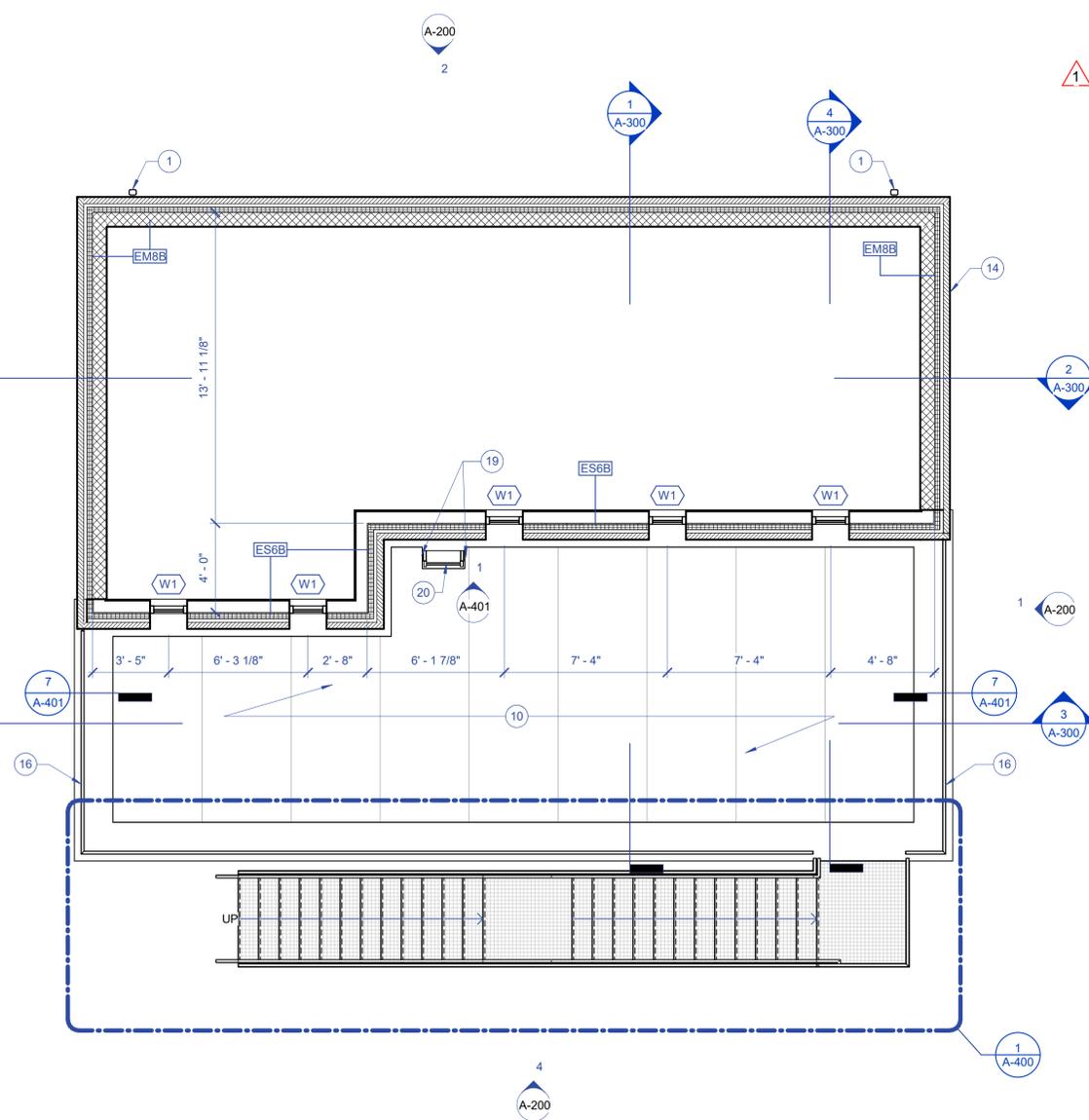


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- SLOPE CONCRETE SLABS TO FLOOR DRAINS AT 1/16" MIN. PER FT.
- ALL CMU WALLS WITH EMBEDDED DETENTION EQUIP. TO HAVE WALLS GROUTED SOLID & REINF. W/ 1# 4 BAR @ 16" O.C. FOR MIN. 4'-0" AROUND EMBEDDED EQUIPMENT OR USE STEEL BLOCKS.
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- ALL CONSTRUCTION AROUND PLUMBING FIXTURES IS REQUIRED TO BE COORDINATED WITH SELECTED MANUFACTURERS. ADJUST WALLS AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF THE SELECTED MANUFACTURERS PLUMBING FIXTURES. ANY CHANGES AND REVISIONS WILL BE DONE AT CONTRACTOR'S EXPENSE.
- BUILDING ENVELOPE CONTINUITY WILL BE MONITORED BY A COMMISSIONING AGENT. TRANSITIONS BETWEEN BUILDING SYSTEMS (I.E. ROOF TO WALL, CURTAINWALL TO EXTERIOR WALL, ETC) SHALL INCLUDE CONTINUOUS AIRTIGHT AIR BARRIER SYSTEM. ALL PENETRATIONS IN THE BUILDING ENVELOPE (INCLUDING WINDOWS, DOORS, STOREFRONT, ETC.) SHALL BE SEALED WITH AIR TIGHT WEATHER SEALS. AT ANY LOCATION WHERE MASONRY TIES OR OTHER MATERIALS PENETRATE THE AIR BARRIER, EACH PENETRATION SHALL BE SEALED AIRTIGHT.

5.4.110 - FLOOR PLAN NOTES

Key	Note
1	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO UNDERGROUND CONNECTIONS. REFER TO CIVIL FOR ADDITIONAL INFORMATION
2	FLOOR DRAIN. REFER TO PLUMBING FOR ADDITIONAL INFORMATION
3	WALL MOUNTED REMOVABLE, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH KICKPLATE. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
4	FLOOR MOUNTED UTILITY SINK. REFER TO PLUMBING FOR ADDITIONAL INFORMATION
5	STRUCTURAL STEEL CANOPY COLUMN, REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
6	UV FILTRATION EQUIPMENT TRENCH & SLAB. REFER TO STRUCTURAL AND WASTEWATER FOR ADDITIONAL INFORMATION
7	CONCRETE SIDEWALK. REFER TO CIVIL FOR ADDITIONAL INFORMATION
8	DASHED LINE DENOTES EDGE OF CANOPY ROOF OVERHEAD. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
9	1/4" GALVANIZED CHECKER PLATE CONDUIT TRENCH COVER
10	FIBER REINFORCED PLATFORM GRATING WITH SOLID TOP SURFACE. PANELS TO SPAN BETWEEN STRUCTURAL BEAMS BELOW, REFER TO STRUCTURAL FOR BEAM SPACING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
11	WALL-MOUNTED MECHANICAL UNIT. REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
12	UV FILTRATION EQUIPMENT. REFER TO WASTEWATER FOR EQUIPMENT SIZE & SPECIFICATION
13	ELECTRICAL EQUIPMENT. REFER TO E-SERIES FOR ADDITIONAL INFORMATION
14	WALL MOUNTED MECHANICAL EXHAUST FAN. REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
15	REMOVABLE FIBER REINFORCED SOLID PANEL FLOORING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
16	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH KICKPLATE. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
17	HOLD FRAMING AND INSULATION 3'-0" OFF FROM FIRST FLOOR LEVEL AT THESE CURBING WALL LOCATIONS. WRAP TILE BACKER BOARD AROUND BASE OF FRAMING
18	EQUIPMENT & PLUMBING TRENCH WITH REMOVABLE FIBERGLASS GRATING. FIBERGLASS GRATING BOD. MONICHOOLS OR EQUAL. SEE STRUCTURAL FOR ADDITIONAL INFORMATION
19	CUT FIBER REINFORCED PANEL AROUND PERIMETER OF ACCESS STAIR
20	WALL-MOUNTED ALUMINUM ACCESS LADDER. REFER TO ELEVATIONS AND DETAILS FOR ADDITIONAL INFORMATION
21	PROVIDE 6" WIDE STRIP OF GRAVEL ALONG EDGE OF BRICK BELOW CONCRETE OVERPOUR ABOVE
22	OWNER PROVIDED UV FILTRATION BULB STORAGE RACK
23	OWNER PROVIDED 15 GALLON CAPACITY, HEATED PORTABLE PRESSURIZED EYEWASH UNIT
24	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO SPLASHBLOCK AT BASE
25	EXISTING UV TRENCH, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
26	EXISTING CSO STORAGE STRUCTURE, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
27	EXISTING RAILING ON EXISTING CSO STORAGE STRUCTURE. DEMOLISH AND REPLACE AS REQUIRED TO INSTALL NEW CANOPY. SEE TYPICAL RAILING SECTIONS & ELEVATIONS FOR NEW RAILING INFORMATION
28	PROPOSED CSO TANK VALVE VAULT AND FLOW METER, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION
29	DEMOLISH EXISTING SLAB ON GRADE. REER TO C-SERIES DRAWINGS FOR REPLACEMENT SLAB AND UV CONTROL TROUGHS IN REPLACEMENT SLAB
30	EXISTING SIDEWALK TO REMAIN

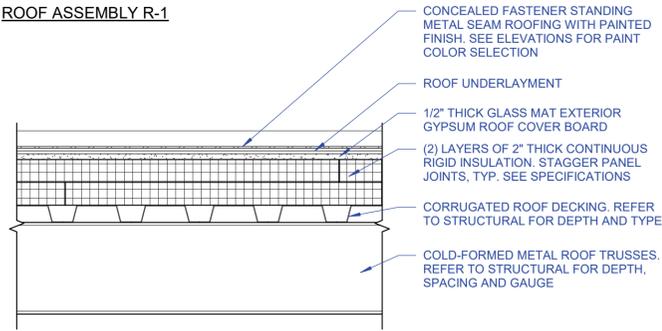


1 EQUIPMENT PLATFORM FLOOR PLAN
1/4" = 1'-0"



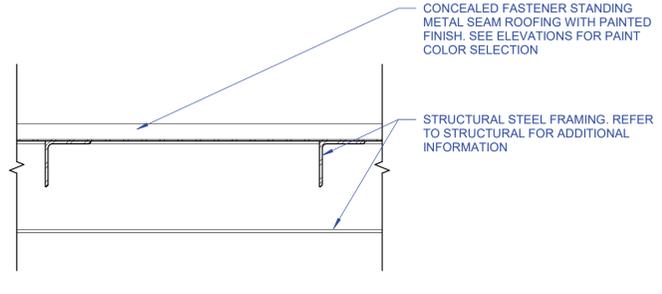
ROOF ASSEMBLIES

ROOF ASSEMBLY R-1



- CONCEALED FASTENER STANDING METAL SEAM ROOFING WITH PAINTED FINISH. SEE ELEVATIONS FOR PAINT COLOR SELECTION
- ROOF UNDERLAYMENT
- 1/2" THICK GLASS MAT EXTERIOR GYPSUM ROOF COVER BOARD
- (2) LAYERS OF 2" THICK CONTINUOUS RIGID INSULATION. STAGGER PANEL JOINTS, TYP. SEE SPECIFICATIONS
- CORRUGATED ROOF DECKING. REFER TO STRUCTURAL FOR DEPTH AND TYPE
- COLD-FORMED METAL ROOF TRUSSES. REFER TO STRUCTURAL FOR DEPTH, SPACING AND GAUGE

ROOF ASSEMBLY R-2



- CONCEALED FASTENER STANDING METAL SEAM ROOFING WITH PAINTED FINISH. SEE ELEVATIONS FOR PAINT COLOR SELECTION
- STRUCTURAL STEEL FRAMING. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION

GENERAL ROOF PLAN NOTES

- TAPERED INSULATION SHALL BE INSTALLED TO ACHIEVE POSITIVE DRAINAGE WITH A MINIMUM RESULTANT SLOPE OF 1/4" PER FOOT, UNLESS INDICATED OTHERWISE.
- LOW SLOPE ROOF AREAS SHALL HAVE A MINIMUM OF 4" RIGID INSULATION OVER ROOF DECK. SADDLES, CRICKETS, AND SLOPE PORTIONS OF FLAT ROOF DECK SHALL BE FORMED BY TAPERED INSULATION. AREAS WHERE TAPERED INSULATION IS ANTICIPATED HAVE BEEN INDICATED, BUT SHALL NOT BE CONSIDERED ALL INCLUSIVE. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE SLOPED SURFACES TO ACHIEVE PROPER DRAINAGE.
- ROOF PENETRATIONS AND EQUIPMENT SHOWN SHALL NOT BE CONSIDERED ALL INCLUSIVE. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DOCUMENTS TO CONFIRM PENETRATIONS AND EQUIPMENT LOCATIONS. FLASH ALL ROOF PENETRATIONS IN ACCORDANCE WITH ROOFING MANUFACTURER'S RECOMMENDATIONS. PROVIDE CRICKETS TO ALLOW FOR PROPER DRAINAGE AROUND UNITS.
- ROOF WALKWAY PADS OR BLOCKS SHALL BE INSTALLED IN ACCORDANCE WITH ROOFING MANUFACTURER'S RECOMMENDATION WHERE INDICATED AND AROUND ENTIRE PERIMETER OF ROOFTOP EQUIPMENT.
- ALL ROOF SYSTEMS ARE "ROOF TYPE A" EXCEPT WHERE NOTED OTHERWISE.

5.4.140 - ROOF PLAN NOTES

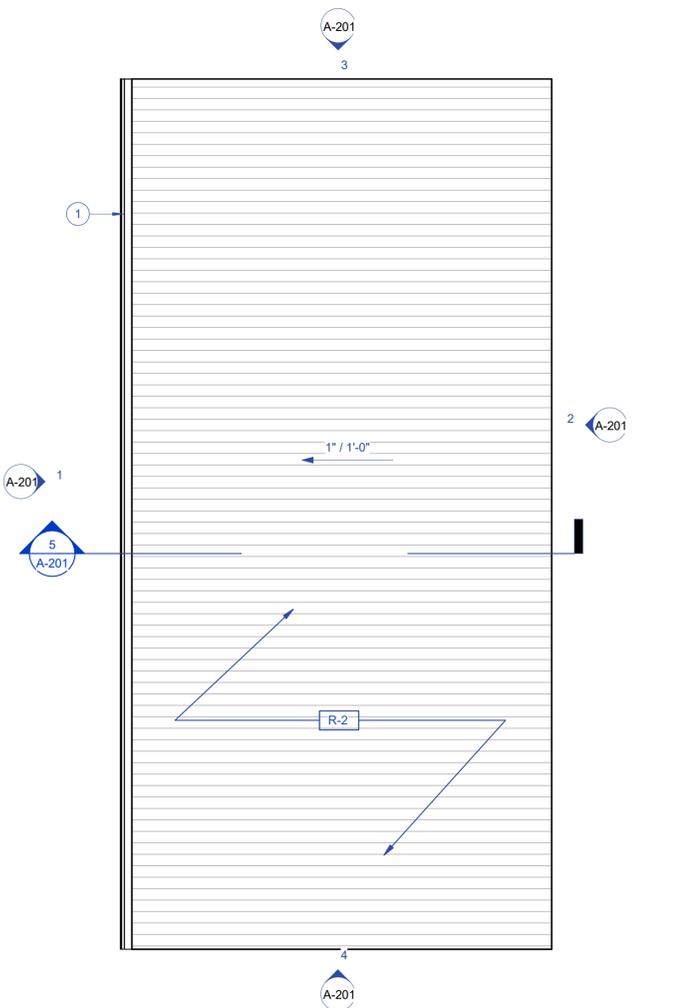
Key	Note
1	5" X 5" ANODIZED ALUMINUM GUTTER
2	REMOVABLE FIBERGLASS SOLID PANEL FLOORING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
3	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH TOEBOARD. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
4	CONCRETE OVERPOUR FOR EQUIPMENT PLATFORM FLOOR STRUCTURE. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
5	PRE-ENGINEERED STEEL STAIR ASSEMBLY WITH METAL GRATE STAIR TREADS & LANDINGS. SEE ENLARGED STAIR PLANS & SECTIONS FOR ADDITIONAL INFORMATION
6	1 1/2" DIA. SCHEDULE 40 STEEL PIPE HANDRAIL, PAINTED YELLOW. SEE TYPICAL STAIR RAILING SECTION FOR ADDITIONAL INFORMATION

5.4.110 - FLOOR PLAN NOTES

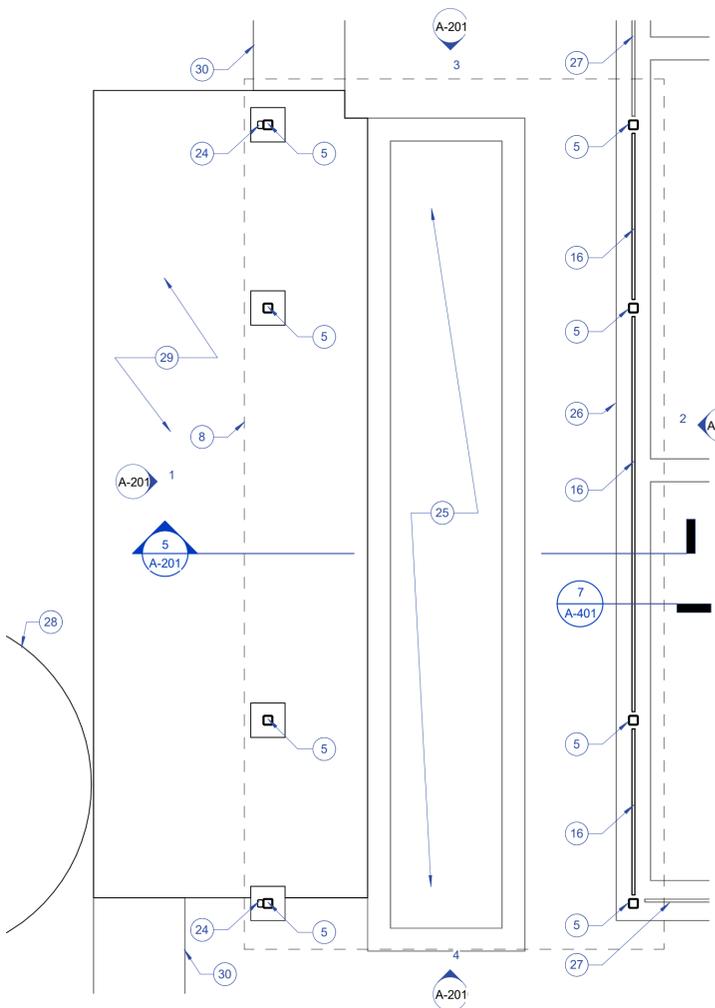
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18	EQUIPMENT & PLUMBING TRENCH WITH REMOVABLE FIBERGLASS GRATING. FIBERGLASS GRATING BOD: MCNICHOLS OR EQUAL. SEE STRUCTURAL FOR ADDITIONAL INFORMATION
19	CUT FIBER REINFORCED PANEL AROUND PERIMETER OF ACCESS STAIR
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29	DEMOLISH EXISTING SLAB ON GRADE. REFER TO C-SERIES DRAWINGS FOR REPLACEMENT SLAB AND UV CONTROL TROUGHS IN REPLACEMENT SLAB
30	EXISTING SIDEWALK TO REMAIN

