Jones & Henry
ENGINEERS, LTD.

Village of Oak Harbor, Ohio
WWTP Improvements
Rebid

ADDENDUM 2

October 22, 2026

Planholders on the Village of Oak Harbor, WWTP Improvements - Rebid are hereby notified of the following amendments to the Contract Documents. This Addendum is hereby made a part of the Contract Documents.

QUESTIONS AND ANSWERS

Questions and answers can be found in the Pre-Bid Questions list attached.

SPECIFICATIONS

Replace the following specifications with the attached:

C-410 Bid Form

02710 – Fencing

11332 – Mechanically-Cleaned Fine Bar Screens

15250 – Piping

Planholders should update the Table of Contents to reflect the above sections.

An updated Table of Contents will be included in the Issued for Construction Project Manual.

DRAWINGS

Replace the following drawings with the attached:

C-0.5	21 of 247	S-4.1	92 of 247	S-8.2	115 of 247
C-104.2	30 or 247	S-4.5	96 of 247	S12.1	120 of 247
C-104.7	35 of 247	S-6.1	102 of 247	S14.1	121 of 247
S-0.12	77 of 247	S-6.3	104 of 247	PE-14.1	155 of 247
S-2.1	79 of 247	S-6.5	106 of 247	PE-14.2	156 of 247
S-2.2	80 of 247	S-6.6	107 of 247	E-0.4	185 of 247
S-2.3	81 of 247	S-6.7	108 of 247	E-101.1	190 of 247
S-2.4	82 of 247	S-7.1	111 of 247	E-2.1	197 of 247
S-2.6	84 of 247	S-8.1	114 of 247	E-10.3	218 of 247

Planholders should update the Drawing Index to reflect the above changes.

An updated Drawing Index will be included in the Issued for Construction Project Manual.

RECEIPT OF THIS ADDENDUM MUST BE ACKNOWLEDGED ON PAGE C-410-1 OF THE BID.

3103 Executive Parkway, Suite 300, Toledo, Ohio 43606 - 419.473.9611

OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT
PRE-BID QUESTIONS

1. Is the Door 200-B, rollup door in the Headworks, motor operated as specified but not shown.

   See Addendum 2, Revised Sheets E-0.4, E-101.1, E-2.1, and E-10.3.

2. Should the pump control for the sludge feed press be provided by the press manufacturer?

   See Sheet I-12 and Addendum 2, Revised Sheet E-101.5.

3. The Isometric of the dewatering system show the polymer solution being injected into the sludge line before the sludge flowmeter- this needs to be move to after the flow meter.

   See Addendum 2, Revised Sheet PE- 14.2

4. The control diagram for the mechanically cleaned bar screen shows one level sensor and one level switch per screen. Sheet E-2.1 only shows one level switch per screen.

   See Addendum 2, Revised Sheet E-2.1 with one level switch per screen.

5. Sub-section 2.02 G channel height shown as 12ft-7in.

   See Addendum 2, revised Specification Section C-11332.

6. Sub-section 2.04 B.2.b – Remote pushbutton station shall have Hand/Off/Auto, Forward/Off/Jog-Reverse selector switches and E-Stop pushbutton as it is shown in the plans.

   See Addendum 2 revised Specification section C-11332.

7. Subsection 2.04 B.3.a.1) – the Hydroranger 200 is discontinued.

   See Addendum 2, revised Specification C-11332.

8. Specification Section 02710 - Fencing, 4.01 Fence System shows Site Gate-2, 4' swing gate. Can you confirm the location of the 4' swing / man gate on the contract documents?

   See Addendum 2, revised Specification C-02710

9. Civil drawings show new fences to be tied into the existing fences. Will there be a detail provided for these connections?

   See Addendum 2, revised Specification 02710

10. For the installation of the 36 inch sanitary sewer, there is an option for jacking this span. There is a 12inch sanitary sewer at approximately elevation 562; however, there are no manholes shown for this line. Where are the nearest manholes located north of the proposed 36" and south of the proposed 36"?

    On Sheet C104.3, Upper Left-hand corner of the Sheet, there is a SA18 inch from the west and the SA 12 from the north (as noted in above), there is a MH label 5089, this nearest Manhole to the South.

    On Sheet 104.1, on the plant entrance drive near the center of the sheet, there is a SA12 north and south (as noted in above) with a 6-inch west, there is a MH label 1066, this is the nearest manhole to the north.

11. The proposed storm from MH-SA-3 to CB ST-2 to CB ST-1 is missing top of casting, invert and or a profile for this storm line. The sheet shown below is C-104.2 (30 of 247)

    See addendum 2, Revised Sheet C-104.2

12. Sheet C 104.2, lower left side, It shows a line coming off an existing 8" water line and maybe a Fire Hydrant symbol. However, the line is in the middle of the access drive.

    See addendum 2, Revised Sheet C-104.2

BID FORM

VILLAGE OF OAK HARBOR

WWTP IMPROVEMENTS

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Village of Oak Harbor
Village Administrator
146 Church St.; P.O. Box 232
Oak Harbor, OH 43449

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:

Addendum No.	Addendum, Date
_____	_____
_____	_____
_____	_____
_____	_____

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 e execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 The basis of award for the Contract will be the Base Bid Price, including Base Bid Equipment and Product Manufacturers.

A. Bid Alternate(s), Mandatory Equipment and Product Manufacturer(s), and "or equal" will be considered by the Owner, in accordance with the Contract Documents, after the award of the Contract.

5.02 Bidder shall fill in all blanks on the Bid Form.

A. The name or make of any piece of equipment or material of construction specified in the Contract Documents and identified on the following Base Bid Equipment and Product Manufacturer List shall be utilized in determining the base bid price.

B. Where two or more Equipment or Product Manufacturers are named, or the words "Or Equal" are listed in the Contract Documents and not included in the Base Bid List, Bidders may utilize any of the named or follow the "Or Equal" process outlined in the Contract Documents.

C. The Bidder shall identify their selected Equipment or Product Manufacturer on the Base Bid List as follows:

Base Bid Equipment or Product Manufacturer List	
Specification Section	**Equipment or Product Manufacturers** Select One by Circling
08125	Cross Aluminum Doors
11104	Sanitaire Division of Xylem
11210	Evoqua Water Technologies
11223	Lutz-Jesco
11233	Trojan Technologies

11238	Existing Blower	
11260	Hydro International	
11332	Duperon Corporation	
11735, 4.03, 4.04, 4.06	Flygt	
11735 4.05	Hayward-Gordon	Wemco
11735 4.07	Roto	
11835	Process Wastewater Technologies LLC	
11841	Westech, Ovivo, Evoqua, Walker, ~~Clear Stream~~ **(Addendum 2, Issued 10/22/2026)**	
11841 4.02	Ford Hall	
16220	Caterpillar, Cummins-Onan, Kohler	
16230	Eaton	
16410	Square D	
16411	Square D	
16421	Eaton	
16440	Lake-Shore	

D. The Owner will have the right to select the Equipment or Product Manufacturer in the Base Bid List if Bidder fails to make a selection where required.

5.03 Bidder shall provide pricing for the Mandatory Equipment or Product Manufacturer Alternates below.

A. Where required, Bidder shall make a selection for the "Add" or "Deduct" by circling one, indicating that the price is to be Added or Deducted from the Base Bid Price, if the Owner accepts that Equipment or Product Manufacturer Alternate. If the Bidder fails to make a selection the default will be a Deduction.

B. A Mandatory Alternate is required for each Equipment or Product Manufacturer listed.

Mandatory Alternate			
Specification Section	**Equipment or Product Manufacturers** Shall not be the same as Base Bid Provide pricing for Mandatory Alternate for all listed Equipment or Product manufacturers	Circle One Assumed to be a deduct unless one is circled	**Dollar Amount**
11735 4.05	Hayward-Gordon	Add/Deduct	
	Wemco	Add/Deduct	
11835	Esmil, Inc	Add/Deduct	
11841	Westech	Add/Deduct	
	Ovivo	Add/Deduct	
	Evoqua	Add/Deduct	
	Walker	Add/Deduct	
	~~Clear Stream~~	~~Add/Deduct~~	

Mandatory Alternate			
Specification Section	**Equipment or Product Manufacturers** Shall not be the same as Base Bid Provide pricing for Mandatory Alternate for all listed Equipment or Product manufacturers	Circle One Assumed to be a deduct unless one is circled	**Dollar Amount**
16220	Caterpillar	Add/Deduct	
	Cummins-Onan	Add/Deduct	
	Kohler	Add/Deduct	
	(Addendum 2, Issued 10/22/2026)		

UNIT PRICE BID

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Item No.	Description	Estimated Quantity	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
1	Wastewater Treatment Plant Improvements	1	LS					
	Allowances							
1A	General Contingency Allowance	1	LS	$250,000				
1B	SCADA Main Control Panel	1	LS	$170,000				
1C	SCADA/ PLC Programming, O&M Manuals, Training and Project Management	1	LS	$63,00				
1D	SCADA/PLC Start-up and Commissioning	1	LS	$20,000				
1E	Laboratory and Misc. Equipment	1	LS	$10,000				
	Contingency Items							
2	Excavation of Unsuitable Material	250	CY					

Item No.	Description	Estimated Quantity	Unit	Unit Cost in Numbers		Unit Price in Words	Total Estimated Cost of Item	
3	Additional Special Backfill	250	CY					
4	Additional Class A Concrete	20	CY					
5	Additional Reinforcing Steel	200	Lbs					
6	Additional Sidewalks	2,500	SF					
	Alternates							
7	Demolition of the Existing Plant	1	LS					
Total Estimated Construction Cost:								

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; and

B. Evidence of authority to do business in the state of the Project; and

C. Previous Experience on similar projects or similar nature of work and value; and

D. Present project commitments, value of work remaining, and scheduled completion; and

E. List of Subcontractor, Process Equipment Suppliers and Material Supplier including their bid amount; and

F. Funding Documents included in Exhibit 2;

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)

PERSONAL PROPERTY TAX AFFIDAVIT

STATE OF OHIO)

)ss.

COUNTY OF _____)

_____, being first duly sworn, deposes and says as follows: answering whichever is applicable by placing an "X" before items 1 or 2.

1. ( ) We are not charged with any delinquent personal property taxes on the general tax list of personal property in _____ County, Ohio.

2. ( ) We are charged with delinquent personal property taxes on the general tax list of _____County, Ohio including unpaid penalties and interest in the amount of $_____.

_____
Bidder

By: _____

Title: _____

Sworn and subscribed before me this _____ day of _____ 20 _____.

_____
Notary Public in and for

_____ State

My Commission Expires:

_____ 20_____

SECTION 02710
FENCING

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the furnishing of all materials, equipment, labor, and supervision necessary for the installation of new fencing as shown on the Drawings in accordance with the Contract Documents.

B. All Work performed under this Section shall comply and be in accordance with all approved trade practices and manufacturers' recommendations.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

a. Manufacturer's product literature.

b. Materials of Construction.

c. O&M manual for electric gate operator.

1.03 PROJECT HANDLING

A. Materials, including but not limited to chain link fencing consisting of posts, barbed wire, fence fabric, and gates, and electric gate operators and gate controls. Materials shall be handled and stored in accordance with the manufacturer's recommendations and in such a manner as to prevent any damage to the finish coatings.

PART 2 PRODUCTS

2.01 FENCE FABRIC

A. Fence fabric shall be 2-inch mesh of carbon steel wire and shall be galvanized after weaving in accordance with ASTM A392 Class II or aluminum-clad in accordance with ASTM A491 Class II.

B. Wire shall be 6 gauge on 6-feet fabric and 9 gauge on 4-feet fabric.

C. PVC-coated fences shall be galvanized materials and chemically cleaned. A phosphate conversion treatment shall be applied to prepare the zinc coating to receive the polyvinyl chloride coating.

1. A minimum of 7 mils of green color compound shall be applied to the materials. Coating application shall be as recommended by the manufacturer.

D. Fence fabric shall be attached to all post rails and tension wires with 12-gauge tie wire at a maximum of 15-inch centers. Tie wire shall be aluminum or galvanized steel.

2.02 FENCE POST AND RAILS FOR CHAIN LINK FENCE

A. Line posts shall be galvanized 2-3/8-inch OD Standard Schedule 40 Steel pipe.

B. Fencing 4 feet in height or less shall be provided with a top rail.

1. Top rails shall be galvanized 1-5/8-inch OD Standard Schedule 40 Steel pipe.

C. Fencing greater than 4 feet in height shall be provided with a tension wire, in lieu of the top rail, unless otherwise specified in Part 4.

1. Tension wire shall be 9-gauge braided wire rope stainless steel or galvanized. Tension wire shall support fence fabric taut to prevent fabric from sagging.

D. Tension wire shall be provided at the bottom of the fabric on all fence systems unless bottom rail is specified.

1. Tension wire shall be 9-gauge braided wire rope stainless steel or galvanized.

2. Bottom rails shall be identical to the top rails where top rails are specified

E. Ends, corners, and pull posts shall be galvanized 2-7/8-inch OD Standard Schedule 40 Steel pipe.

F. Posts for swing gates and cantilevered slide gates shall be sized by fence gate manufacturer for the gate width specified.

G. All terminal, corner, and gate posts shall be braced to the next post using a brace rail and a galvanized 3/8-inch truss rod with tightener.

2.03 GATES FOR CHAIN LINK FENCE

A. All gates shall be the same height as the adjacent fence. Barbed wire shall be included on all gates where the adjacent fence system has barbed wire installed.

B. Gates shall be constructed on 1.90-inch OD (larger if required for strength) tubular steel frame, adequately reinforced, and braced to prevent sagging.

C. Gates shall be covered with fence fabric matching that of the adjacent fence.

D. Gates shall include all hinges or rollers, hardware, catches and latching/locking mechanisms as specified herein or otherwise required for complete, functioning installation. All gate components shall be galvanized, aluminum-clad, or PVC-coated as specified in Part 4.

E. Manually operated swinging double gates shall be designed to latch together at the center and lock in the closed position by means of a plunger rod and a suitable catch installed in the pavement.

1. Latching mechanism shall be pad lockable.

2.04 ACCESSORIES FOR CHAIN LINK FENCE

A. Three rows of barbed wire shall be provided. Each barbed wire row shall consist of two strands of twisted 12-1/2-gauge wire with 14-gauge, 4-point barbs spaced on 5-inch centers.

1. Extension arms for supporting barbed wire shall be galvanized, inclined at 45 degrees, and shall be capable of supporting a weight of 250 pounds applied vertically at the tip.

B. Provide one padlock for each gate specified shown on the Drawings or as ordered.

1. Pad lock shall be keyed to the Owner's master key.

2.05 RESERVED

2.06 CANTILEVERED GATES

A. The gate frame shall be schedule 40 galvanized steel tubing 1.9 inch diameter minimum with welded joints. The gate frame shall be designed by the gate manufacturer.

B. Truck assemblies shall consist of two heavy-duty swivel trucks on four horizontal wheels with sealed and lubricated bearings and two high-impact lateral wheels for proper alignment of the truck within the top track.