GENERAL PLAN NOTES

- PLAN NOTES INDICATE ONE GRAPHIC REPRESENTATION TYPICAL. THE CONTRACTOR SHALL USE THE GRAPHIC REPRESENTATIONS FOR THE COUNTY, NOT THE KEYED PLAN NOTES. THE ABSENCE OF A KEYED PLAN NOTE ON THE PLAN DOES NOT ABSOLVE THE CONTRACTOR FROM PROVIDING THE FEATURE GRAPHICALLY REPRESENTED ON THE DRAWING.
- ALL DIMENSIONS SHOWN ARE TO FACE OF STUD OR MASONRY, UNLESS NOTED OTHERWISE. DIMENSIONS DESIGNATED AS "CLR OR "CLEAR" INDICATE A CLEAR DIMENSION FROM FACE OF FINISH TO FACE OF FINISH. DIMENSIONS OF EXTERIOR WALLS ARE TO OUTSIDE EDGE OF FOUNDATION.
- DIMENSIONS FOR ALL OPENINGS FOR MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL SHALL BE FIRE STOPPED AT EACH FLOOR AND RATED WALL PENETRATION.
- PROVIDE BRACING AND BLOCKING AS REQUIRED IN WALLS SUPPORTING CASEWORK, TACKBOARDS, MARKERBOARDS, AND RESTROOM ACCESSORIES.
- ALL DOOR FRAMES ARE LOCATED 4" FROM ADJACENT WALL, UNLESS NOTED OTHERWISE.
- ALL EXPOSED OUTSIDE CORNERS OF CMU SHALL BE BULLNOSED.
- SEAL ALL JOINTS BETWEEN DISSIMILAR MATERIALS.
- ALL GYPSUM WALLBOARD IS 5/8" TYPE "X", UNLESS NOTED OTHERWISE.
- ALL EXTERIOR WALLS ARE TYPE "ES6B", UNLESS NOTED OTHERWISE.
- ALL INTERIOR WALLS ARE TYPE "S6id" (6" METAL STUD TO DECK, WITH SOUND ATTENUATION BATT INSULATION WITH TYPE "X" GYPSUM WALLBOARD ON BOTH SIDES). UNLESS NOTED OTHERWISE.
- BASE ELEVATION IS 0'-0" = XXX.XX' (UNITED STATES GEOLOGICAL SURVEY DATA). COORDINATE WITH CIVIL DRAWINGS
- HATCHING WITHIN WALLS SHOWN IN PLANS AND SECTIONS INDICATES NEW CONSTRUCTION.
- ALL WALLS THAT HAVE THE DESIGNATION "-C", AND ARE IN A SPACE WITH NO CEILING WILL BE 10FT TALL.
- DRAWINGS ESTABLISH THE DESIGN INTENT OF WORK TO BE PERFORMED. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE HIGHEST INDUSTRY STANDARDS. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL TRADES SHALL CAREFULLY COORDINATE WORK OF ALL OTHER TRADES. ANY DISCREPANCIES OR CONFLICTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT AND THE OWNER PRIOR TO FABRICATION OR INSTALLATION.
- CONTRACTORS SHALL BE RESPONSIBLE FOR CHECKING THE CONTRACT DOCUMENTS FOR COORDINATION BETWEEN ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, SECURITY AND LANDSCAPING. CONTRACTORS SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS AND FOR VERIFYING THEM WITH THE CONTRACT DOCUMENTS. ANY DISCREPANCY IN THE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECT PRIOR TO ANY FABRICATION OR CONSTRUCTION.
- ALL CORRIDOR SURFACES SHALL BE FLUSH. AT JUNCTIONS OF MASONRY AND STUD WALLS, MASONRY WALL LOCATIONS SHALL HOLD TRUE AND MTL STUDS SHALL BE MOVED AS REQUIRED TO PROVIDE FLUSH CONNECTION BETWEEN GYP. BD. AND MASONRY. VERIFY NO. OF LAYERS OF GYP. BD. W/ WALL TYPES. RELOCATION OF WALL SHALL BE APPROVED BY ARCHITECT PRIOR TO CONST. AT TRANSITIONS FROM 1 LAYER GYP. BD. TO 2 LAYERS OF GYP. ON MTL. STUDS A MIN. CORRIDOR WIDTH OF 5'-0" FROM FACE OF STUDS SHALL BE MAINTAINED.
- ALL BUILDING MATERIALS (INCLUDING BUT NOT LIMITED TO METAL FLASHING, VAPOR BARRIERS, AIR/WATER RESISTANT BARRIERS, THRU-WALL FLASHING, ETC.) SHALL BE LAPPED TO SHED WATER TO THE OUTSIDE OF THE BUILDING ENVELOPE.
- SEE CODE COMPLIANCE PLAN G-100 FOR FIRE RATED WALLS.
- SEE WALL TYPE LEGEND A-002 FOR WALLS AND CONSTRUCTION REQUIREMENTS.
- WHEREVER POSSIBLE KEEP MINIMUM SIZE OF CUT MASONRY TO 4" OR GREATER.
- ALL DIAGONAL WALLS SHALL BE AT 45° (U.N.O.)
- SEE STRUCTURAL FOR CONTROL/EXPANSION JOINT LOCATIONS.
- SLOPE CONCRETE SLABS TO FLOOR DRAINS AT 1/16" MIN. PER FT.
- ALL CMU WALLS WITH EMBEDDED DETENTION EQUIP. TO HAVE WALLS GROUTED SOLID & REINF. W/ 1 # 4 BAR @ 16" O.C. FOR MIN. 4'-0" AROUND EMBEDDED EQUIPMENT OR USE STEEL BLOCKS.
- ALL EXPOSED PIPES, DUCTS CONDUITS IN SECURITY AREAS SHALL BE PROTECTED.
- ALL DOORS AND BORROWED LITE FRAMES IN SECURITY MASONRY WALLS TO BE FULLY GROUTED. ALL SECURITY DOORS AND BORROWED LITE FRAMES IN MASONRY WALLS TO BE FULLY GROUTED. ALL SECURITY DOORS AND BORROWED LITE FRAMES IN SECURITY STUD WALLS TO HAVE JAMBS FULLY GROUTED UNLESS NOTED OTHERWISE.
- WHEREVER VOLUME DAMPERS (V.D.) ARE LOCATED ABOVE SECURITY CEILINGS, PROVIDE 2'-0"x2'-0" ACCESS PANELS IN THE CEILING. REFER TO MECHANICAL DRAWINGS FOR NUMBER AND LOCATION. COORDINATE WITH ELECTRICAL DRAWINGS. PANELS SHALL BE SECURITY TYPE TO MATCH ADJACENT CEILING.
- ALL CHASE WALLS SHALL BE FULL HEIGHT UNLESS NOTED OTHERWISE.
- ALL INTERIOR AND EXTERIOR EXPOSED STEEL TO BE PAINTED. COLOR TO BE SELECTED BY ARCHITECT.
- PROVIDE (2) TWO 4'x8' GRAPHIC SITE CONSTRUCTION SIGNS. ARCHITECT TO PROVIDE GRAPHIC CONTRACTOR TO INSTALL
- ALL EXTERIOR WINDOWS ARE TYPE "XX", UNLESS NOTED OTHERWISE.
- SUFFIXES WITHIN SPECIFICATION REFERENCES (i.e. 10 11 33 XX or 10 11 33 A1) IN THE DRAWINGS CAN BE IGNORED. THESE SUFFIXES ARE A SORTING MECHANISM USED IN PREPARING THESE DRAWINGS.
- ALL ROUGH OPENINGS (R.O.) SHALL BE VERIFIED WITH SELECTED WINDOW AND DOOR MANUFACTURER. ANY CHANGES FROM THE BASIS OF DESIGN WILL BE COORDINATED WITH ALL TRADES AND ROUGH OPENINGS ADJUSTED AS REQUIRED. ANY DISCREPANCIES FOUND WILL BE BROUGHT TO THE ARCHITECT PRIOR TO CONSTRUCTION. ANY CHANGES AND REVISIONS WILL BE DONE AT CONTRACTOR'S EXPENSE.
- ALL CONSTRUCTION AROUND PLUMBING FIXTURES IS REQUIRED TO BE COORDINATED WITH SELECTED MANUFACTURERS. ADJUST WALLS AS REQUIRED TO ACCOMMODATE THE INSTALLATION OF THE SELECTED MANUFACTURERS PLUMBING FIXTURES. ANY CHANGES AND REVISIONS WILL BE DONE AT CONTRACTOR'S EXPENSE.
- BUILDING ENVELOPE CONTINUITY WILL BE MONITORED BY A COMMISSIONING AGENT. TRANSITIONS BETWEEN BUILDING SYSTEMS (I.E. ROOF TO WALL, CURTAINWALL TO EXTERIOR WALL, ETC.) SHALL INCLUDE CONTINUOUS AIRTIGHT AIR BARRIER SYSTEM. ALL PENETRATIONS IN THE BUILDING ENVELOPE (INCLUDING WINDOWS, DOORS, STOREFRONT, ETC.) SHALL BE SEALED WITH AIR TIGHT WEATHER SEALS. AT ANY LOCATION WHERE MASONRY TIES OR OTHER MATERIALS PENETRATE THE AIR BARRIER, EACH PENETRATION SHALL BE SEALED AIRTIGHT.



3 EXISTING UV TRENCH - NEW CANOPY ROOF PLAN
1/4" = 1'-0"



1 EXISTING UV TRENCH - NEW CANOPY FLOOR PLAN
1/4" = 1'-0"



BID SET
 SPEEDWAY WWTP
 WET WEATHER CAPACITY
 EXPANSION
 SPEEDWAY, IN 46224

#	Revision	Date
1	ADDENDUM #2	2/26/2026

Project #: 23-400-353-1
 Designed By: Designer
 Drawn By: Author
 Checked By: Checker
 Date: 02.26.2026



EXISTING UV TRENCH -
 NEW CANOPY FLOOR
 PLAN & ROOF PLAN

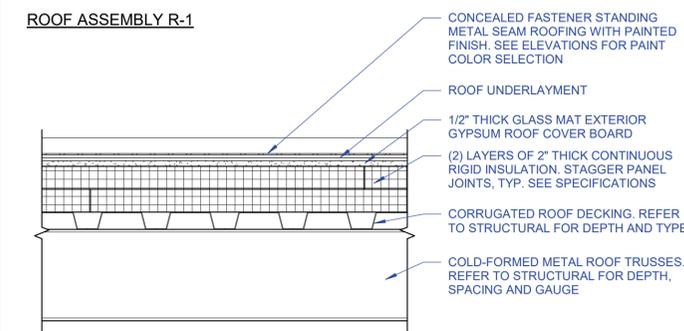
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GENERAL ROOF PLAN NOTES

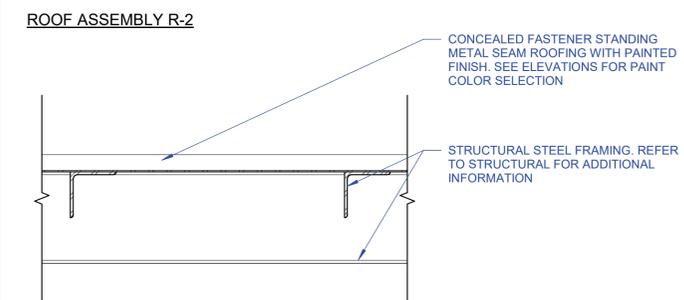
1. TAPERED INSULATION SHALL BE INSTALLED TO ACHIEVE POSITIVE DRAINAGE WITH A MINIMUM RESULTANT SLOPE OF 1/4" PER FOOT, UNLESS INDICATED OTHERWISE.
2. LOW SLOPE ROOF AREAS SHALL HAVE A MINIMUM OF 4" RIGID INSULATION OVER ROOF DECK. SADDLES, CRICKETS, AND SLOPE PORTIONS OF FLAT ROOF DECK SHALL BE FORMED BY TAPERED INSULATION. AREAS WHERE TAPERED INSULATION IS ANTICIPATED HAVE BEEN INDICATED, BUT SHALL NOT BE CONSIDERED ALL INCLUSIVE. IT IS CONTRACTOR'S RESPONSIBILITY TO PROVIDE SLOPED SURFACES TO ACHIEVE PROPER DRAINAGE.
3. ROOF PENETRATIONS AND EQUIPMENT SHOWN SHALL NOT BE CONSIDERED ALL INCLUSIVE. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DOCUMENTS TO CONFIRM PENETRATIONS AND EQUIPMENT LOCATIONS. FLASH ALL ROOF PENETRATIONS IN ACCORDANCE WITH ROOFING MANUFACTURER'S RECOMMENDATIONS. PROVIDE CRICKETS TO ALLOW FOR PROPER DRAINAGE AROUND UNITS.
4. ROOF WALKWAY PADS OR BLOCKS SHALL BE INSTALLED IN ACCORDANCE WITH ROOFING MANUFACTURER'S RECOMMENDATION WHERE INDICATED AND AROUND ENTIRE PERIMETER OF ROOFTOP EQUIPMENT.
5. ALL ROOF SYSTEMS ARE "ROOF TYPE A" EXCEPT WHERE NOTED OTHERWISE.

ROOF ASSEMBLIES

ROOF ASSEMBLY R-1

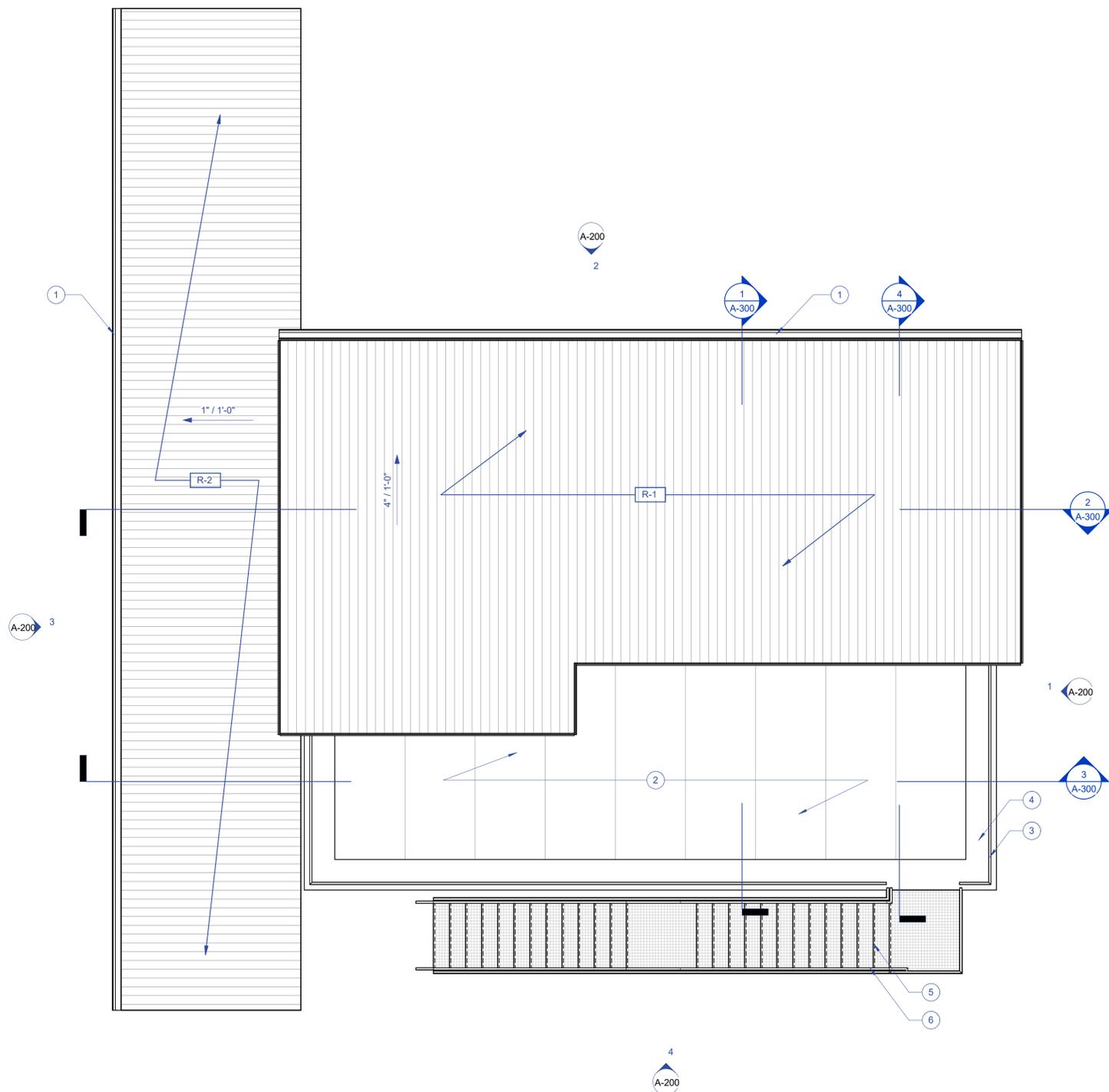


ROOF ASSEMBLY R-2



5.4.140 - ROOF PLAN NOTES

Key	Note
1	5" X 5" ANODIZED ALUMINUM GUTTER
2	REMOVABLE FIBERGLASS SOLID PANEL FLOORING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
3	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH TOEBOARD. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
4	CONCRETE OVERPOUR FOR EQUIPMENT PLATFORM FLOOR STRUCTURE. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
5	PRE-ENGINEERED STEEL STAIR ASSEMBLY WITH METAL GRATE STAIR TREADS & LANDINGS. SEE ENLARGED STAIR PLANS & SECTIONS FOR ADDITIONAL INFORMATION.
6	1 1/2" DIA SCHEDULE 40 STEEL PIPE HANDRAIL PAINTED YELLOW. SEE TYPICAL STAIR RAILING SECTION FOR ADDITIONAL INFORMATION