C. The gate posts shall be 4-inch minimum schedule 40 galvanized posts.

D. The fence manufacturer shall design the size, spacing, depth and required encasement of the gate posts to provide the proper counterbalance for the cantilever gate.

E. The gate assembly shall be constructed to accommodate the electric gate operator for each gate.

F. One 25-foot-wide gate will be provided as shown on the drawings.

2.07 GATE OPERATORS AND CONTROLS FOR CANTILEVER GATES

A. The gate shall be controlled to open and close from one control signal either at a local station or remotely.

PART 3 EXECUTION

3.01 COORDINATION

A. The fence shall not be installed until site grading and paving is completed and final project clean-up is completed.

B. The Contractor shall layout and stake the complete fence and gate locations per plan at one time to allow the Owner to review the planned installation prior to installation of the fence.

3.02 PREPARATION

A. Final grading shall be completed prior to the installation of the permanent fence system.

3.03 CHAIN LINK FENCE INSTALLATION

A. The Contractor shall erect the fence, gates, and fence posts level and plumb as required, in accordance with manufacturer's recommendations and as shown on the Drawings.

B. Line posts shall be spaced at intervals not exceeding 10 feet.

C. Fence fabric shall be stretched taut, securely fastened to the posts, tension wire and top rail as specified and shown on the Drawings.

1. Fence fabric shall be installed approximately 1 inch above the top rail or wire.
2. Fence fabric shall be installed approximately 2 inches above finish grade. Fence fabric when lifted shall not allow an opening greater than 5 inches.
3. Fence fabric shall be stretched at a maximum of 30 feet and all terminal posts.

D. All changes in fence alignment of 30 degree or more and all abrupt changes in grade shall be made with corner posts.

E. Foundations for post shall be sized by fence manufacturer.

1. Foundations shall extend a minimum of 36 inches below finish grade.
2. Concrete foundation shall have a minimum outside diameter of 3 times the embedded post OD and not less than 9 inches.
3. Concrete foundation shall be crowned to shed water way from the embedded post.
4. Concrete foundation shall be belled at the bottom.

PART 4 SPECIAL PROVISIONS

4.01 FENCE SYSTEM

Location	Height	Fence Fabric	Gate Type	Gate Size	Accessories
Chain Link Fence	6-feet	Galv			1,3, and 5

Site gate	6-feet	Galv	Sliding (Cantilever)	One 25-foot panel	As specified
Site gate -1	6-feet	Galv	Swing	6-foot	As specified
Site gate -2	6-feet	Galv	Swing	4-foot	As specified

*The 4-ft gate shall be installed in the new fencing at a location selected by the Owner.

The connection of a new fence to an existing fence will be made at a new line post consistent with Contract Documents. **(Addendum 2, Issued 10/22/2026)**

ABBREVIATIONS

Fence Fabric

PVC PVC Coated
Galv Galvanized
AL Aluminum Clad
DF Decorative Fence

Gate Type

Swing
Sliding

Accessories

1. Barb Wire
2. Top Rail
3. Top Tension Wire
4. Latch/Lock
5. Bottom Tension Wire

4.02 ELECTRIC GATE OPERATOR

A. Industrial Slide Gate Operator:

1. Chamberlain/LiftMaster SL 585 Model Slide Gate Operator or equal that provides continuous cycle operation and a traveling speed of up to 11-inch per second.

2. UL Classification: Conforms to Class II, when tested in accordance with UL32.

B. Operator Enclosure: Weather-resistant, hinged, lockable, 16-gauge steel enclosure with baked-on powdercoat finish over a 7-gauge steel frame.

C. Operator Motor: 1 HP minimum Continuous Duty motor with built-in overload protection in three phase 460 VAC 60 Hz.

D. Drive System: 20:1 gear reduction using worm-gear reduction in synthetic oil bath with a solenoid-activated brake system that prevents back-driving.

E. Open and Close Limit Settings: Limit switches are modular and fully adjustable.

F. Control Circuit: LiftMaster GL solid-state control board; low-voltage control inputs protected from external spikes and surges that provide long distance control of wiring

runs over 1,000 feet for connection of a full range of optional external devices including loop detectors, telephone entry systems, access control systems, and radio receivers.

G. Additional Required Controls:

1. Internally-mounted RF receiver tuned at 315 MHz.
2. Inherent obstruction sensing providing separate, single force adjustments for both open and closed directions, allowing a closing gate to reverse to the opposite limit and stop when encountering an obstruction.
3. External obstruction sensing providing separate open and close cycle input connections for external contact and non-contact sensors.
4. UL 325-compliant entrapment warning alarm system providing ability to offer a warning tone which begins 3-seconds prior to gate movement and continues during gate operation.
5. Loop detector inputs allowing for the connection of exit, shadow, and interrupt loop detectors.
6. Timer-to-close providing adjustable timer settings between 1 and 180 seconds which resets upon receiving any additional open commands. Provide means to deactivate timer-to-close as needed.
7. Maximum run timer to protect gate and operator from damage by limiting run time to 120 seconds.
8. Emergency Release: External manual hydraulic release for manual operation of gate during emergencies and maintenance work.
9. Emergency Stop: Stop button in a weather-tight outdoor enclosure to halt operation of the operator in an emergency.
10. Accessory Power: Two 24 VAC connections for operator accessories, including a radio receiver and loop detectors.
11. Integral thermostat-controlled heater kit for use in cold weather climates.
12. Twelve (12) - Radio Transmitters for exclusive use with Gate Operator.

4.03 ELECTRIC GATE OPERTAOR INSTALLATION

A. The electric gate operator shall be installed after the fencing is completed and it will be coordinated with the approved slide gate.

B. The electric gate operator shall be installed according to the manufacturer’s requirements, including required mounting and support structure.

C. Install separate power and control conduits for the operator.

END OF SECTION

SECTION 11332
MECHANICALLY-CLEANED FINE BAR SCREENS AND WASHER COMPACTORS

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the design, fabrication, shipping and handling of two front-cleaning, front-return, link driven, mechanically-cleaned, bar screens assembly; two interleaving, dual auger washer compactors; and any auxiliary equipment or accessories to be installed in the location as indicated on the Drawings and as specified herein.

B. All equipment supplied under this Section shall be furnished by or through a single Screening System Supplier who shall coordinate with the Owner and Engineer the design, fabrication, delivery, installation and testing of the screening components. The Screening System Supplier shall have the sole responsibility for the coordination and performance of all components of the screenings system.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

a. Complete description in sufficient detail to permit an item comparison with the specification.

b. Dimensions and installation requirements.

c. Descriptive information including catalogue cuts and manufacturers' specifications for major components.

d. Electrical schematics and layouts.

e. Hydraulic calculations demonstrating compliance with the required hydraulic characteristics.

2. Information for the Record:

a. Manufacturer’s certification of installation.

b. Provide operation and maintenance manuals.

c. Provide an electronic copy of the PLC program to the owner for restoration of the system program.

1.03 QUALITY ASSURANCE

A. All equipment furnished under this Section and related Sections shall be of a single manufacturer who has been regularly engaged in the design and manufacture of the equipment and demonstrates, to the satisfaction of the Engineer, that the quality is equal to equipment made by those manufacturers specifically named herein. The screen and washer compactor manufacturer shall have at least 50 installations of mechanically-cleaned bar screen and washer compactor equipment that has been in successful operation, at similar installation, for at least ten years. Upon request, the manufacturer shall provide a reference of such installation sites along with the relevant contact information.

B. The Mechanical Cleaned Bar Screens and Washer Compactors shall be fully assembled and shop tested at the manufacturing facility prior to shipment. Shop testing shall include a minimum of four hours of run time. The Engineer, the Owner or the Owner's designated representative reserves the right to witness the shop test. A minimum of three weeks' notice shall be provided prior to the test to allow for travel coordination.

1.04 ELECTRICAL AND CONTROL COORDINATION

A. If the current requirement of any motor or piece of equipment is increased to such an extent that the wiring, conduit, and/or starter for that motor or equipment must be increased from that shown on the Electrical Drawings, the Contractor shall furnish and install the larger items under the Section the equipment is specified. The increased wiring, conduit, and starter costs shall be included in the motor or equipment cost under the Section the equipment is specified, and no additional compensation will be allowed.

B. Equipment and panels shall be NEMA 4X stainless steel unless designated otherwise on the Drawings, or in the electrical or equipment specifications.

C. Certain equipment furnished under this Section shall be connected to the plant control system as shown on the P&ID Drawings. Mechanical and electrical components for these connections shall be furnished, under this Section, as required to provide control functions compatible with the plant control system. These connections and any remote-control connections shall be furnished and wired to clearly labeled terminal strips within the equipment control panel.

D. If the electrical control requirements change from that specified or shown on the Electrical or P&ID Drawings due to the requirements of the actual equipment furnished, the Contractor shall perform all necessary modifications under this Section, and no additional compensation will be allowed. The final installation shall meet the operational intent of that specified and shown on the Drawings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Screens shall be as manufactured by Duperon Corporation, 1200 Leon Scott Court, Saginaw, Michigan, TF 800.383.8479. The screens shall be the FlexRake® Model, Full Penetration Fine Screens.

2.02 BASIS OF DESIGN

A. The mechanically cleaned bar screen shall have a head sprocket only, with no sprockets, bearings, idlers, or similar drive components under water to trap the chain. Equipment featuring reciprocating rake arms or lower bearings/sprockets/tracks below the water is not acceptable.

B. The mechanically cleaned bar screen shall meet the total screen debris removal capacity of:

Scraper Ratio below Water Level:

$$\frac{\text{Upstream Water Level (ft)}}{1.745\ \text{ft}} = \text{Number of Scrapers below Water level}$$

Debris Volume per Linear Foot = 0.152 ft3 /hr (0.046 m3/m)

Total Screen Debris Removal Capacity on Low (ft3/hr) =

(0.152 ft3/ft) x (Screen Width) x 60 x (Number of Scrapers below Water Level)

Total Screen Debris Removal Capacity on High (ft3/hr) =

(0.152 ft3/ft) x (Screen Width) x 260 x (Number of Scrapers below Water Level)

C. The flowability of the screen area, specifically, shall be defined as follows: A composite number representing the specific flow- ability of a screen area composed of the bars' Hydraulic Headloss

$$\text{(Coefficient Shape Factor)} \times \left(\frac{\text{Bar Width}}{\text{(Clear Opening)}}\right) = \left(\frac{0.190}{\text{(Clear Opening)}}\right)$$

D. The mechanically cleaned bar screen shall be designed to run continuously (24/7), without operator.

E. The equipment shall have multiple scrapers on the bar screen at one-time cleaning continuously from bottom to top, the entire width of the bar screen. The drive output shaft rotation shall be constant and in one direction in order to reduce maintenance and increase service life. The link system shall have jam evasion capability by flexing around and collecting large objects such as a 2 X 4, bowling ball, grease balls and surges of solids at peak loading times without overloading and shutting down the unit. The link system shall be such that it bends in one direction only which allows it to become its own lower sprocket and frame and shall have a 1,000-pound lifting capacity.

F. The design shall be such as to ensure that all maintenance can be accomplished at the operating floor level or above. No part of the drive system including sprockets shall be located below the water surface at maximum design flow.

G. Design Conditions:

Site Installation Information:	**Provide**
Quantity of Screens	2
Channel Width:	3 ft
Channel Height:	~~12 ft 7 in~~ 28-ft **(Addendum 2, Issued 10/22/2026)**
(upstream clearance) Channel Height:	28-ft
Bar Opening Size:	1/4"
Angle of Installation:	10 degrees
Average Flow:	0.93 mgd
Number of Screens Operating at Average Flow	1
Average Water Level:	1.0 ft
Maximum Flow:	10 mgd
Maximum Water Level:	17.0 ft
Number of Screens Operating at Max. Flow	1
Maximum Head Differential:	3.5 ft
Equipment Location:	Indoors
Installation Area Classification:	Class I-Div I
Washer/Compactor:	Yes

2.03 COMPONENTS

A. Bar screen assembly shall be of 304 stainless steel and designed to withstand 3.5-foot head differential unless noted otherwise. A stainless-steel channel bottom plate shall be an integral part of the bar screen assembly to fully engage scrapers in the bar screen at the base of the unit and assure that the raking mechanism reaches the bottom of the screen to prevent debris accumulation. The Bar screen assembly shall be shipped in one piece.

1. Bars shall be 316L stainless steel and be tear-shaped with a Hydraulic Coefficient shape factor of 0.76 and the minimum dimensions of 0.25-inch x 0.75-inch x 0.13 inch. Bars shall be individually replaceable without welding.

2. The screen framework shall be 304 stainless steel bent plate with minimum of 3/16 inch cross section. Horizontal members shall be of stainless steel bent plate or stainless-steel pipe. Support members and frame shall adequately support the bar screen based on site specific requirements.

3. Dead plate shall be 0.25-inch-thick 304 stainless steel. The dead plate shall be flat and true; span the entire width of the unit; and transition from bar screen to discharge point.

4. The discharge chute shall be 11ga. (0.12 inch) 304 stainless steel. The discharge chute shall be bolted to the dead plate and shall be designed to allow debris to be transferred from discharge point into the debris containment.

5. Link slide assembly shall be provided per manufacturer standard design and shall be constructed of UV Stable UHMW PE rollers and 304 stainless steel supports and components.

B. Return guide/Closeouts shall be 304 stainless steel and shall assure proper alignment of scrapers as they enter the bar screen and assure that there is no space wider than the clear opening between bars to prevent passage of larger solids than allowed through the screen.

C. A 304 stainless steel and UV Stable UHMW-PE debris blade assembly, which does not require a separate drive, shall be installed to assist in removing debris from the scraper on the mechanically cleaned bar screen unit as recommended by the manufacturer.

D. A 14ga. #4 brushed satin finish 304 SSTL Enclosure shall be installed to cover the screen above the operating deck level. Front Enclosure shall have removable panels for access to equipment. Removable panels shall be 16ga. 304 SSTL and shall be provided with knurled knobs for "no tool required" access. Alignment notches shall be included to support repositioning of removable panels. The top of the Front enclosure shall include a knock out for a customer site option to install a 6-inch diameter pipe stub. Rear Enclosure shall have hinged removable doors and shall be secured with a lift-slide-latch handle. Rear removable door shall include an integral viewing door that shall be secured with a lift-slide-latch handle to provide access for a quick look inside.

E. The link system shall be passivated stainless steel castings and have a minimum ultimate strength of 60,000 pounds with a minimum cross section of 1.5 inches and weighing a minimum of 4.5 pounds each. Parts must meet ASTM A380 specification for surface finish.

1. 304 stainless steel system includes 302 stainless steel retaining rings and 304 stainless steel pins.

F. Scrapers shall be spaced 21 inches apart. To provide long service life the scraper shall move at no greater than 28 inches per minute at standard operating speed of ½ rpm allowing for approximately 1 debris discharge per minute. Staging Scrapers and Thru Bar Scrapers shall be a maximum ratio of 1:1 per manufacturer recommendations. At least one scraper every 84 inches shall fully penetrate the bar screen, cleaning all three sides of the bars as well as through to the cross members in openings of 0.25, 0.375 and 0.50 inches.