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



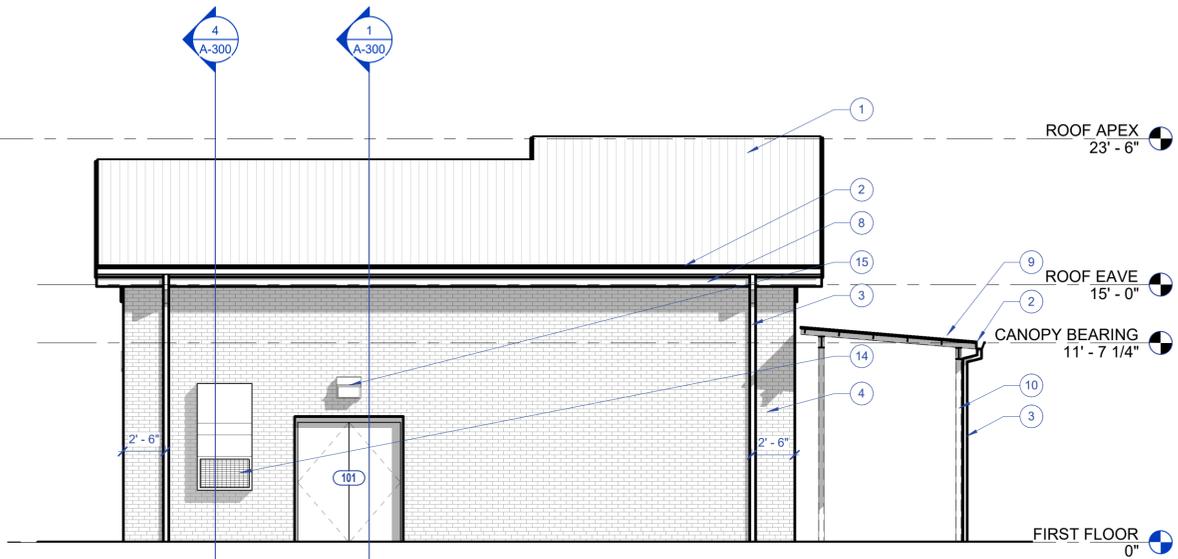
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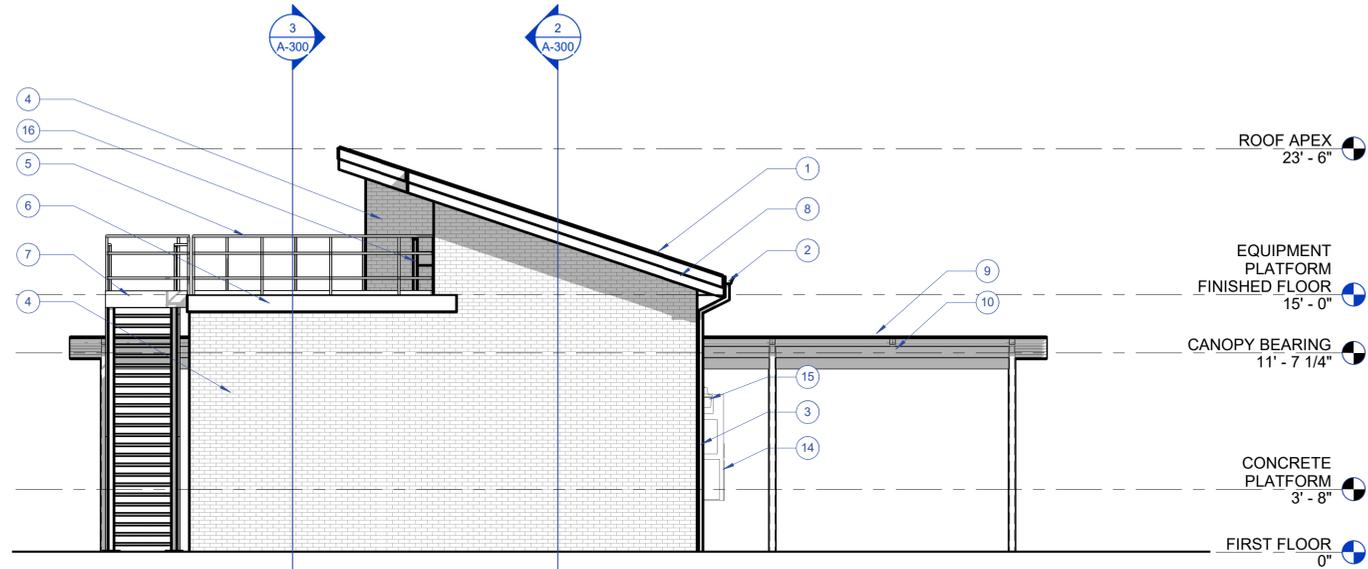


5.4.200 - ELEVATION NOTES	
Key	Note
1	INSULATED, CONCEALED FASTENER STANDING METAL SEAM ROOF ASSEMBLY WITH PAINTED FINISH, PAINT COLOR TBD BY ARCHITECT. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
2	5" X 5" ANODIZED ALUMINUM GUTTER
3	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO UNDERGROUND CONNECTIONS. REFER TO CIVIL FOR ADDITIONAL INFORMATION
4	FACE BRICK, RUNNING BOND, MODULAR SIZE, BRICK COLOR, FINISH TEXTURE AND BASIS OF DESIGN TBD BY ARCHITECT
5	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH TOEBOARD. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
6	CONCRETE OVERPOUR FOR EQUIPMENT PLATFORM FLOOR STRUCTURE. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
7	PRE-ENGINEERED STEEL STAIR ASSEMBLY WITH METAL GRATE STAIR TREADS & LANDINGS. SEE ENLARGED STAIR PLANS & SECTIONS FOR ADDITIONAL INFORMATION.
8	FIBER CEMENT PASCAL TRIM PAINTED PAINT COLOR TBD BY ARCHITECT
9	UNINSULATED, CONCEALED FASTENER STANDING METAL SEAM CANOPY ROOF ASSEMBLY. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
10	STEEL CANOPY STRUCTURE, REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION

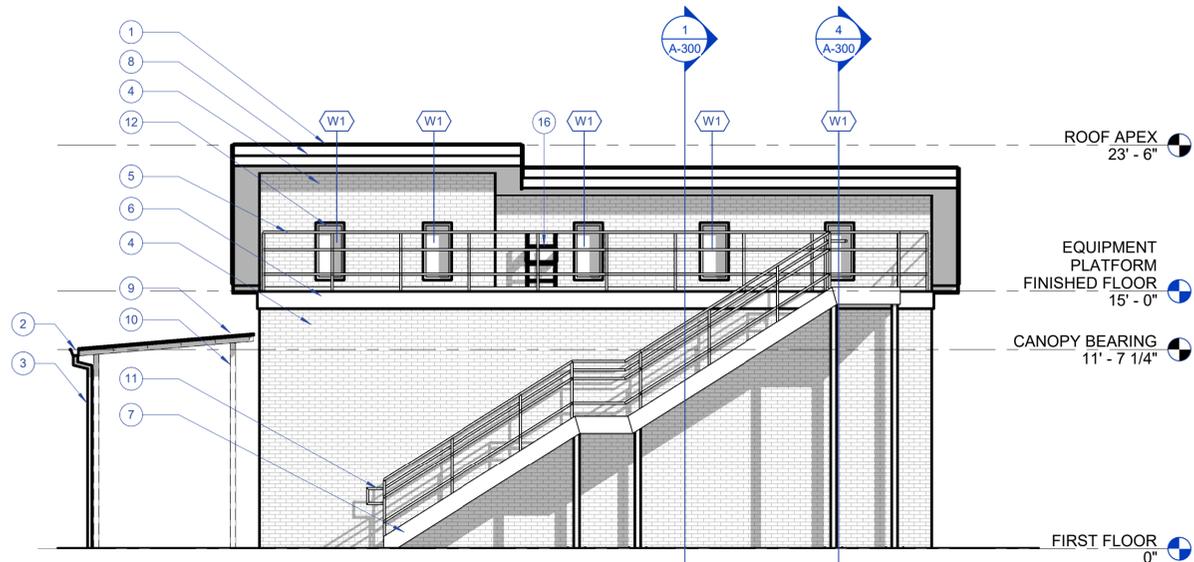
5.4.200 - ELEVATION NOTES	
Key	Note
11	1 1/2" O.D. SCHEDULE 40 STEEL PIPE HANDRAIL, PAINTED YELLOW. SEE TYPICAL STAIR RAILING SECTION FOR ADDITIONAL INFORMATION
12	ALUMINUM-FRAMED, DOUBLE GLAZED INSULATED FIXED WINDOW. REFER TO WINDOW ELEVATIONS FOR ADDITIONAL INFORMATION
13	ALUMINUM STOREFRONT ASSEMBLY, SEE STOREFRONT ELEVATIONS FOR ADDITIONAL INFORMATION
14	WALL-MOUNTED MECHANICAL UNIT, REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
15	EXTERIOR WALL PACK LIGHT, REFER TO ELECTRICAL FOR ADDITIONAL INFORMATION
16	WALL-MOUNTED ALUMINUM ACCESS LADDER, REFER TO SECTIONS & DETAILS FOR ADDITIONAL INFORMATION
17	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO SPLASHBLOCK AT BASE
18	EXISTING RAILING TO REMAIN
19	EXISTING CSO STORAGE STRUCTURE, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION



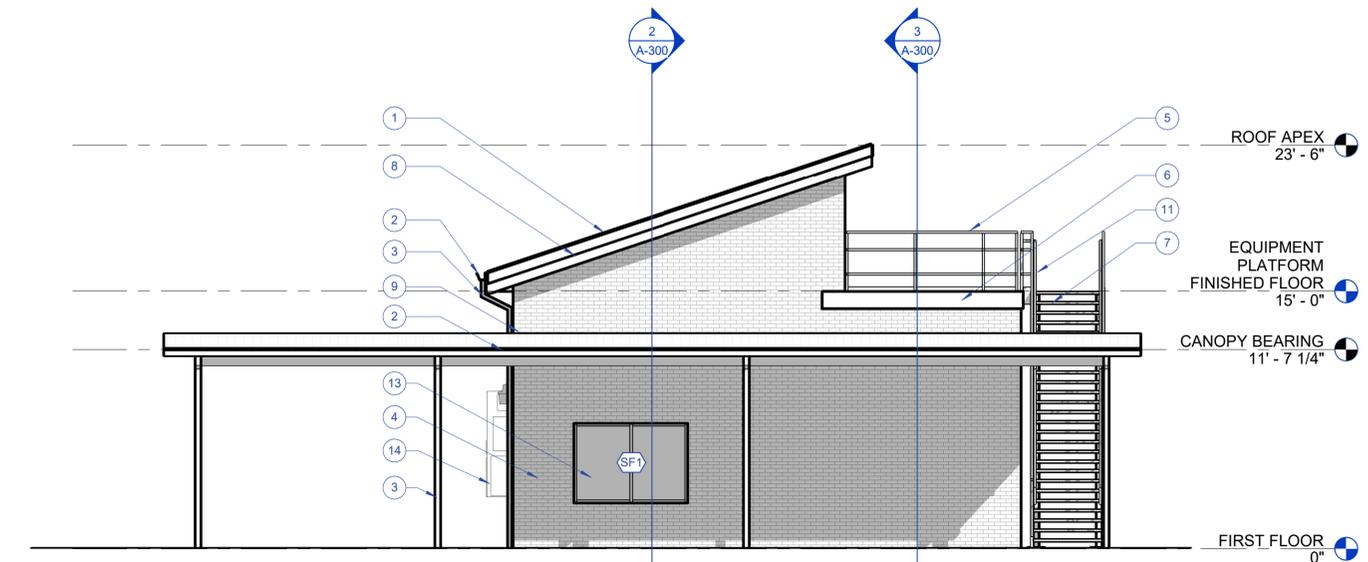
2 NORTH ELEVATION
3/16" = 1'-0"



1 EAST ELEVATION
3/16" = 1'-0"



4 SOUTH ELEVATION
3/16" = 1'-0"



3 WEST ELEVATION
3/16" = 1'-0"

BID SET

**SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION**
SPEEDWAY, IN 46224

#	Revision	Date
1	ADDENDUM #2	2/26/2026

Project #: 23-400-353-1
Designed By: Designer
Drawn By: Author
Checked By: Checker
Date: 02.26.2026