1. Staging Scrapers shall be 1-inch thick x 4 inches x screen width UV Stable UHMW-PE with a serrated edge.

2. Thru Bar Scrapers shall be minimum 0.375-inch-thick x 5 inches x screen width 304 stainless steel.

G. The Drive Head shall be located at the top of the mechanically cleaned bar screen.

1. Each mechanically cleaned bar screen unit shall operate independently and shall have its own drive unit and driven components.

a. Drive Sprockets and end castings shall be cast 304 stainless steel.

b. Drive Shaft shall be 304 stainless steel.

c. Gearbox shall be shaft-mounted, right-angle type and include spiral bevel gearing. The output shaft speed shall be controlled by a vector type inverter or per rake manufacturer's recommendation. It shall have at least a 1.52 or greater service factor based on machine torque requirements. The gearbox shall not be vented to the outside atmosphere. The gearbox shall be grease filled. Oil filled gearboxes are not allowed.

d. The motor shall be AC induction type, inverter duty, 3 phase240/480 volt and mounted to the gear reducer. The motor shall be 1/2 hp, designed for 1800 RPMs base speed and rated for Class I, Division I environments. The motor shall have an EPNV enclosure, NEMA design B with a 56C frame size. Service factor shall be 1.0 or greater, Class F insulation and be optimized for IGBT type inverters. The motor must be UL listed and designed for continuous operation.

e. Motor shall have built in, normally closed, thermostat to protect from overheating that is to be field wired to corresponding terminal in control panel for redundant (ambient) overload protection.

f. All drive head components shall be of components available in the United States.

2. Bearing shall be Thordon self-lubricating type and shall have a 24/7/365 L10 life of 20 years when in compliance with stated O&M recommendations. Non-sealed bearings are not acceptable.

3. Speed reducer shall be a double-reduction, cycloidal style and shall comply with all applicable AGMA standards. The speed reducer shall be capable of a 4/1 speed range with variable output speeds between 0.50 to 2.2 output RPMs (in high flow conditions). The speed reducer shall produce an output torque of 11,417 inch/pound and have a gear ratio of 809:1.

H. All non-stainless bar screen components shall be coated in accordance with the paint manufacturer's specification. Surface Preparation shall be done in accordance with SSPC-SP-10 Near White. The three-part coating system shall be manufactured by Tnemec as follows: Prime Coat Series 90-97 Tneme Zinc at 2.5-3.5 mils DFT, Intermediate Coat Series 27 F.C. Typoxy at 3.0-5.0 mils DFT, and Top Coat Series 1095 Endura-Shield II at 2.0-3.0 mils DFT. Standard color is 11SF Safety Blue. Material shall meet all state and federal VOC and other regulatory requirements.

I. 304 Stainless steel underflow / overflow weir plate shall be provided by the screen manufacturer and installed downstream of the mechanically cleaned bar screen to maintain a minimum of 1-foot downstream water level during average and minimum flows. The weir plate shall be anchored to both channel walls with 3/8-inch anchors, by others. Contractor to field verify the channel dimensions prior to the design and manufacturing of the weir plate.

2.04 ELECTRICAL, CONTROLS, INSTRUMENTATION

A. Controls for each rake shall be in enclosures provided by the bar screen manufacturer. The bar screen manufacturer shall be responsible for proper sizing and function of the controls at 480V, unless specified otherwise.

1. Main control panels require shading from the sun and shall be operated within a temperature range between 35°F and 104°F. Sunshields, visors or other structures needed to provide shade are by others.

2. Controls shall be designed to accept incoming power supply per Contract Documents and shall include a step-down transformer as needed to achieve 120V.

3. Control Panel(s) shall be constructed to meet the appropriate NEMA classification requirements and will include a main, lockable disconnect.

4. Controls shall be tested prior to shipment. The rake manufacturer shall verify all overload settings in the rake controller to ensure proper overload and speed settings required for the application are properly programmed.

5. Control panel(s) shall be wired complete with a minimum of #16 MTW wire in the appropriate colors for the circuits being supplied. 120VAC control shall be red, grounded AC neutral shall be white, DC control shall be blue, DC neutral shall be blue with a white tracer, equipment ground shall be green and all incoming and outgoing external power source wires shall be a yellow configuration. All AC power wiring shall be a minimum of #12 Black. All wires shall be labeled at both ends with heat-shrink wire markers. Internal panel wiring shall be contained in non-flammable, covered wire way.

6. All panel(s) and panel mounted devices shall be labeled with engraved I.D. markers that reference back to the system schematics. Tags shall be white with black core, engraved as required.

7. All field wiring and power cables between the bar screen Main Control Panel and the Local Push Button Station shall be provided by others under the Electrical Section. VFD rated motor cable (Belden #29502 or equal) is recommended for all motors. Motor cables shall be less than 80 ft unless otherwise specified.

B. Components:

1. Main Control Panel

a. Enclosure(s) shall be NEMA 12 painted for indoor installations

b. Enclosure shall not be located in an explosive environment.

c. Main Control Panel shall be designed with a SCCR rating of 18KA at 480VAC minimum and labeled as such, unless otherwise specified.

d. All terminals utilized in the main panel shall be 600V rated terminals and 20% spare terminal space shall be provided for any potential future revisions.

e. The Main Control Panel shall include at a minimum the following

1) Main fusible disconnect with lockable operator, unless otherwise specified.

2) Physical and virtual Hand/Off/Auto (HOA) Selector and Push/pull E-Stop button.

3) Elapsed run-time meter

4) Indication for "Power On", "Forward" and necessary faults.

f. PLC Based Controls shall include the following:

1) Programmable Logic Controller (PLC)

2) Variable Frequency Drive (VFD)

3) HMI programmable functions as required

4) SCADA Interlocking via Hard Contact and/or Ethernet Communications Protocols as required.

2. Local Control Push Button Station

a. Enclosure shall be NEMA 7/9 rated for Classified area installation. Local push button station must be local to the equipment to maintain requirements of local safety codes.

b. The remote push button station shall include Hand/Off/Auto selector switch, Forward/Off/Jog-Reverse selector switch, and E-Stop button. (**Addendum 2, Issued 10/22/2026)**

3. Each raking assembly shall have a separate level system that installed per the manufacturer's instructions in the Control Room.

a. Single Level/Speed Control: When the level switch trips, the rake runs. When the level switch returns to the normal position, an off-delay timer is initiated to prevent intermittent equipment starting/stopping. Cycle timing logic shall also be included that shall function in parallel with the level control for optimal rake run time.

1) Siemens ~~HydroRanger~~ 200 Hydroranger LT500 (**Addendum 2, Issued 10/22/2026)** with (1) upstream Ultrasonic Level

Transducers. Transducer shall be installed upstream of the rake, at least 1 foot above the highest anticipated water elevation and the beam angle shall not have obstructions between the transducer face and the water surface. The HydroRanger will be configured with one level setpoint. A mechanical float switch can be used in conjunction with the HydroRanger as backup control.

C. Controls Design Conditions:

Incoming Power: (Voltage/Phase)	480 V / 3 phase / 60 Hz
Main Control Panels:	One MCP for all screening equipment
MCP Installation location:	Indoors
Approx. distance between main panel and equipment motor	100 feet
If indoors, climate controlled location?	No
Transducer/Float cable length:	50 feet (standard). Please enter a longer cable length if required.

2.05 SPECIALTY TOOLS, SPARE PARTS AND LUBRICATION

A. Manufacturer shall provide any specialty tools and recommend spare parts required for maintaining the equipment as follows:

1. Snap/Retaining Rings (10)
2. Link Clevis Pins (4)
3. Scraper Bolts (4)
4. Scraper Nuts (4)
5. Snap Ring Tool (1)
6. Never Seez, 1 oz. tube (1)

B. Manufacturer shall provide one tube of Multi-Purpose grease which is a 5-year supply of lubrication, required for maintaining all bar screen components.

2.06 MANUFACTURERS

A. Washer Compactor shall be as manufactured by Duperon Corporation, 1200 Leon Scott Court, Saginaw, Michigan, TF 800.383.8479.

2.07 BASIS OF DESIGN

A. The Washer Compactor shall have dual augers to provide positive displacement action. Augers shall be oriented on top of each other and rotate in opposing directions. Augers shall be intermeshed, with one left-hand and one right-hand lead. Augers shall be

designed with a limited float on top of a strainer to allow for the accommodation of irregular debris.

B. The Washer Compactor shall have a wash water manifold integrated into the main housing. Two ports inside the unit shall emit a medium pressure stream. Wash water shall run continuously when the Washer Compactor is in motion. Continuous operation (non-batching) equipment is required.

C. The Washer Compactor shall be continuous run, not requiring an operator. The Washer Compactor shall be equipped with a self-regulating, active pressure zone designed to accept non-standard wastewater debris in its original form, including but not limited to: rocks; broken concrete; and metal (such as bolts or short pipe) up to 4 inches long. The Washer Compactor shall have the ability to process multiple pieces of clothing, variable volumes of debris, and unprocessed septage or grease. The Washer Compactor shall move at a normal operating speed of 0.5 to 2.2 RPM and shall have the ability to run intermittently to sync with upstream equipment.

D. Materials:

1. All welded fabrications shall be made from stainless steel. All welded connections and welding procedures shall comply with AWS "Structural Welding Code - Sheet Steel" D1.3/D1.6.

2. Select power transmission parts to be made from cast iron; however, shall conform to standard coating as follows.

   a. Motor gearbox shall be coated in accordance with the paint manufacturer's specification. Surface preparation shall be done in accordance with SSPC-SP-10 near White. The three-part coating system shall be manufactured by Tnemec; Prime Coat Series 90-97 Tnemec Zinc at 2.5-3.5 mils DFT; Intermediate Coat Series Typoxy at 3.0-5.0 mils DFT; and Top Coat Series 1075U Endura-Shield II at 2.0-3.0 mils DFT. Standard color is 11SF Safety Blue. Material shall meet all State and Federal VOC and other regulatory requirements.

3. Parts not covered in the specifications above shall be manufactured from UHMW polyethelene.

E. Design Conditions:

Washer Compactor WC3.A1.5 Data Sheet	
Number of Compactors	2
Peak Capacity:	30 cu.ft./hr (approx. 15 minutes)
Average Capacity (Continuous):	6.5 cu.ft./hr
Wastewater Application (1/4” bar screen):	Up to 15 mgd
Water: Typical	• Utilizes filtered effluent or municipal water • Consumes 3-10 GPM • Requires 40-60 PSI • 1/2inch NPT supply (female threads) • 3 inch NPT drain (male threads)

Washer Compactor WC3.A1.5 Data Sheet	
Materials of Construction:	• 304 SSTL • 17-4 Spur Gears • Delrin (or equivalent) thrust and plane bearings • UHMW Auger Supports
Strainer:	• Perforated Screen
Hopper Height (Deck to Hopper):	38”
Hopper Length (WC3.D2.5 Unit):	43
Hopper Length (WC3.A3.X Unit):	
Below Freezing Temperatures:	NA indoor
Performance Data (Typical Wastewater Debris)	
Dry Solids:	30%-60%
Mass/Weight Reduction:	60%-70%
Volume Reduction:	70%-80%
Odor/Fecal:	Significantly decreases odor/fecal
Motor/Drive	
Motor Size:	1.0 HP
Motor Paint:	Duperon® Standard Tnemec Coating
Motor Service Factor (Minimum):	1.0
Output Speed:	2.2 RPM
Speed Reducer Ratio/Output:	809:1
Speed Reducer Paint:	Duperon® Standard Tnemec Coating
Site Power	
Phase/Voltage:	240/480 volt
Local Controls	
	• Emergency Stop Push Button • HOA (Auto is discreet “Run” input) • Fwd/Off/Reverse • “Run” and “In Auto” discrete outputs • Explosion-Proof station (local standard)
Mounting:	• Wall • Pedestal (by others)

2.08 COMPONENTS

A. The main housing of the Washer Compactor shall be constructed of stainless steel with a minimum thickness of 11 gauge. Support and flange connections shall be 3/8 inch.

B. The hopper of the Washer Compactor shall be constructed of stainless steel with a minimum thickness of 11 gauge.

C. The augers shall be of stainless steel with 8-inch diameter flights, 3/8-inch-thick, with 4-inch flight pitch. The augers shall be coupled to a transmission at the drive end and be supported at the compaction end with UHMW plane bearings. This arrangement shall allow for the accommodation of irregular debris. The auger shaft shall be 2-inch stainless steel schedule 40 pipe with 2-inch solid stainless-steel stub shaft.

D. The compaction housing of the Washer Compactor shall be ¼ inch stainless steel and shall house a spring and gate assembly to provide the resistance for compaction. The compaction housing shall contain the auger supports.

E. The discharge chute of the Washer Compactor shall be constructed of stainless steel with a minimum thickness of 14 gauge. Support and flange connections shall be 1/4 inch. The discharge chute shall be tapered outward toward the discharge end.

F. The water supply shall connect at a single point with a 1/2-inch NPT female connector. A NEMA 7/9 Explosion proof solenoid valve is provided to limit the wash water flow to only when the washer compactor is running. Stainless steel ball valves shall be provided to distribute flow to the washing and trough sprayer connections.

G. A strainer shall be located beneath the lower auger to filter the washed solids. The strainer shall be removable via drain trough and pressed against the lower auger with spring pressure. The strainer shall be self-cleaning through continuous, even contact with the lower auger. Strainers requiring auger-mounted brushes will not be accepted.

H. A removable pan shall be provided beneath the main housing to collect washwater. Washwater shall be drained through a 3-inch NPT male drain port. The pan shall be a minimum of 11-gauge stainless steel (material options contained in table).

I. An overflow port shall be installed in the housing above the strainer. Overflow shall be drained through a 2-inc NPT male drain port. Overflow port required.

J. The washer compactor shall be mounted on stainless steel casters to allow the unit to be rolled away from the screen for maintenance and repairs. Casters required.

K. Drive Assembly:

1. Each Washer Compactor unit shall operate independently, with its own drive unit and driven components. The gearbox shall not be vented to the outside atmosphere.

2. The gearbox shall be grease lubricated and designed for 5 years (or 20,000 hours of operation) between recommended clean and re-grease services. The gearbox shall be right angle type and shall incorporate cycloidal and spiral bevel gearing with a total ratio of 809:1. The gear reducer output shaft speed shall be 0.5 RPM minimum to 2.2 RPM maximum and controlled by an AC Tech, vector-type inverter (or greater service factor) based on unit torque requirements. It shall be shaft-mounted utilizing the keyless Taper-Grip® bushing.

3. The motor shall be mounted to the gear reducer by utilizing a quill, C-Face mounting style. The motor shall be AC induction type, 1.0 HP, 3/60/230/460 volt, explosion-proof, inverter-duty model.