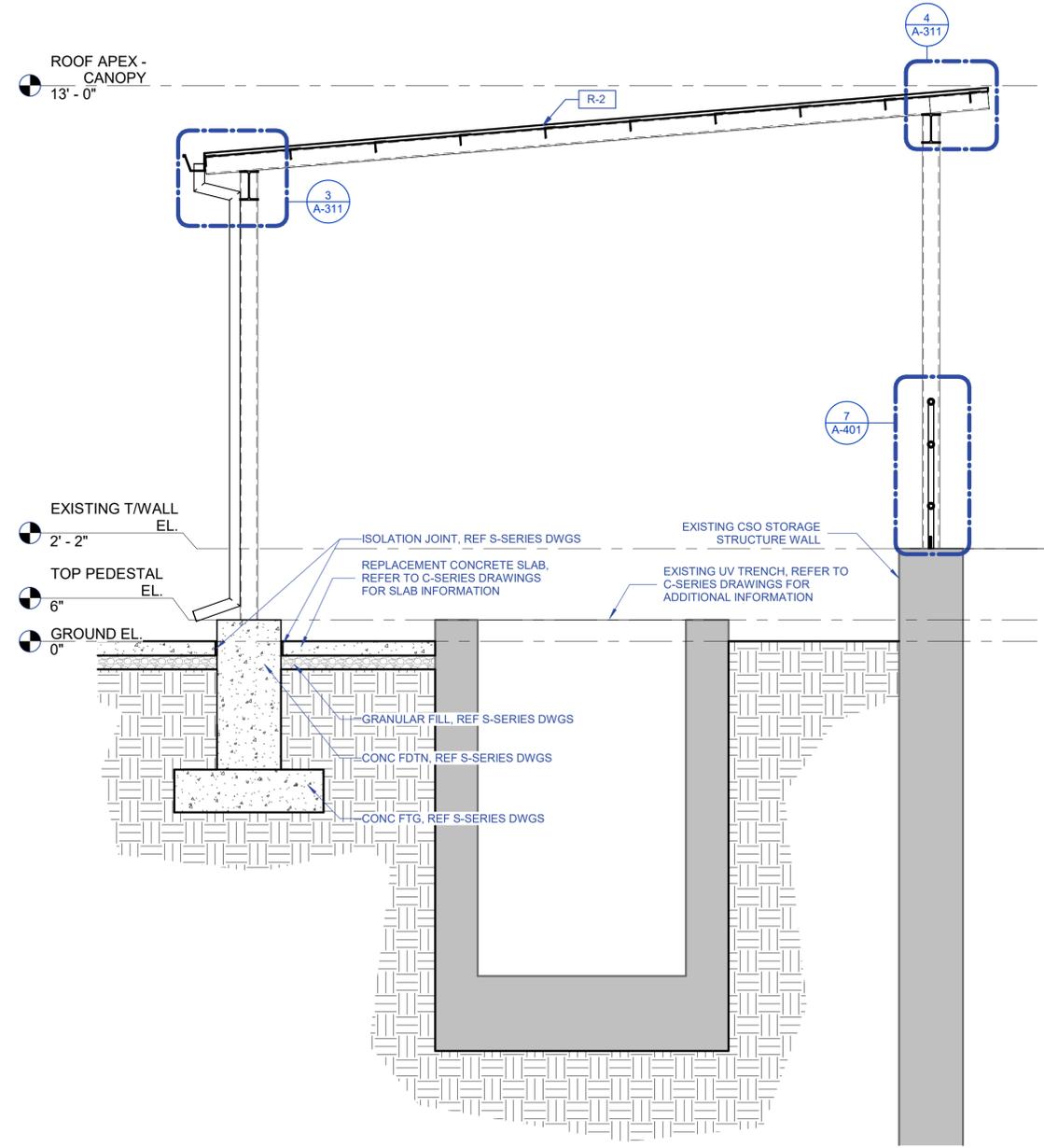


**OVERALL BUILDING
ELEVATIONS**

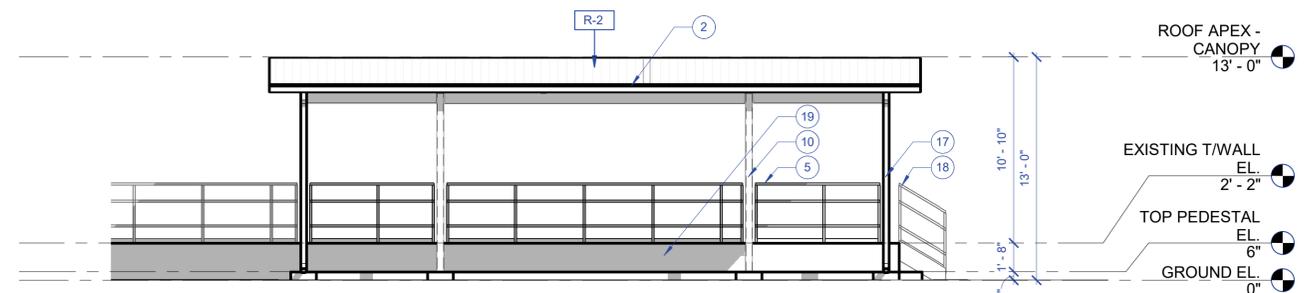
A-200

5.4.200 - ELEVATION NOTES

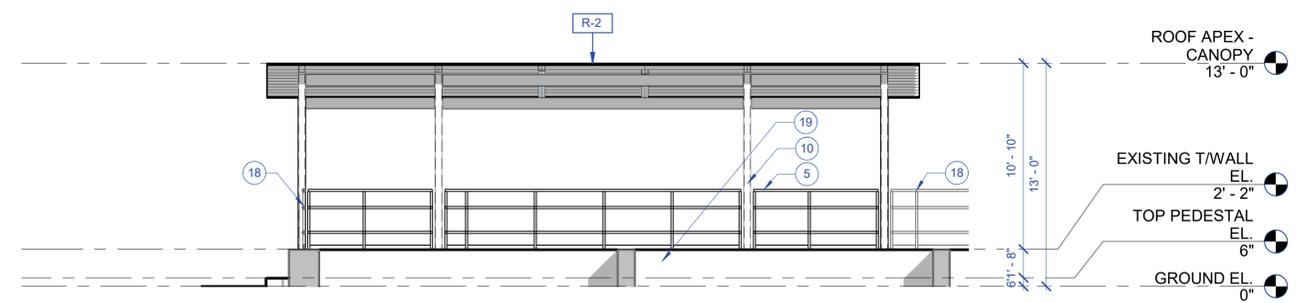
Key	Note
1	INSULATED, CONCEALED FASTENER STANDING METAL SEAM ROOF ASSEMBLY WITH PAINTED FINISH, PAINT COLOR TBD BY ARCHITECT. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
2	5" X 5" ANODIZED ALUMINUM GUTTER
3	4" X 4" ANODIZED ALUMINUM DOWNSPOUT DRAINING TO UNDERGROUND CONNECTIONS. REFER TO CIVIL FOR ADDITIONAL INFORMATION
4	FACE BRICK, RUNNING BOND, MODULAR SIZE. BRICK COLOR, FINISH TEXTURE AND BASIS OF DESIGN TBD BY ARCHITECT
5	FLOOR MOUNTED, 1 1/2" DIA. SCHEDULE 40 STEEL PIPE SAFETY RAILING WITH TOEBOARD. ENTIRE RAILING ASSEMBLY TO BE PAINTED YELLOW. SEE TYPICAL RAILING SECTION FOR ADDITIONAL INFORMATION
6	CONCRETE OVERPOUR FOR EQUIPMENT PLATFORM FLOOR STRUCTURE. REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
7	PRE-ENGINEERED STEEL STAIR ASSEMBLY WITH METAL GRATE STAIR TREADS & LANDINGS. SEE ENLARGED STAIR PLANS & SECTIONS FOR ADDITIONAL INFORMATION
8	FIBER CEMENT ESCALATOR TRIM, PAINTED PAINT COLOR TBD BY ARCHITECT
9	UNINSULATED, CONCEALED FASTENER STANDING METAL SEAM CANOPY ROOF ASSEMBLY. SEE ROOF PLAN FOR ADDITIONAL INFORMATION
10	STEEL CANOPY STRUCTURE, REFER TO STRUCTURAL FOR ADDITIONAL INFORMATION
11	1 1/2" O.D. SCHEDULE 40 STEEL PIPE HANDRAIL, PAINTED YELLOW. SEE TYPICAL STAIR RAILING SECTION FOR ADDITIONAL INFORMATION
12	ALUMINUM-FRAMED, DOUBLE GLAZED INSULATED FIXED WINDOW. REFER TO WINDOW ELEVATIONS FOR ADDITIONAL INFORMATION
13	ALUMINUM STOREFRONT ASSEMBLY, SEE STOREFRONT ELEVATIONS FOR ADDITIONAL INFORMATION
14	WALL-MOUNTED MECHANICAL UNIT, REFER TO MECHANICAL FOR ADDITIONAL INFORMATION
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18	EXISTING RAILING TO REMAIN
19	EXISTING CSO STORAGE STRUCTURE, REFER TO C-SERIES DRAWINGS FOR ADDITIONAL INFORMATION



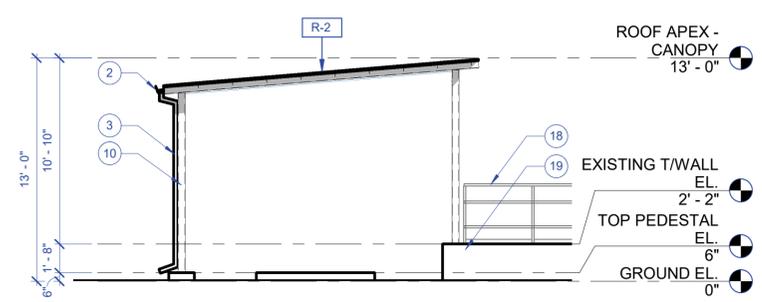
5 EXISTING UV TRENCH - NEW CANOPY SECTION
1/2" = 1'-0"



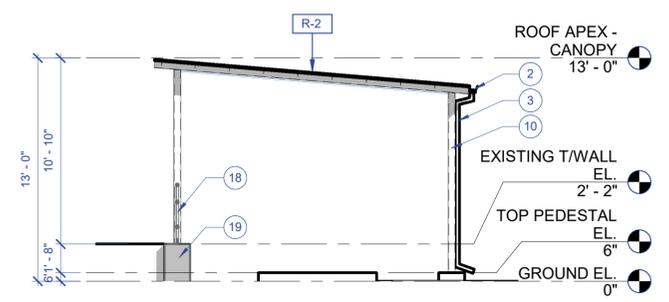
1 EXISTING UV TRENCH - NEW CANOPY NORTH ELEVATION
3/16" = 1'-0"



2 EXISTING UV TRENCH - NEW CANOPY SOUTH ELEVATION
3/16" = 1'-0"



4 EXISTING UV TRENCH - NEW CANOPY WEST ELEVATION
3/16" = 1'-0"



3 EXISTING UV TRENCH - NEW CANOPY EAST ELEVATION
3/16" = 1'-0"

#	Revision	Date
1	ADDENDUM #2	2/26/2026

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EXISTING UV TRENCH - NEW CANOPY ELEVATION & SECTION

BID SET
SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION
 SPEEDWAY, IN 46224

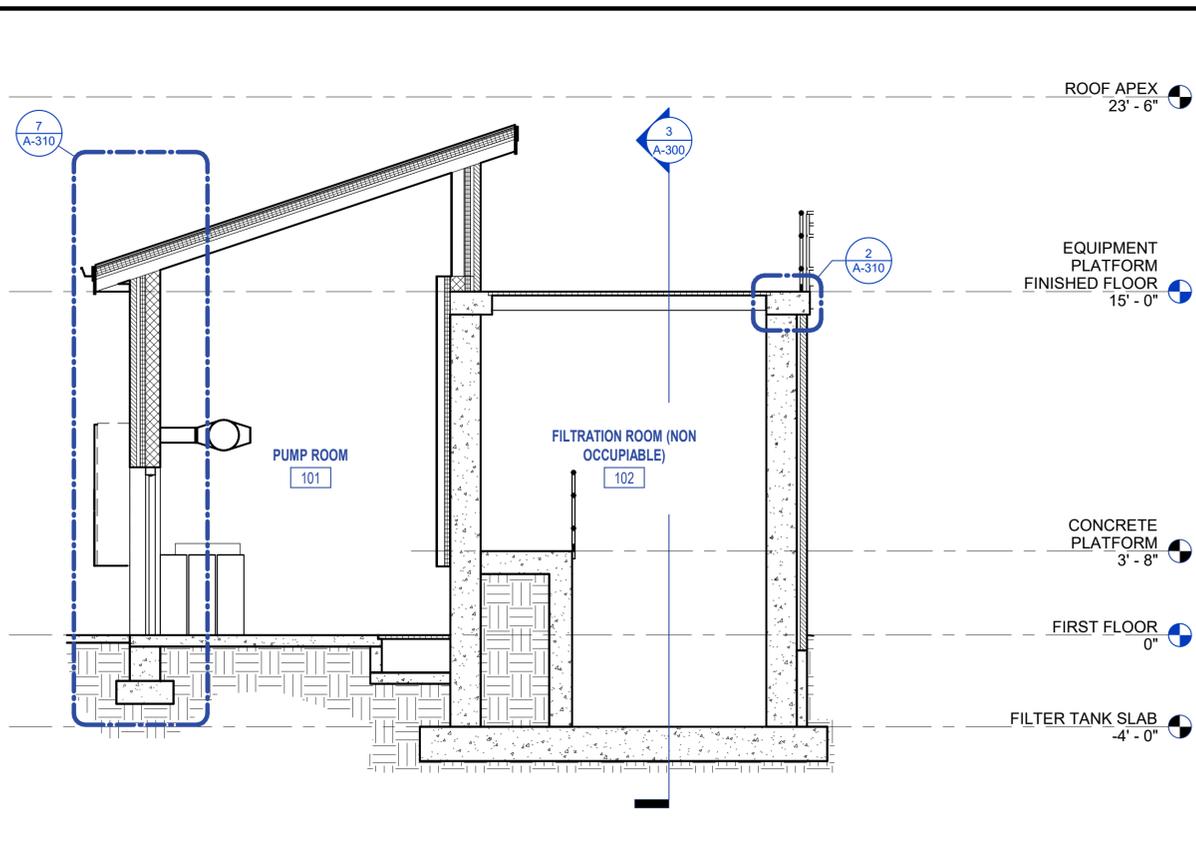
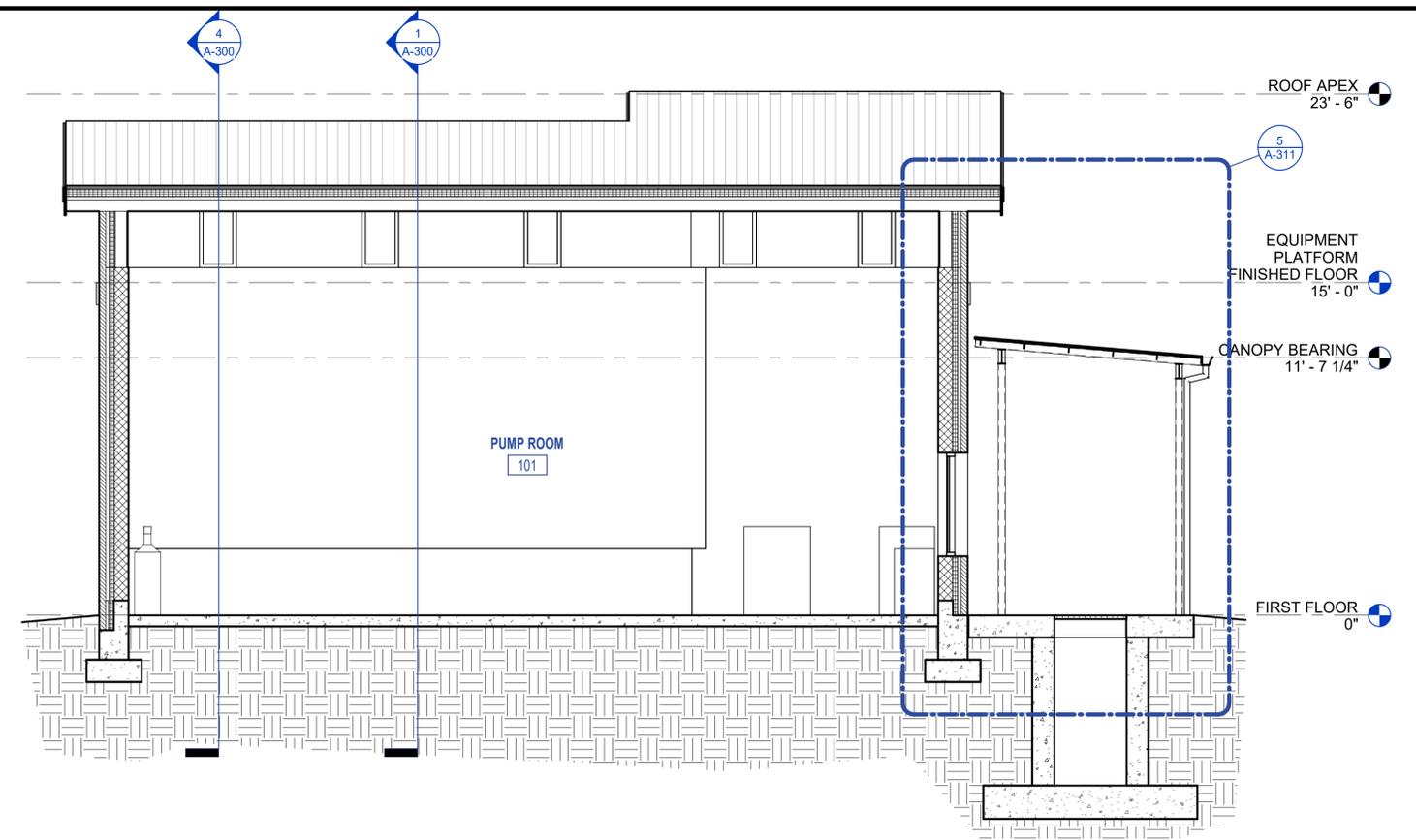
#	Revision	Date
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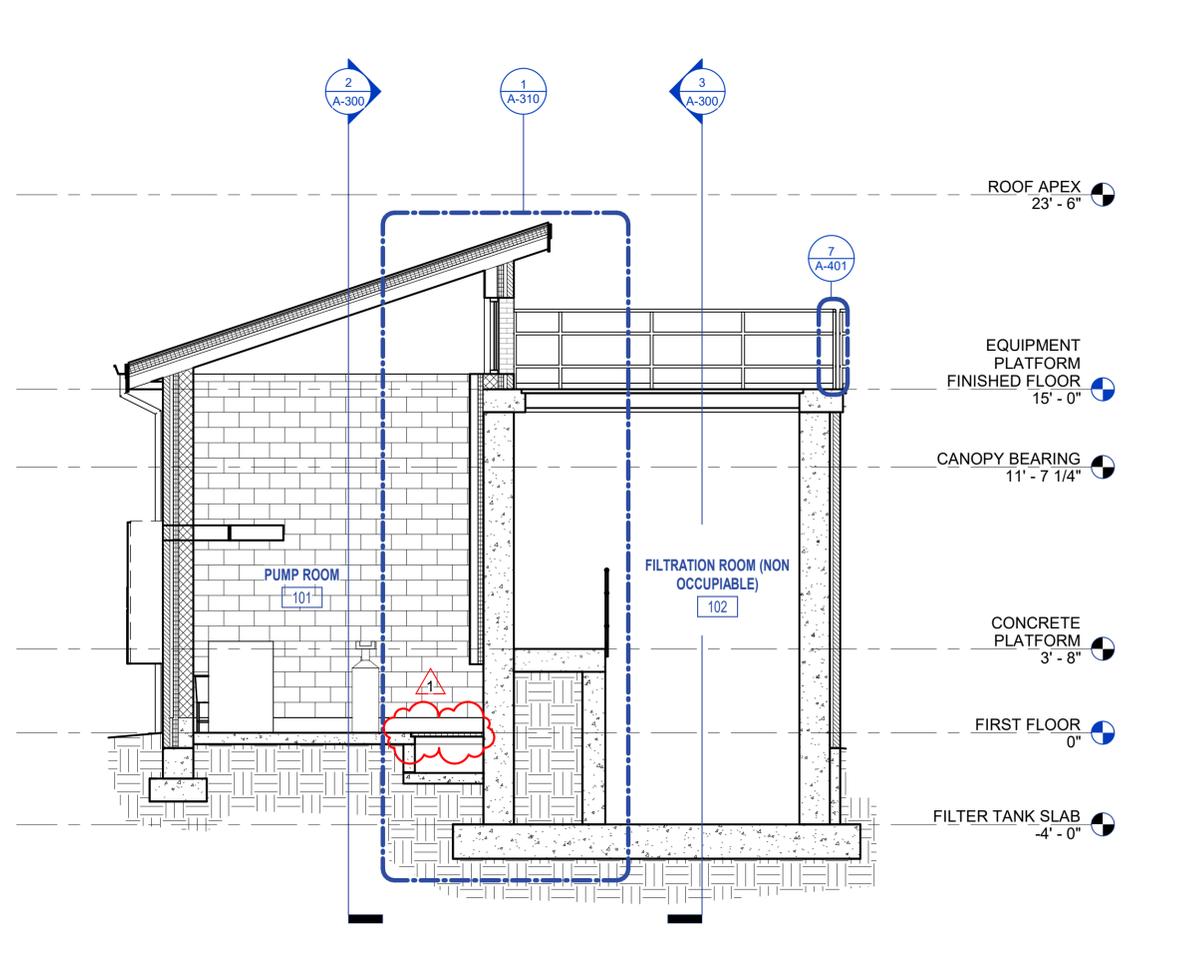
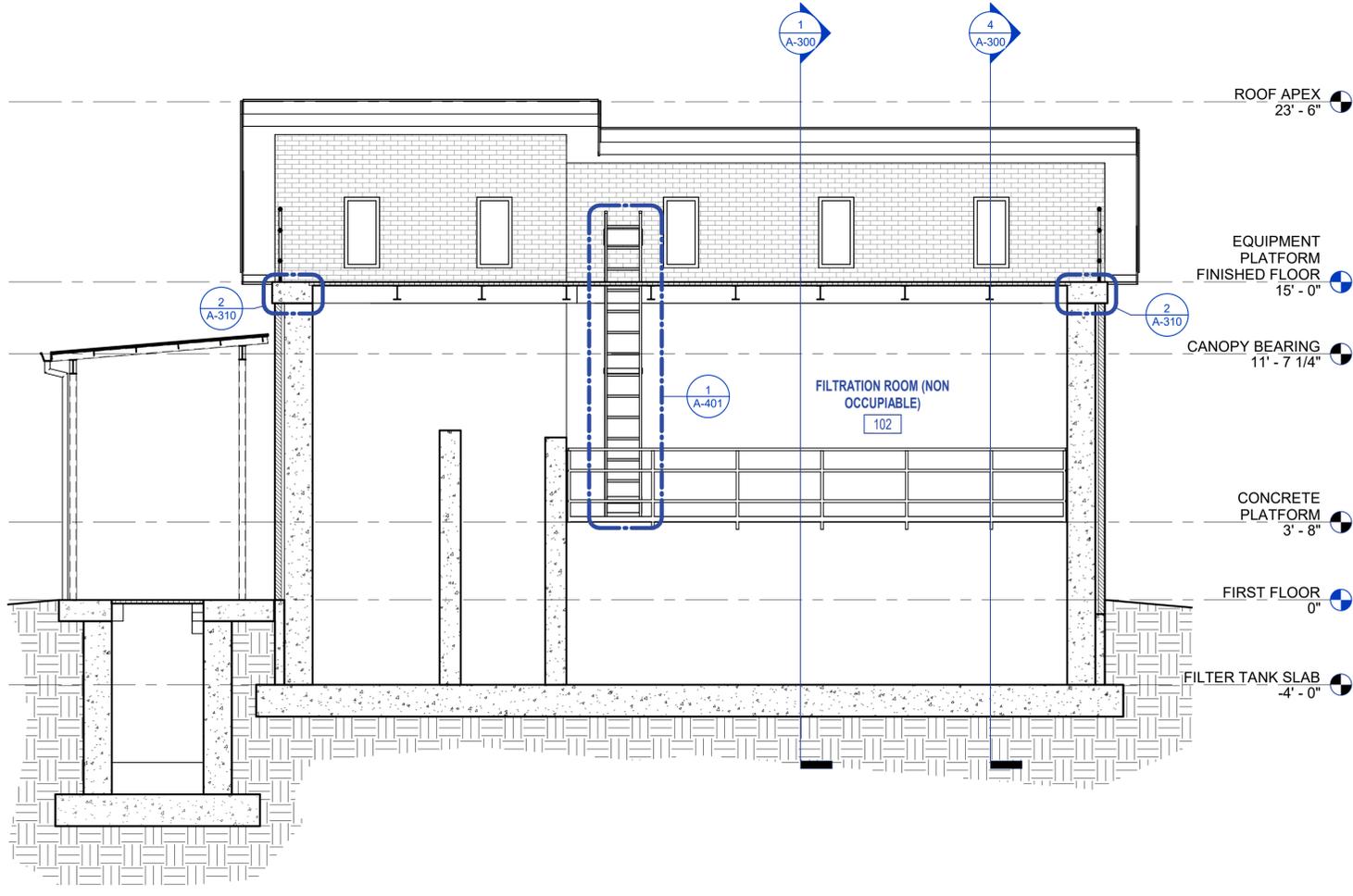
BUILDING SECTIONS