4. The drive assembly shall incorporate the Duperon® standard coating system.

L. Auger Transmission:

1. The Drive Assembly shall be coupled to a dual gear transmission, which drives the augers in a counter-rotation.

2. The spur gears are contained in a stainless-steel housing and supported by Delrin (or equivalent) plane bearing.

3. Grease fittings shall be located outside of the transmission housing to provide lubrication to the gears.

M. The Speed Reducer shall have a maximum output of 2.2 RPM, 809:1 reduction ratio with 18,900 in-lb. of output torque.

N. Thrust Bearings shall be Delrin (or equivalent), self-lubricating, and be capable of withstanding a minimum of 2000 lb. of thrust load (each auger) at 2.2 RPM for life of machine.

O. Screw supports shall be UHWM plane type, self-lubricating, and fastened into place using stainless steel fasteners.

2.09 ELECTRICAL, CONTROLS, INSTRUMENTATION

A. Controls for the washer compactor shall be in enclosures provided by the washer compactor manufacturer. The washer compactor manufacturer shall be responsible for proper sizing and function of the controls at 480V, unless specified otherwise. Note that the washer compactor controls can be integrated into the main control panel of the bar screen if provided by the same manufacturer.

1. Main Control Panel

a. Enclosure(s) can be NEMA 12 for indoor/outdoor installations.

b. Enclosure shall not be located in a Classified area.

c. Main Control Panel shall be designed with a SCCR rating of 18KA at 480VAC minimum and labeled as such, unless otherwise specified.

d. All terminals utilized in the main panel shall be 600V rated terminals and 20% spare terminal space shall be provided for any potential future revisions.

e. The Main Control Panel shall include at a minimum the following

1) Main fusible disconnect with lockable operator, unless otherwise specified.

2) Physical or virtual Hand/Off/Auto (HOA) Selector and Push/pull E-Stop button.

3) Elapsed run-time meter

4) Indication for "Power On", "Forward" and necessary faults

5) Fused connection for the washwater solenoid.

f. Relay Based Controls shall include the following:

1) Variable Frequency Drive (VFD)

2) Electronic torque control

3) Hard contact SCADA Interlock(s)

4) Adjustable off delay timer

2. Local Control Push Button Station

a. Enclosure shall be NEMA 4/7/9 rated for Classified area installation Local push button station must be local to the equipment to maintain requirements of local safety codes as determined by the Engineer.

b. Local station shall be mounted within 10 feet or as close to the equipment as safely possible and be field wired by the electrical subcontractor to the corresponding terminal inputs in the main control panel.

c. The remote pushbutton station shall include a Hand/Off/Auto, Forward/Off/Jog-Reverse selector switches and E-Stop push button.

3. Sequence of Operations:

a. The Washer Compactor controls shall enable the push button station installed near the Washer Compactor when in “Hand” mode and utilize an input signal from a remote source when in “Auto” mode. Upon receiving a disruption of “remote source” signal in “Auto” mode, the Washer Compactor shall utilize an off-delay timer to allow debris to finish depositing. The washwater solenoid is energized any time that the washer compactor is running.

b. The Duperon® Speed Controller fault shall be cleared by turning off the Washer Compactor, then waiting approximately three minutes (or time designated per current UL standards) and then turning the HOA back to the desired setting. A motor overtemp fault shall clear automatically when the motor cools to a temperature within the normal operating range.

PART 3 EXECUTION

3.01 SHIPMENT

A. Shipment of all equipment shall be coordinated to allow the screen shipment as one complete integrated assembly unless otherwise specified by the Owner, Contractor, or Engineer.

3.02 INSTALLATION

A. Equipment shall be installed in conformance with the manufacturer's installation instructions, as submitted with Shop Drawings, Operation and Maintenance Manuals and any pre-installation checklists. Installation shall utilize standard torque values and

be installed secure in position and neat in appearance. Installation shall include any site preparation tasks as required by the manufacturer or for proper installation; such as unloading, touch-up painting, etc. and any other installation tasks and materials such as wiring, conduit, controls stands as by the manufacturer.

B. Anchor Bolts: Anchor bolts and nuts shall be 304 stainless steel and furnished for each item of equipment by the Contractor. *This provision not needed if casters provide on the washer compactor for easy removal*

Anchor bolt template drawings shall be included in the submittal to permit verification of the location structural elements, new or existing in the concrete.
Anchor bolt sizes, quantity and requirements will be indicated on the submittal drawings. Quantity is site specific but typically each Bar screen assembly requires (8) to (12) ½-inch diameter x 4 1/2-inch long embed HILTI HAS RODS w/ RE-500 SD adhesive system anchor bolts for Mechanical Screen anchorage and typically (8) to (12) 3/8-inch diameter x 3 3/8-inch long embed HILTI HAS RODS w/ RE-500 adhesive system anchor bolts for the Return Guide/Closeouts anchorage.

3.03 TESTING

A. After completion of installation, Contractor shall provide for testing and shall be performed in conformance with the manufacturer's start up instructions. Testing of the bar screen shall demonstrate that the equipment is fully operational by picking up and depositing materials into specified containment.

B. Field certification shall include inspection of the following:

1. Verify equipment is properly aligned and anchored per the installation instruction and drawings. Assure the bar screen unit is square, flat and unobstructed with required clearances maintained.

2. Assure controls and instrumentation work in all modes.

3. Check equipment for proper operation of debris blade, scrapers, etc. as well as completion of the Start-Up requirements in the installation guide.

3.04 ONSITE TECHNICAL ASSISTANCE

A. Manufacturer shall provide services to include Installation Certification, and shall include (1) day for Start-Up and (1) day for Training. Manufacturer shall be given minimum 14 days notification prior to the need for such services. To assure the best outcome for the Owner and Contractor, the Contractor shall provide certification for completion of the PRE-COMMISSIONING CHECKLIST.

PART 4 SPECIAL PROVISIONS

Not Used.

END OF SECTION

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SECTION 15210
PIPING

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the furnishing and installing of all pipelines 4-inch diameter and larger shown on the Drawings or as required to complete the Work.

B. Piping less than 4-inch diameter, will be included under other Sections unless otherwise specified.

C. Buried sanitary sewers and storm sewers shall be furnished and installed as specified in Section 02550. Buried pressure lines shall be installed as specified in Section 02555.

D. Material to be furnished and installed, but not limited to:

1. All pipe, fittings, specials, bends, beveled pipe, adapters, bulkheads, stoppers, plugs, joint restraints, joints and jointing materials.
2. Pipe supports other than those specified in Section 15010.
3. Granular material for bedding and encasement of pipelines.
4. Class B concrete as specified in Section 03300 for blocking and encasement of pipelines.
5. Make connections to all existing and/or new facilities and provide temporary services.
6. Install temporary plugs and/or stoppers and harnessing.
7. Test and clean pipelines.
8. Sterilize water mains.

E. The Contractor shall make adequate field measurements before new piping is fabricated.

F. All wall, floor, and roof penetrations and any building modifications which are required for the installation of the Work under this Section shall be included in this Section.

G. Instruments which are to be located in pipelines 4-inch in diameter and larger shall be furnished under Division 16 and installed under this Section.

1.02 QUALITY CONTROL

A. Laboratory Services - Laboratory testing services shall be provided as specified under Section 01410 of the Specifications.

B. Field Inspection:

1. All pipe sections, specials, and jointing materials shall be carefully examined for defects and no piece shall be laid that is known to be defective. Any defective piece discovered installed shall be removed and replaced with a sound one in a manner satisfactory to the Resident Project Representative at the Contractor's expense.

2. Defective material shall be marked with lumber crayon and removed from the job site before the end of the following day.