A-300



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

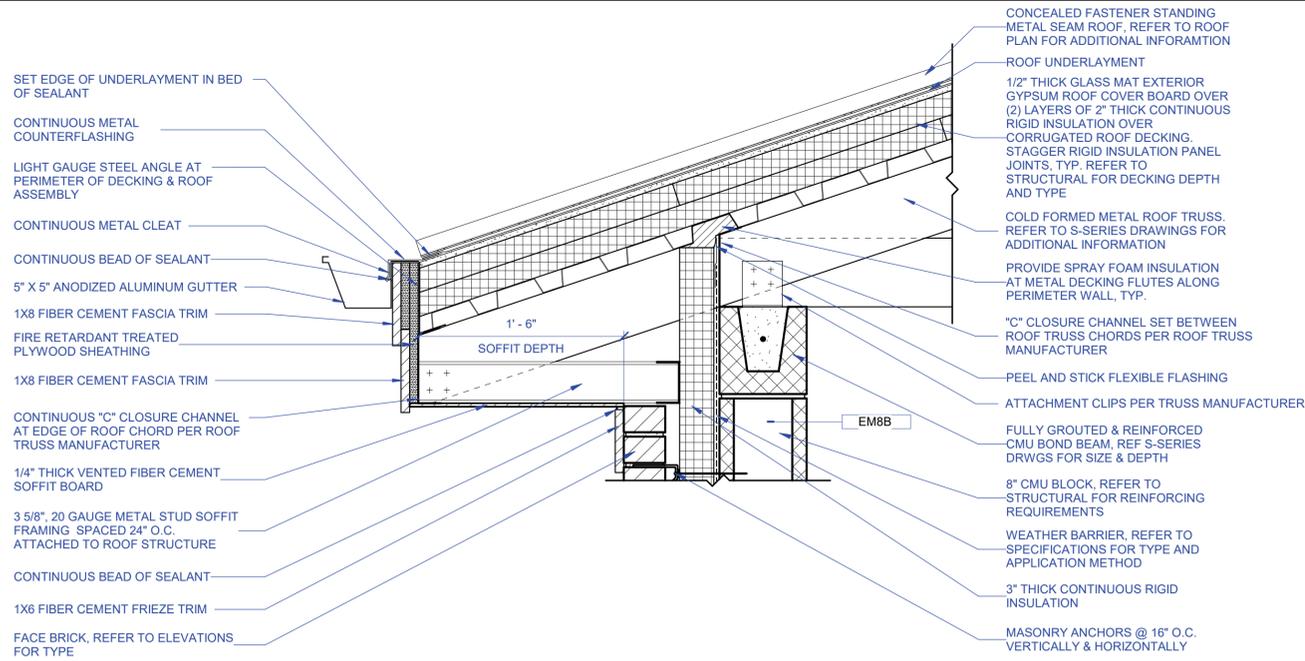
1 BUILDING SECTION - 4
 1/4" = 1'-0"



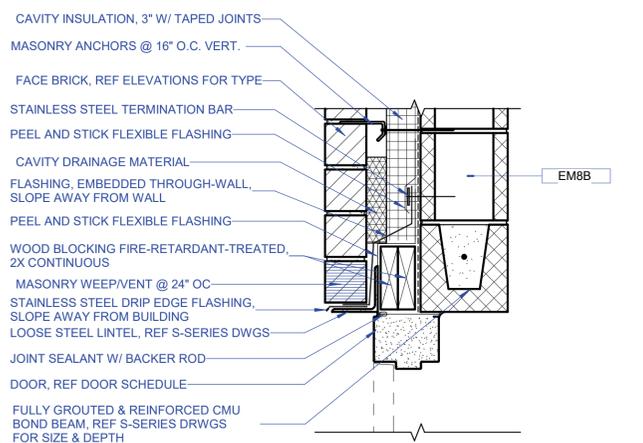
3 BUILDING SECTION - 2
 1/4" = 1'-0"

4 BUILDING SECTION - 3
 1/4" = 1'-0"

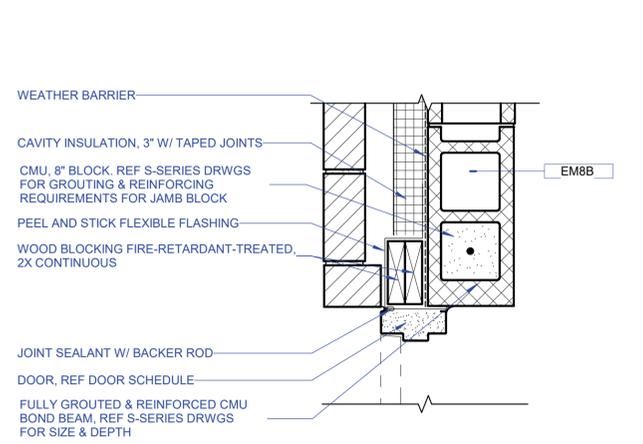
BID SET
SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION
 SPEEDWAY, IN 46224



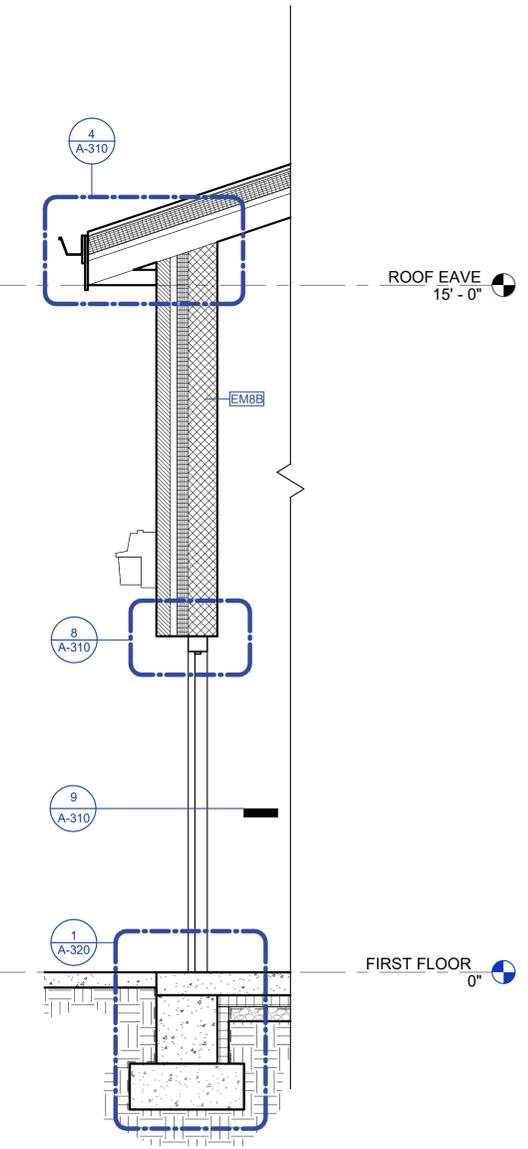
4 ROOF SOFFIT - LOWER EDGE
 1 1/2" = 1'-0"



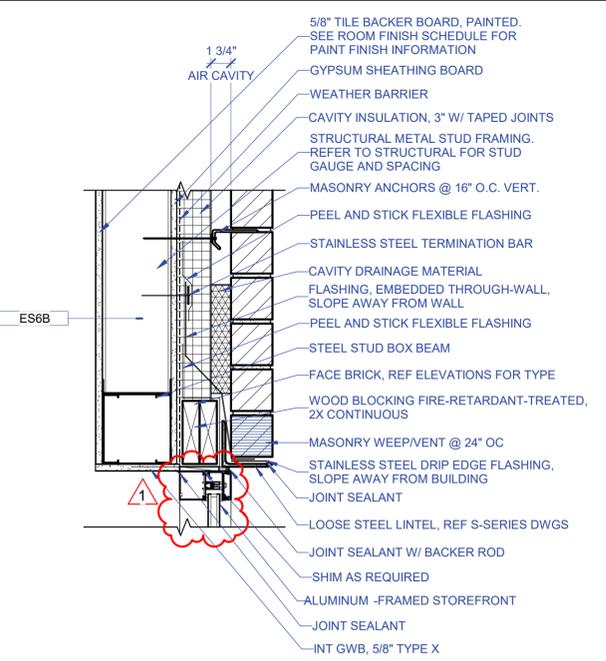
8 EM8B - HM DOOR - HEAD
 1 1/2" = 1'-0"



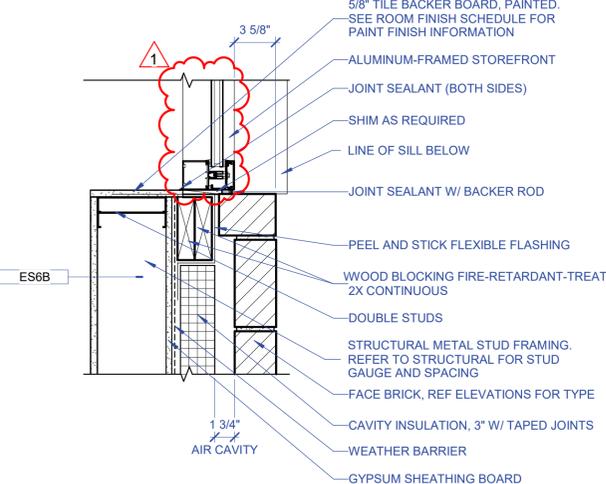
9 EM8B - HM DOOR - JAMB
 1 1/2" = 1'-0"



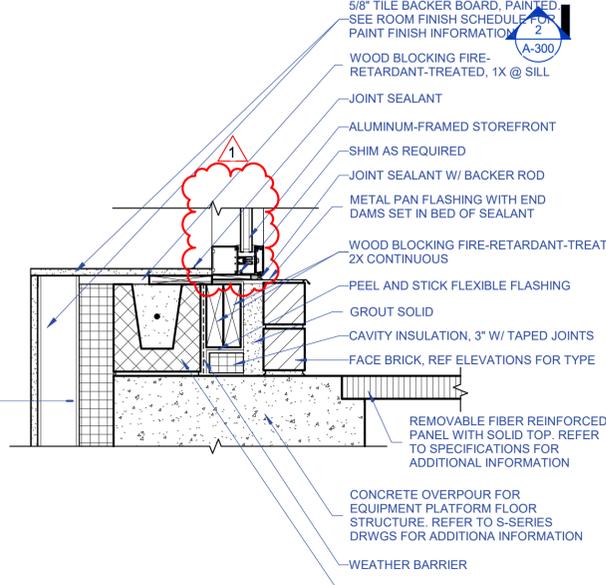
7 WALL SECTION - 2
 1/2" = 1'-0"



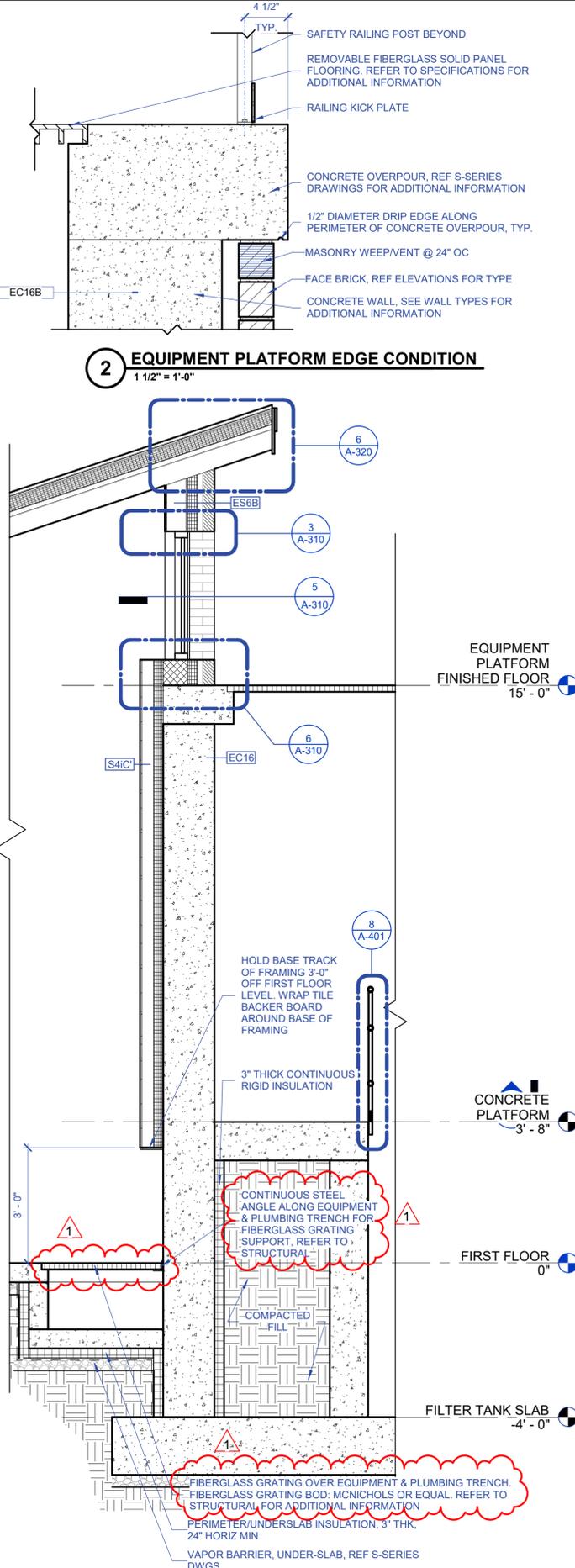
3 ES6B - ALUMINUM WINDOW - HEAD
 1 1/2" = 1'-0"



5 ES6B - ALUMINUM WINDOW - JAMB
 1 1/2" = 1'-0"



6 ES6B - ALUMINUM WINDOW - SILL
 1 1/2" = 1'-0"



1 WALL SECTION - 1
 1/2" = 1'-0"

#	Revision	Date
1	ADDENDUM #2	2/26/2026

Project #: 23-400-353-1
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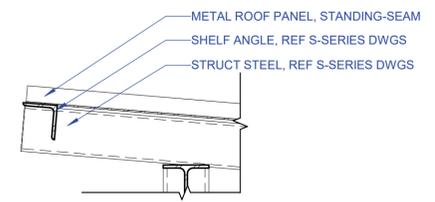


WALL SECTION & DETAILS

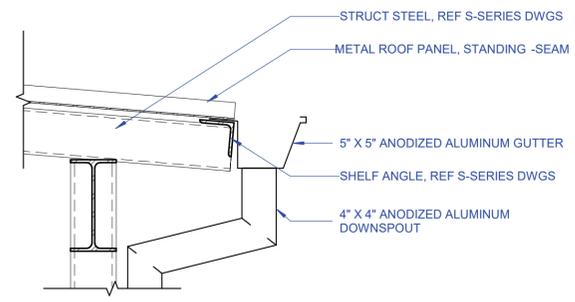
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#	Revision	Date
1	ADDENDUM #2	2/26/2026

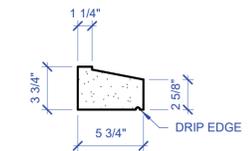
Project #: 23-400-353-1
 Designed By: Designer
 Drawn By: Author
 Checked By: Checker
 Date: 02.26.2026



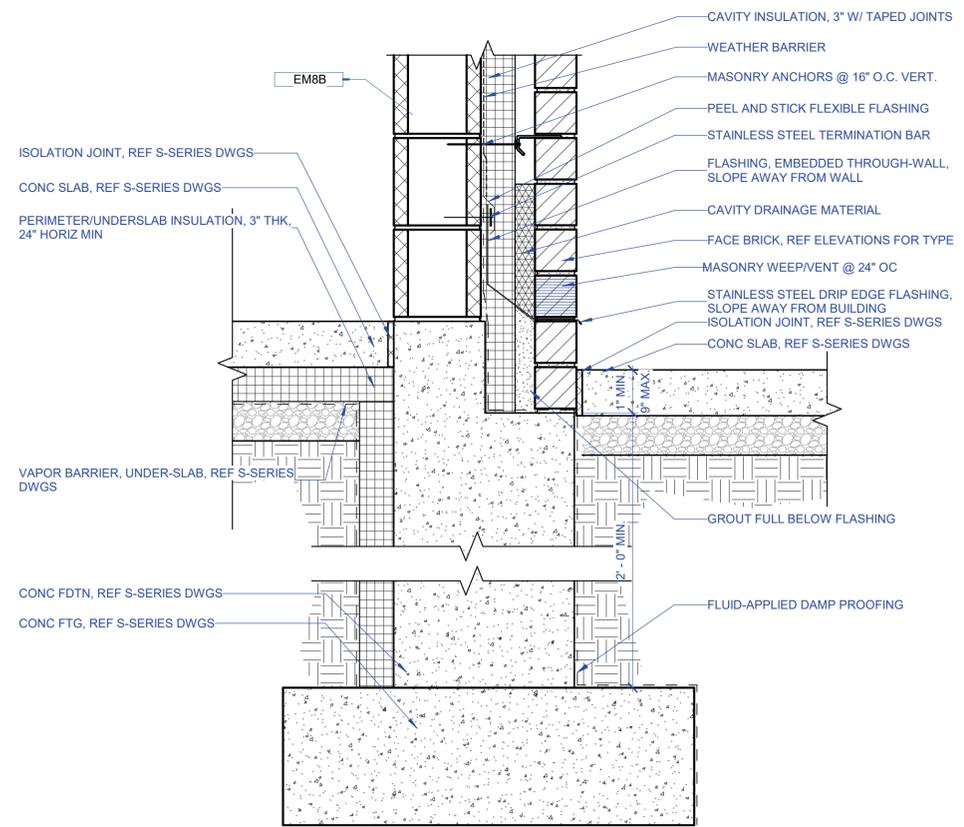
4 UPPER EDGE CONDITION - CANOPY ROOF
 1 1/2" = 1'-0"



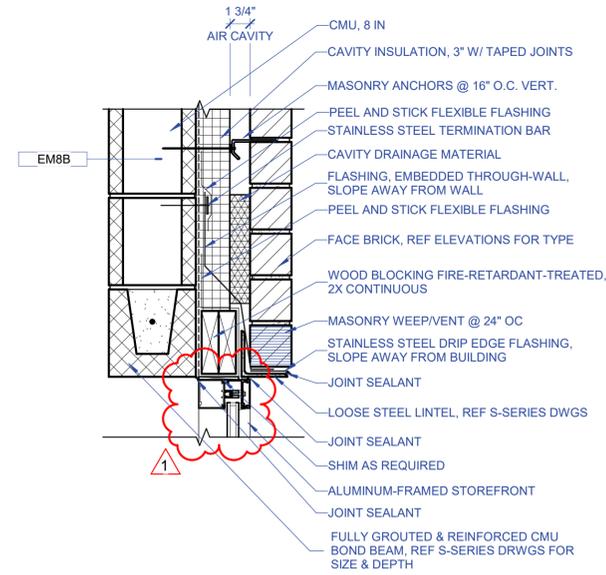
3 LOWER EDGE CONDITION - CANOPY ROOF
 1 1/2" = 1'-0"



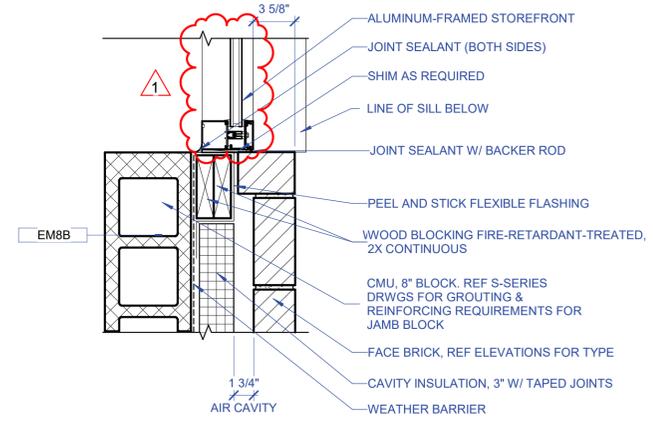
8 STONE TRIM UNIT - TYPE "A"
 1 1/2" = 1'-0"



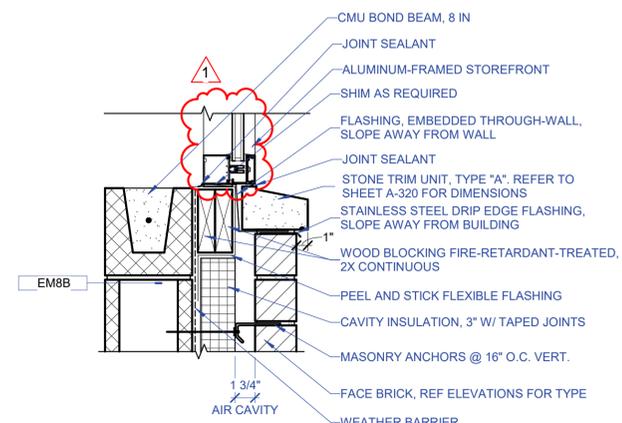
9 FOUNDATION DETAIL - EXTERIOR CMU WALL & BRICK LEDGE W SLAB
 1 1/2" = 1'-0"



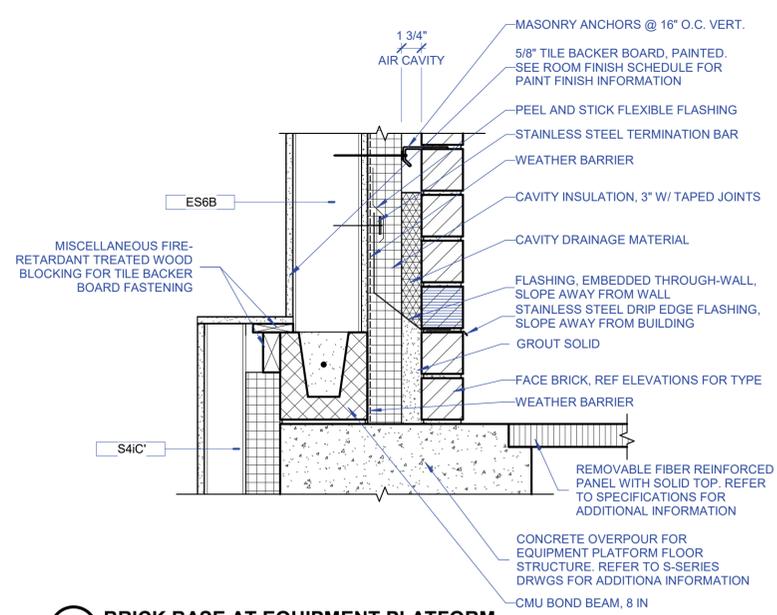
2 EM8B - ALUMINUM STOREFRONT - HEAD
 1 1/2" = 1'-0"



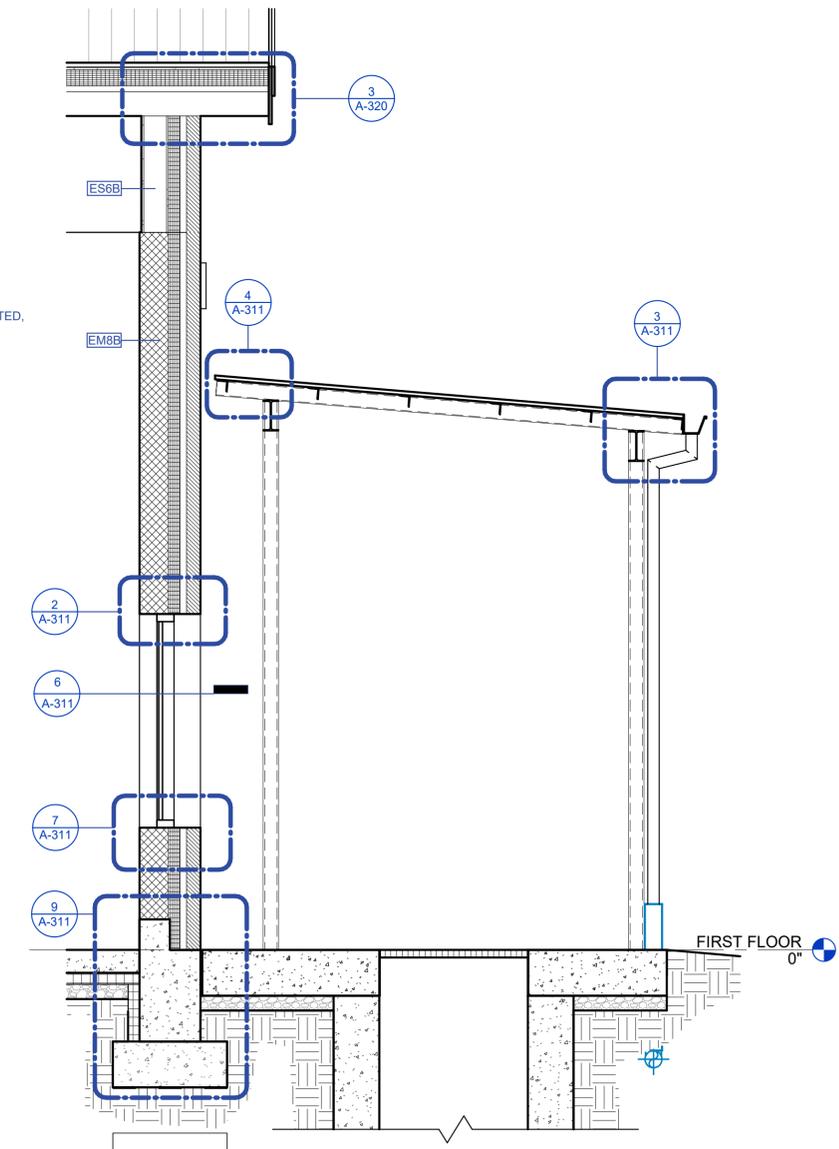
6 EM8B - ALUMINUM STOREFRONT - JAMB
 1 1/2" = 1'-0"



7 ES6B - ALUMINUM WINDOW - SILL
 1 1/2" = 1'-0"



1 BRICK BASE AT EQUIPMENT PLATFORM
 1 1/2" = 1'-0"



5 WALL SECTION - 3
 1/2" = 1'-0"

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 25-117
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 Drawn By: RMS
 Checked By: AMS
 Date: 02/26/2026



FOUNDATION PLAN NOTES

- INDICATES NOTE REFERENCED IN PLAN
- 1. SEE THE S1-SERIES SHEETS FOR GENERAL STRUCTURAL NOTES AND TYPICAL STRUCTURAL DETAILS.
- 2. T/SLAB ELEVATION = VARIES. SEE PLAN
T/FOOTING ELEVATIONS = VARIES, SEE PLAN
- ③ FLOOR SLAB SHALL CONSIST OF A 5-INCH SLAB-ON-GRADE OVER 6-INCHES OF COMPACTED FILL AND A 10-MIL VAPOR RETARDER. REINFORCE SLAB WITH SYNTHETIC FIBER REINFORCING PER CONCRETE SCHEDULE.
- 4. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED PRIOR TO FABRICATION, CONSTRUCTION OR ERECTION. THE GENERAL CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ANY DISCREPANCIES.
- 5. AT RE-ENTRANT SLAB CORNER CONDITIONS, PROVIDE (2) #4 X 4'-0" AT 3-INCHES O.C. PLACED 2-INCHES CLEAR FROM CORNER, CENTERED IN SLAB, TYPICAL.
- 6. SEE SITE PLAN FOR ALL FINAL GRADE ELEVATIONS.
- 7. SEE GEOTECHNICAL REPORT FOR ALL BACKFILLING AND COMPACTION REQUIREMENTS BEHIND WALLS AND UNDER BASE SLABS.
- 8. UNSUITABLE SOILS IN THE VICINITY OF THE WET WEATHER BUILDING MAY REQUIRE UNDERCUTTING AND BACKFILL PER DETAIL 1/S103. REFER TO THE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
- 9. SAW CUT OR WET CUT CONTRACTION JOINTS IN SLABS AS SHOWN ON PLANS. WET CUTS ARE TO BE MADE AFTER FINAL FLOATING WHILE CONCRETE IS STILL PLIABLE. SAW CUTS ARE TO BE MADE AS SOON AS PRACTICAL AFTER FINAL HARD TROWELING BUT MUST BE COMPLETED WITHIN 2-HOURS OF FINAL TROWELING.
- 10. REFER TO S100 SERIES SHEETS FOR TANK BASE SLAB CONSTRUCTION JOINT AND TANK WALL CONSTRUCTION AND CONTRACTION JOINT REQUIREMENTS.
- 11. GENERAL CONTRACTOR SHALL SUBMIT CONSTRUCTION / CONTRACTION JOINT PLAN FOR ENGINEER REVIEW. APPROVAL OF JOINT LAYOUT IS REQUIRED PRIOR TO CONSTRUCTION.
- 12. MAINTAIN STRUCTURAL SLAB THICKNESSES AT ALL FLOOR SLOPES AND DEPRESSIONS.
- 13. GENERAL CONTRACTOR TO COORDINATE ALL OPENING, PIPE SLEEVES, EMBEDDED ITEMS, HANDRAILS, GRATING, ETC. WITH THE PROCESS DRAWINGS.
- 14. SEE PROCESS DRAWINGS FOR PIPE PENETRATIONS, SIZES, AND LOCATIONS. SEE TYPICAL DETAILS FOR REINFORCING REQUIREMENTS AT PIPE PENETRATIONS.
- ① 15. REMOVABLE TRENCH COVER PANELS SHALL BE 1 1/2" THICK MOLDED SQUARE GRID FIBERGLASS REINFORCED GRATING (MCNICHOLS MS-S-150 OR APPROVED EQUIVALENT). COORDINATE COLOR SELECTION WITH OWNER.

SPREAD FOOTING SCHEDULE					
MARK	WIDTH	LENGTH	THICK.	BOTT. LONG. REINF.	BOTT. TRANS. REINF.
F3	3'-0"	3'-0"	1'-0"	4 - #4	4 - #4

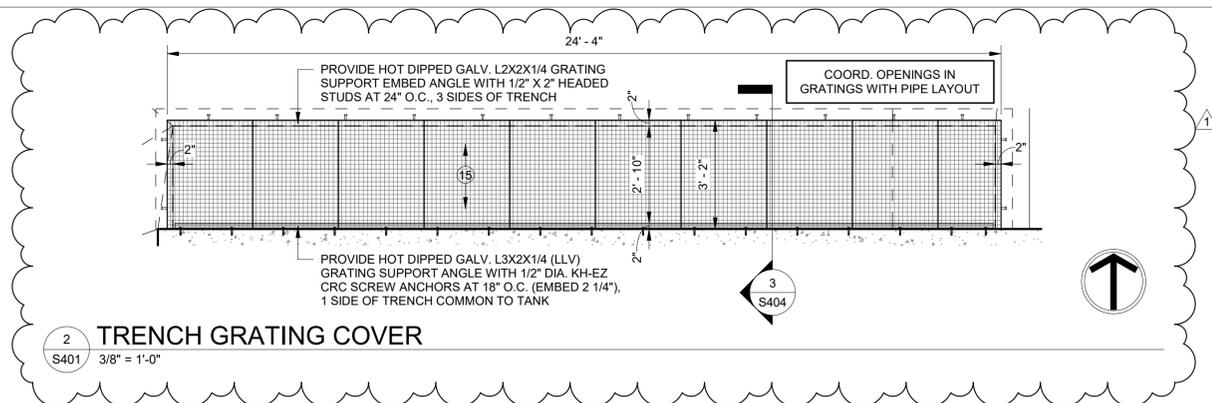
WALL FOOTING SCHEDULE					
MARK	WIDTH	LENGTH	THICK.	BOTT. LONG. REINF.	BOTT. TRANS. REINF.
WF2.5	2'-6"	CONT.	1'-0"	3 - #4	#4 AT 18" O.C.

PEDESTAL SCHEDULE						
MARK	WIDTH	LENGTH	TYPE	V. REINF.	TIES	REFERENCE
P1.5	1'-6"	1'-6"	A	8 - #6	3 x #3 AT 3" O.C. TOP, #3 AT 12" O.C. REMAINDER	3/S104

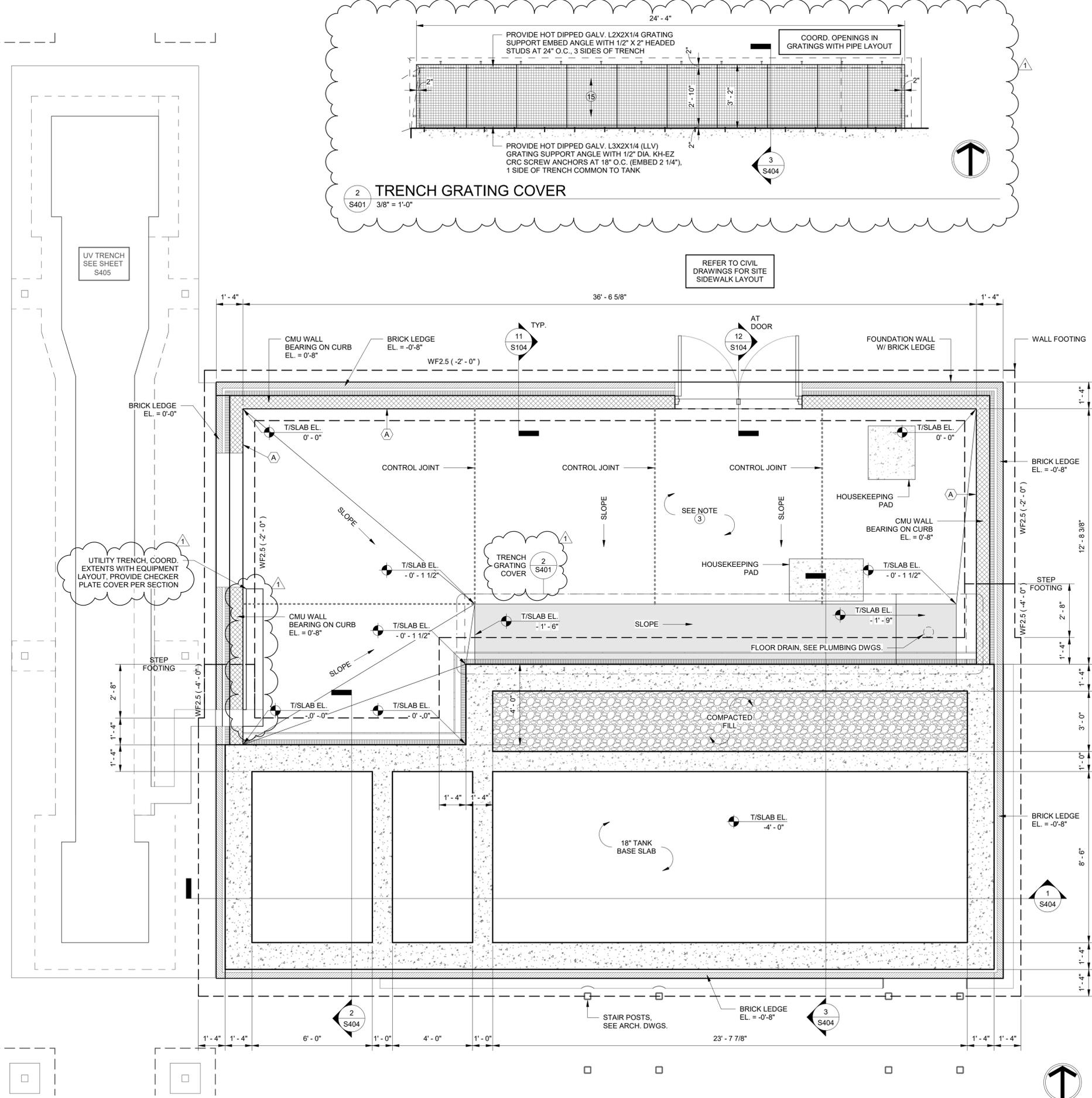
COLUMN SCHEDULE			
COLUMN SIZE	BASE PLATE	ANCHOR BOLTS	REFERENCE
HSS4X4X3/8	PL 12" x 12" x 1"	4 - 1" DIA.	4/S104 & 10/S104

MASONRY WALL SCHEDULE			
MARK	CMU SIZE	VERTICAL REINF.	HORIZONTAL REINF.
A	8"	#5 AT 40" O.C.	(2) - #5 AT T/BB = T/WALL

- NOTES:**
- REINFORCE ALL WALLS AS INDICATED IN SCHEDULE EXCEPT AS NOTES ON PLANS AND/OR DETAILS.
 - PROVIDE TOP BAND BEAM (BB) TO ALL WALLS. WHEN WALL COURSING DOES NOT FINISH ON A FULL BLOCK, TOP BB DEPTH SHALL BE THE LAST FULL BLOCK PLUS THE PARTIAL DEPTH OF THE REMAINING BLOCK AT TOP OF THE WALL. 1'-0"
 - PROVIDE A 1'-0" HOOK AT TOP OF ALL VERTICAL BARS. 3'-0" MIN.
 - PROVIDE HORIZONTAL JOINT REINFORCEMENT AT 16" O.C. (8" LAP), U.N.O.



2 TRENCH GRATING COVER
 S401 3/8" = 1'-0"



1 WET WEATHER BUILDING FOUNDATION PLAN
 S401 3/8" = 1'-0"

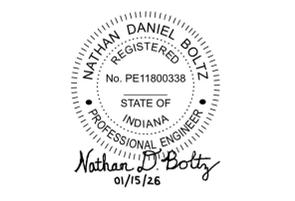
BID SET

SPEEDWAY WWTP WET WEATHER CAPACITY EXPANSION

SPEEDWAY, IN 46224

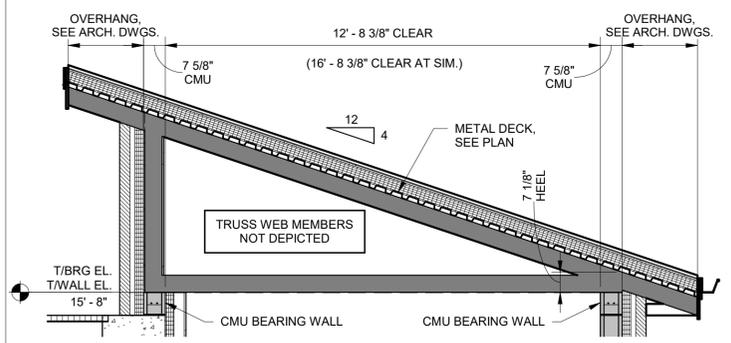
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1	ADDENDUM #2	02/26/2026

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 Checked By: AMS
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**WET WEATHER
 TREATMENT BUILDING
 - SECTIONS**

S404



- CFMF TRUSS NOTES:**
- SEE DESIGN CRITERIA BELOW FOR TRUSS LOADING INFORMATION.
 - TRUSS WEB MEMBERS NOT DEPICTED IN SECTION FOR CLARITY. TRUSS MANUFACTURER TO DETERMINE WEB MEMBER CONFIGURATION.
 - TRUSS PROVIDER SHALL DESIGN AND DETAIL TRUSS TO CMU BEARING WALL CLIPS FOR BOTH BEARING AND UPLIFT.
 - TRUSS DESIGNER SHALL BE RESPONSIBLE FOR DESIGN AND DETAILING OF CFMF ROOF EDGE OUTRIGGERS, SEE PLAN FOR APPROXIMATE OUTRIGGER LAYOUT.

DESIGN CRITERIA:

WIND LOADING PER THE 2014 INDIANA BUILDING CODE (2012 INTERNATIONAL BUILDING CODE, FIRST PRINTING WITH INDIANA AMENDMENTS)

WIND CRITERIA:

RISK CATEGORY	III
BASIC WIND SPEED	120 PSF
EXPOSURE	C
BUILDING TYPE	ENCLOSED

LIVE LOAD:

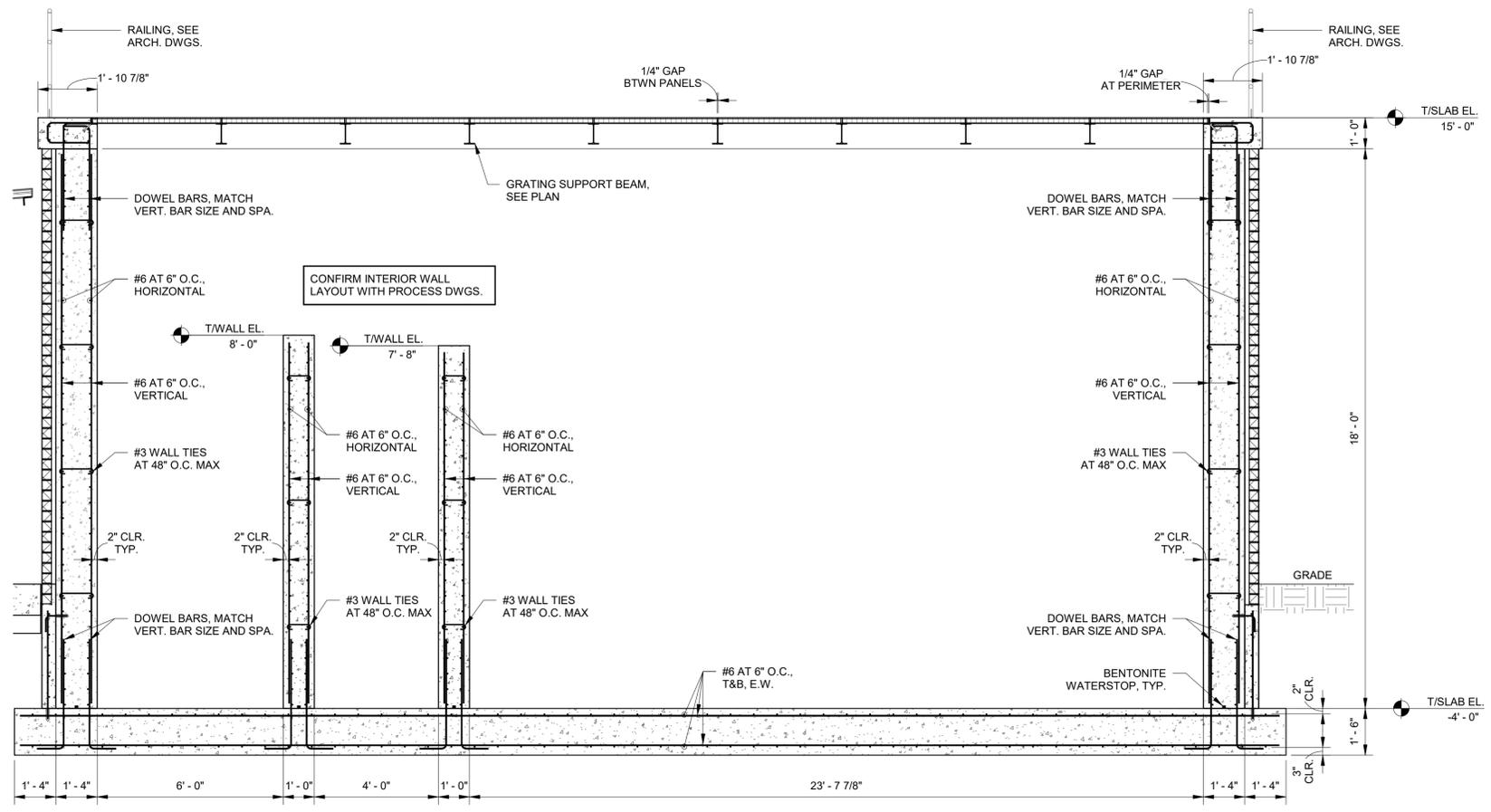
TOP CHORD	20 PSF
BOTT. CHORD	10 PSF

(NOTE: BOTT CHORD LIVE LOAD IS AN INDEPENDENT LOADING CASE AND IS NOT TO BE APPLIED CONCURRENTLY WITH THE TOP CHORD LIVE LOAD)

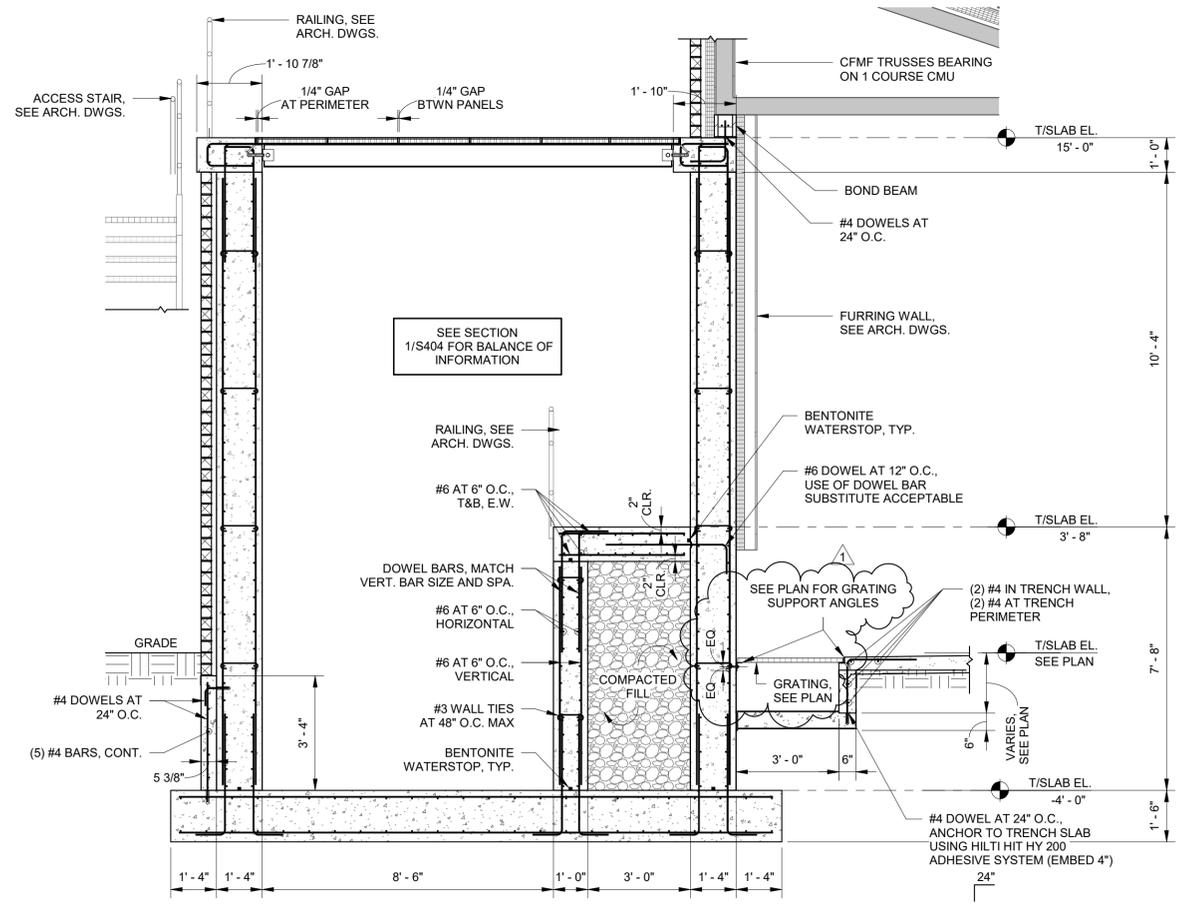
DEAD LOAD:

TOP CHORD	10 PSF
BOTT. CHORD	8 PSF

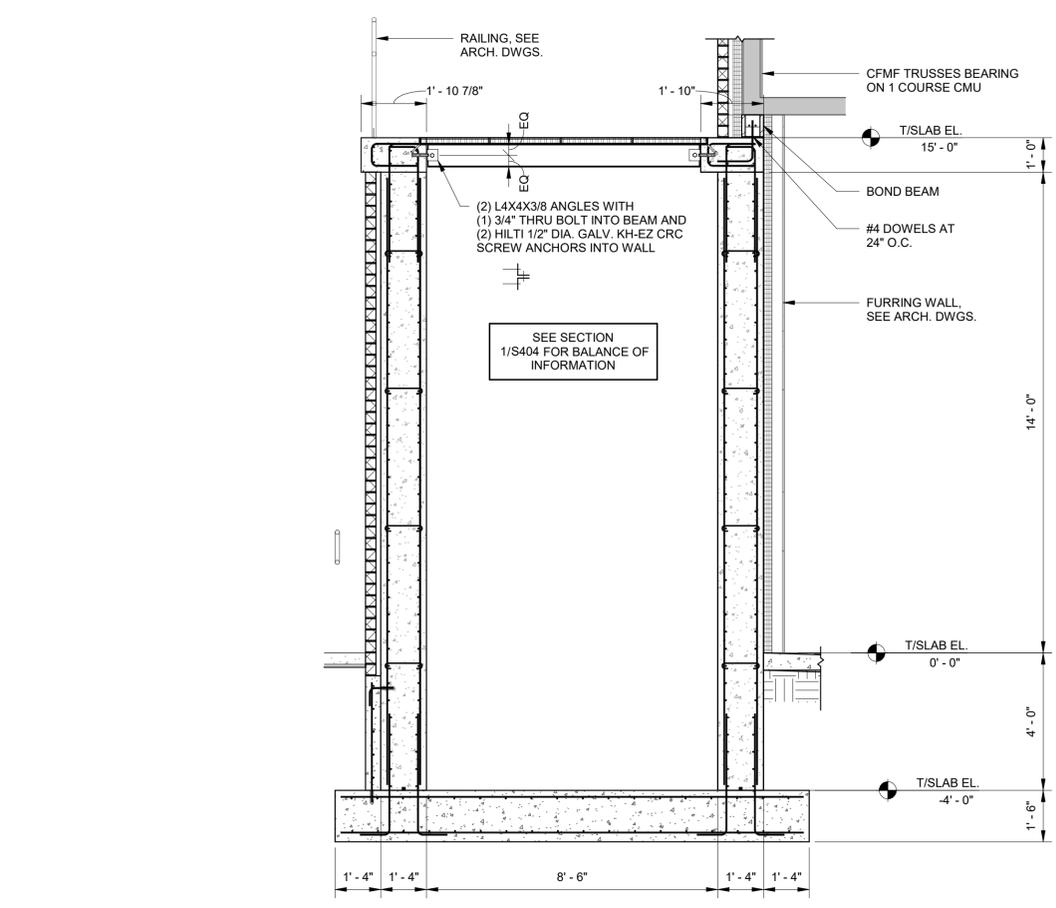
4 SECTION - CFMF TRUSS
 S404 3/8" = 1'-0"



1 SECTION
 S404 3/8" = 1'-0"



3 SECTION
 S404 3/8" = 1'-0"



2 SECTION
 S404 3/8" = 1'-0"

BID SET
**SPEEDWAY WWTP
 WET WEATHER CAPACITY
 EXPANSION**
 SPEEDWAY, IN 46224

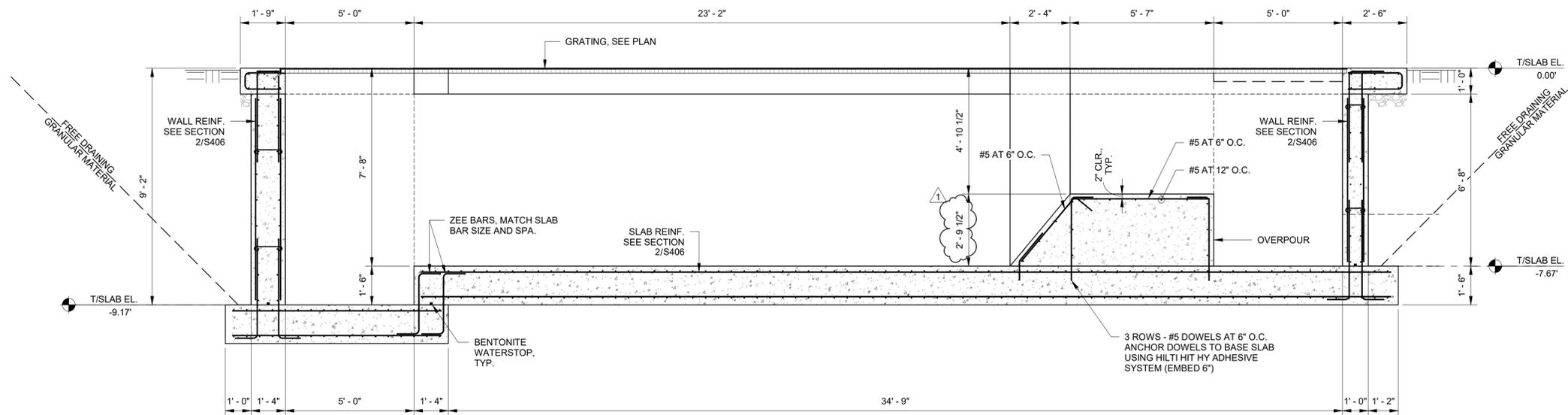
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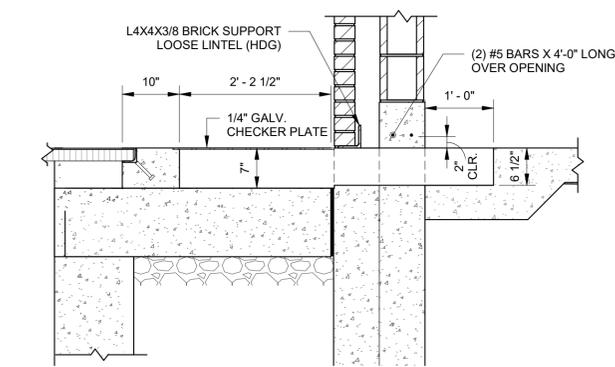


**WET WEATHER UV
 SYSTEM - SECTIONS
 AND DETAILS**

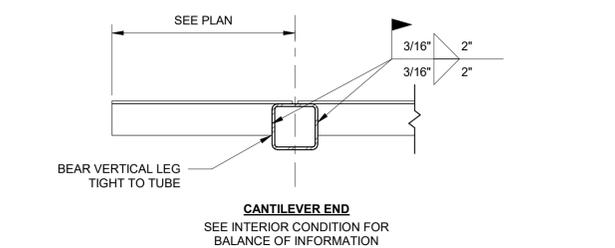
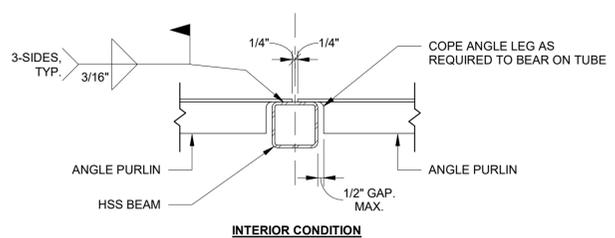
S406



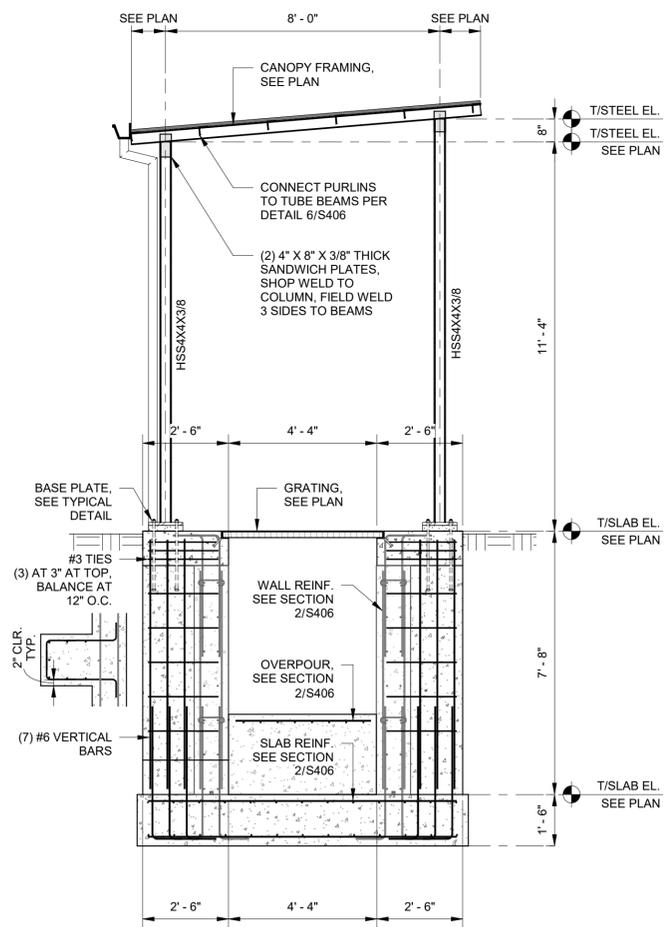
1 SECTION
 S406 3/8" = 1'-0"



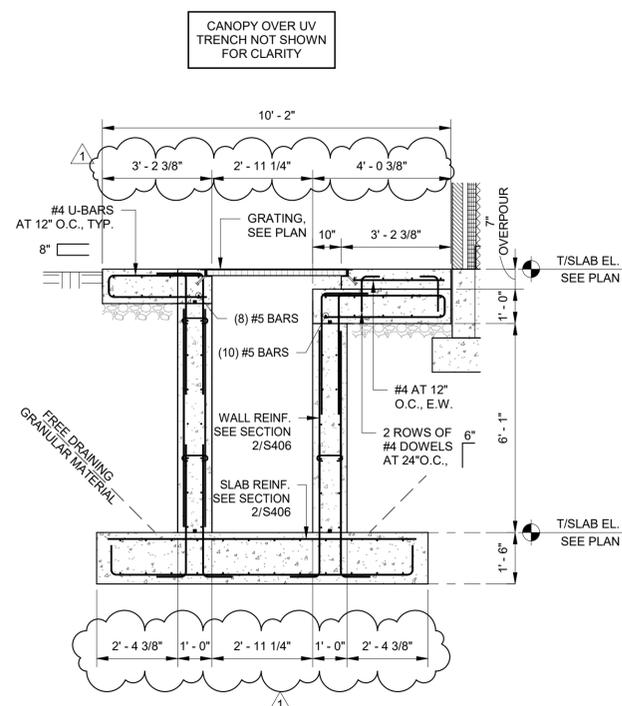
5 SECTION
 S406 3/4" = 1'-0"



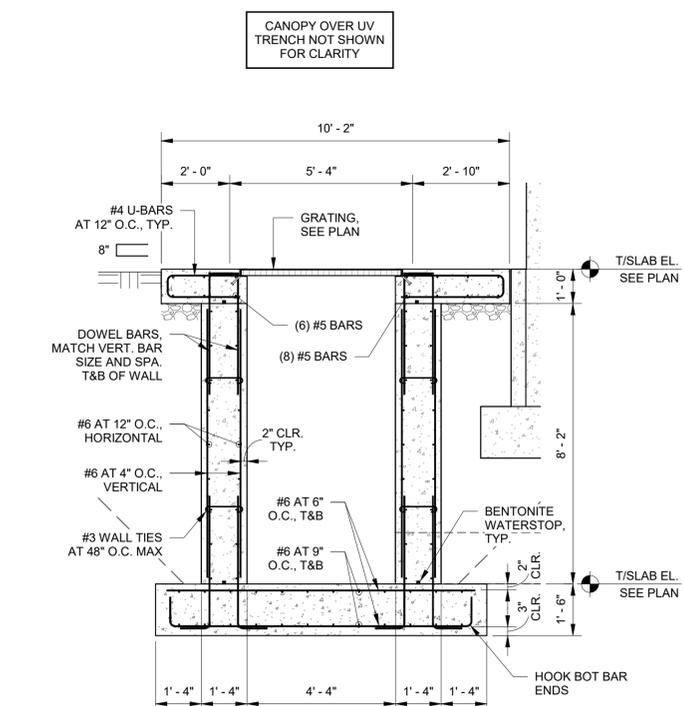
6 CONNECTION DETAIL
 S406 1 1/2" = 1'-0"



4 SECTION
 S406 3/8" = 1'-0"



3 SECTION
 S406 3/8" = 1'-0"



2 SECTION
 S406 3/8" = 1'-0"

BID SET
SPEEDWAY WWTP
WET WEATHER CAPACITY
EXPANSION
 SPEEDWAY, IN 46224

#	Revision	Date
1	ADDENDUM #2	02/26/2026

Project #: 23-400-353-1
 Designed By: K.I.
 Drawn By: J.W.
 Checked By: K.I.
 Date: 01.15.2026

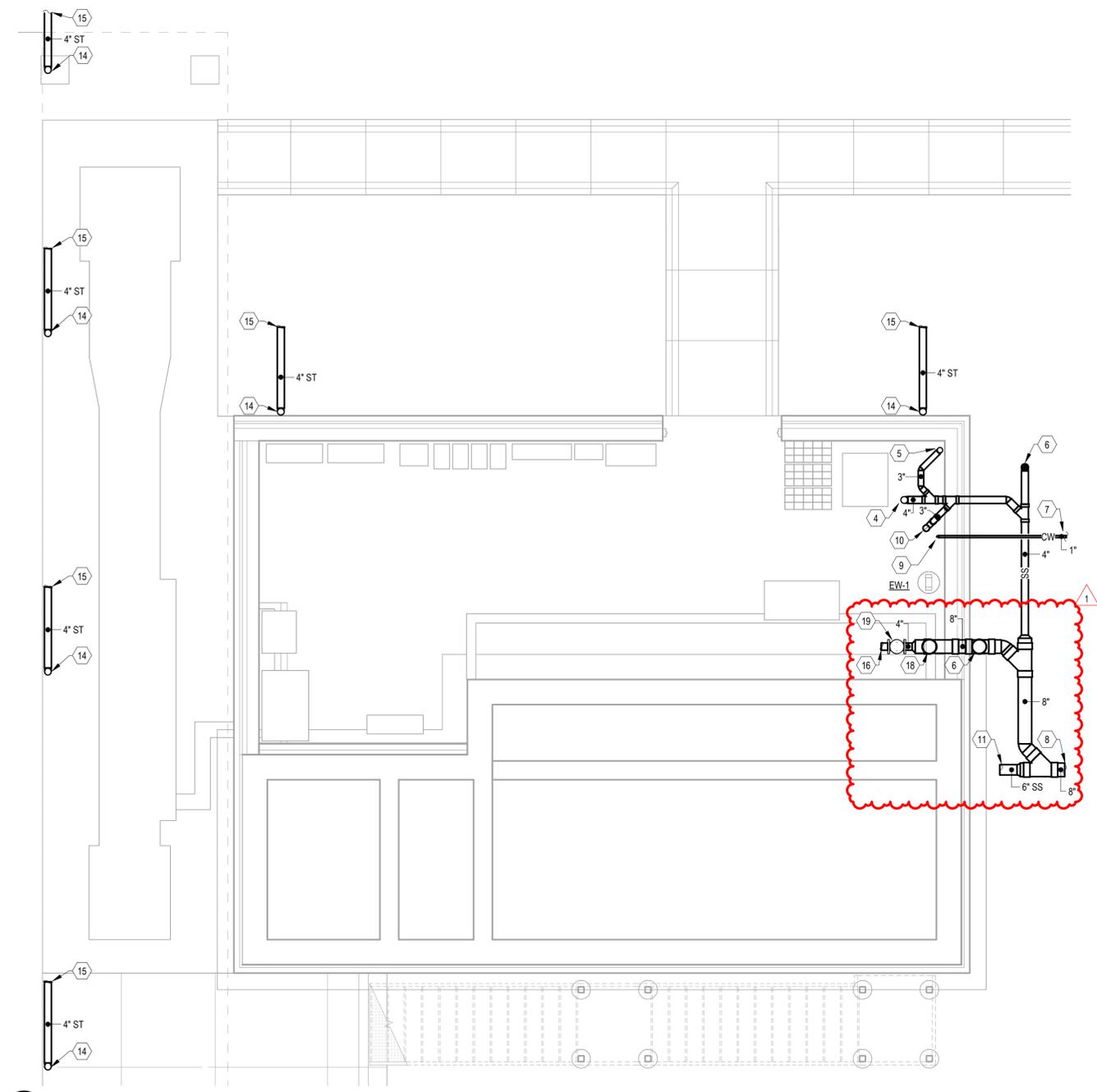


PLUMBING PLANS

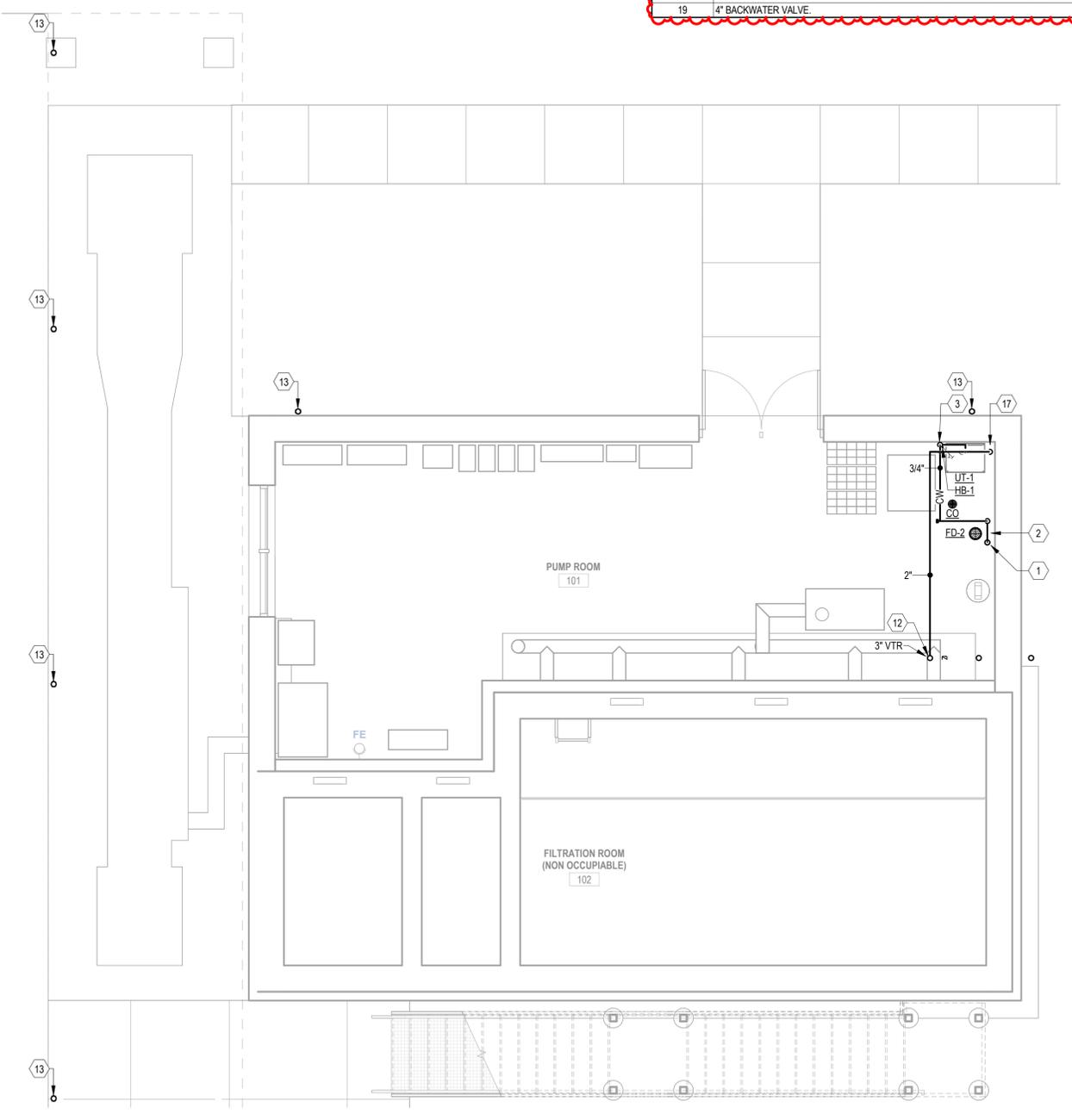
P210

#	NOTE
1	1" CW DN. B.F.F.
2	1" BACKFLOW PREVENTER SHALL BE INSTALLED VERTICALLY FOR ACCESSIBILITY.
3	3/4" CW DROP TO HOSE BIBB. ROUTE 3/4" CW TO UTILITY SINK.
4	4" WASTE UP TO CLEANOUT.
5	3" WASTE UP TO UTILITY SINK.
6	WASTE UP TO CLEANOUT.
7	1" DOMESTIC WATER SERVICE TO SITE WATER SYSTEM. REFER TO DRAWING C400 FOR CONTINUATION.
8	8" SANITARY WASTE TO SITE SANITARY SYSTEM. REFER TO DRAWING C400 FOR CONTINUATION.

#	NOTE
9	1" CW UP A.F.F.
10	2" WASTE UP TO FLOOR DRAIN.
11	6" WASTE UP TO FILTRATION SYSTEM DRAIN. REFER TO DRAWING C400 FOR CONTINUATION.
12	2" VENT UP AND 3" VENT THRU ROOF.
13	4" STORM LEADER UP/DN.
14	4" STORM LEADER UP.
15	4" STORM LEADER TO SITE STORM SYSTEM. REFER TO DRAWING C400 FOR CONTINUATION.
16	4" WASTE UP TO TRENCH DRAIN. REFER TO DRAWING C400 FOR CONTINUATION.
17	2" VENT UP & 3" WASTE DN.
18	8" WASTE UP TO SCUM DRAIN. REFER TO DRAWING C400 FOR CONTINUATION.
19	4" BACKWATER VALVE.



1 FOUNDATION PLUMBING PLAN
 P210 1/4" = 1'-0"



2 FIRST FLOOR PLUMBING PLAN
 P210 1/4" = 1'-0"

PLUMBING FIXTURE ROUGH-IN SCHEDULE

FIXTURE	WASTE	TRAP	VENT	COLD	HOT
UT-1	2"	2"	1-1/2"	3/4"	--

BACK FLOW PREVENTOR SCHEDULE

TAG	SERVICE	SIZE	TYPE	MANUFACTURER	MODEL #	LOCATION	NOTES
BFP-1	DOMESTIC WATER	1"	REDUCED PRESSURE ZONE ASSEMBLIES	WATTS	SERIES LF909	PUMP RM. 101	INSTALL WITH AIR GAP, ELBOWS, TEST COCKS AND NON-RISING STEAM GATE VALVES.

DRAIN SCHEDULE

TAG	FLOOR DRAIN DESCRIPTION	MANUFACTURER	MODEL #
FD-1	FLOOR DRAIN: ADJUSTABLE CAST IRON BODY, LOW DOME CHROME PLATED STRAINER, FLAPPER TYPE BACKWATER VALVE. CAULK OUTLET. PC TO PROVIDE SCREEN MESH.	J.R. SMITH	2005-Y04-CP-GV
FD-2	FLOOR DRAIN: CAST IRON BODY WITH 3" WASTE CONNECTION, 5" STRAINER AND 4" FUNNEL.	J.R. SMITH	2041S

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE DESCRIPTION	MANUFACTURER	MODEL #
UT-1	UTILITY TUB: 24" X 17-1/2" X 8" DEEP, STAINLESS STEEL ONE COMPARTMENT SINK W/ LEGS.	REGENCY	600FHMSB1824
	FAUCET: WALL MOUNTED, SINGLE HOLE, SINGLE TEMPERATURE FAUCET W/ POLISHED CHROME PLATED BRASS BODY. 5-13/16" SWIVEL GOOSENECK W/ LAMINAR FLOW DEVICE.	T&S	5F-1WL805C
	DRAIN: 3-1/2" BASKET DRAIN W/ STRAINER, 1-1/2" IPS, REGENCY P-TRAP 13" CHROME P-TRAP 1-1/2" (600PTRAP).		
EW-1	EYEWASH STATION: HEATED PORTABLE PRESSURIZED EYEWASH UNIT. TANK AND EYEWASH JACKET. 510 WATT DRUM HEATER. DUAL THERMOSTAT. PIPE INSULATION.	BRADLEY	S19-788H

PLUMBING EQUIPMENT SCHEDULE

TAG	DESCRIPTION	MANUFACTURER / MODEL # / CAPACITY	ELECTRICAL REQUIREMENTS	REMARKS (SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS)
HB-1	HOSE BIBB	J.R. SMITH # 5675-H	-	LOCATED IN PUMP ROOM.
DCV-1	DUAL CHECK VALVE	WATTS # LF7R	-	UNIT SHALL BE LINE SIZE

WATER HAMMER ARRESTOR SCHEDULE

NOTES: CONTRACTOR TO VERIFY FIXTURE UNITS CONNECTED

PDI SYMBOL	FIXTURE UNITS CONNECTED	CONNECTION SIZE
A	1-11	1/2"
B	12-32	3/4"
C	33-60	1"
D	61-113	1"
E	114-154	1"
F	155-330	1"