C. Field Testing:

1. All materials, process of manufacturing, and finished pipe shall be subject to inspection and approval.

2. The Resident Project Representative may select one sample of pipe on the job site of each production run of each size and type of pipe to be tested by the laboratory. The Contractor shall furnish the first test piece or pipe core and any additional samples required because of failures. Should the sample fail to meet specifications, retests shall be conducted by the laboratory in conformance with the specifications.

D. To assure uniformity and compatibility of piping components in grooved piping systems, all grooved products utilized shall be supplied by a single manufacturer. Grooving tools shall be supplied by the same manufacturer as the grooved components.

1.03 SUBMITTALS

A. Submit shop drawings in accordance with Section 01300 showing: layout plan and dimensions, schedule of pipe fittings and specials, materials and class for each size and type of pipe, joint details, and any special provisions required for assembly.

B. Shop drawings shall be drawn to not less than 1/4-inch scale and show the laying length and piece mark for each section of pipe and fitting.

C. Drawings shall show the position and elevation of valves, pumps, and/or other equipment served by the various pipe systems.

D. The concrete pipe manufacturer's certificate shall state that the materials have been sampled and tested in accordance with the provision for and meet the requirements of the designated specification. The certificate shall be signed by an authorized agent of the manufacturer.

E. If directed by the Engineer, each certificate shall be accompanied by a report showing test results compared to specification requirements. Test specimens shall be selected in conformance with the designated specification, except that no less than two tests shall be made for each production run of each size, type, and class of pipe furnished, and further, that in case tests are unsatisfactory, additional tests shall be made to the maximum number in the referenced ASTM Specification.

F. Before fabrication of any concrete pressure pipe, fittings, or specials, the Contractor shall furnish to the Engineer at least six copies of the design calculations for the pipe showing the calculations to arrive at the gross wrapping stress in wire; initial and resultant stresses in concrete, cylinder, and wire; internal pressure when compression in concrete is zero; compression strength of concrete at time of wrapping; and calculations to show stress, conditions, and the core and steel when the pipe is simultaneously subjected to the design pressure and external loads. The Contractor shall also furnish the full details of all pipe, specials, and fittings, and a laying schedule showing dimensions, details, and specifications of all pieces.

G. Submit a schedule of all proposed pipe escutcheons.

H. Other submittals may appear in Part 4 of this Section.

I. Any proposed grooved joint couplings and fittings shall be shown on drawings and product submittals, and shall be specifically identified with the applicable style or series number.

PART 2 PRODUCTS

2.01 RESERVED

2.02 UNDERDRAIN PIPE AND JOINTS

A. Underdrain pipe shall be of the type specified or shown on the Drawings and of quality conforming to the following requirements.

B. Perforated Polyvinyl Chloride Pipe (PPVC):

1. Perforated polyvinyl chloride pipe shall be manufactured from polyvinyl chloride compounds conforming to ASTM D1784, Class 1254-B. Pipe and fittings shall conform to the requirements of ASTM F949, shall have a smooth interior and a corrugated profile. Pipe shall be manufactured to 46 psi stiffness when tested in accordance with ASTM D2412.

2. Joints shall be bell and spigot gasketed connections. Gaskets shall meet the requirements of ASTM F477.

3. Perforation dimensions shall conform to ASTM F949 Table 5.

4. Pipe shall be Contech A2000 or equal.

C. Corrugated Polyethylene Tubing (CPT):

1. Corrugated Polyethylene tubing shall conform to ASTM F405 Heavy-Duty Tubing Requirements for sizes 4-inch thru 8-inch and ASTM F667 for tubing sizes 10-inch, 12-inch, and 15-inch.

2. Tubing shall be a minimum 6-inch in size.

3. Tubing shall be perforated with two rows of holes nominally 1/4-inch to 3/4-inch in diameter at a maximum 5-inch centers.

2.03 PROCESS AND PRESSURE PIPE

A. Ductile Iron Pressure Pipe (DIP):

1. Ductile Iron Pressure Pipe (DIP) shall conform to ANSI A21.51 or AWWA C151 and shall be pressure class 350 psi for sizes 12-inch and below, and pressure class 300 psi for larger sizes unless otherwise specified herein. Mechanical joint fittings shall be ductile iron and conform to ANSI A21.10 or AWWA C110 and ANSI A21.53 or AWWA C153. Flanged fittings shall be ductile iron and conform to ANSI A21.15 or AWWA C115. All fittings shall have a pressure rating of 250 psi for all pipe sizes unless otherwise specified.

2. Ductile iron pipe buried underground, unless otherwise specified or shown, shall have rubber gasket (slip-on) type joints in straight runs and mechanical joints with retainer glands each way from bends as shown on the Drawings. The gasket shall be a single molded rubber ring fitted into a specially shaped recess in the bell forming a pressure tight seal. The spigot end of each pipe shall be marked to indicate when the pipe is “home.” Fittings shall have mechanical joints with retainer glands unless otherwise specified or shown. Retainer glands shall be ductile iron. The restraining mechanism shall impart multiple wedging action against the pipe. Restraining devices shall be of heat treated ductile iron. Twist-off nuts shall be used to ensure proper actuation of the restraining device. The mechanical joint retainer gland shall be Ebaa Iron, Inc., Series 1100 Megalug, or equal. **(Addendum 2, Issued 10/22/26)**

3. Ductile Iron pipe inside buildings or structures shall be joined with flanged, or mechanical joints as shown on the Drawings, or as indicated in the pipe schedule. All mechanical joints shall have retainer glands. Flanges shall comply with ANSI 21.15 or AWWA C115 and shall be ANSI 125-pound drilling, unless otherwise specified. Flanged joints shall have full face 1/8-inch rubber gaskets or of thickness and type approved by the Engineer. The pipe shall not be threaded or flanged in the field. Flanges shall be firmly bolted with machine, stud, or tap bolts of the proper size and number. Within buildings the bolts and nuts shall be of the best quality mild steel, with true threads, meeting the requirements of ANSI B16.1.

4. Flange adapters for plain end pipe (not fittings), where specified, shown on Drawings, or approved by Engineer shall be a restrained flange adapter. The restraining mechanism shall be multiple gripping wedges set against the pipe wall. Twist off nuts shall be used to ensure proper actuation of the restraining device. The restrained flange adapter shall be Series 2100 Megaflange by Ebaa Iron, Inc., or equal.

5. Wherever specified or shown, mechanical joints shall conform to ANSI A21.11 (AWWA C111), except as specified under Subsection Process and Pressure Pipe Nuts and Bolts.

6. Couplings, if required or permitted, shall be Dresser Style 38, Rockwell, or equal. Restrained coupling shall be Dresser Style 167 Lock Coupling, Rockwell, or equal.

B. Steel Pipe:

1. Steel pipe shall be designed, fabricated, and installed in accordance with these Specifications, the applicable "Good Practice" outlined in AWWA Design and Installation of Steel Water Pipe, and applicable AWWA C200, C203, and C205, and ASTM A53 Grade B for pipe less than 24-inch in diameter and API-5L for pipe greater than 24-inch diameter.

2. Pipe shall be manufactured of materials conforming to ASTM A53 Grade B in accordance with the applicable AWWA Standards quoted above. It shall be supplied in nominal lengths approved by the Engineer. Not more than two circumferential welds per joint will be permitted.

3. Specials shall be fabricated of steel plate and designed for the same conditions as the pipe. Collars, stiffeners, and other reinforcement shall be used as required to obtain the necessary strength in all parts of the specials. A plate collar shall be welded around all outlet connections.

4. Minimum wall thickness shall be as follows:

Pipe Diameter	Min. Thickness
Less than 12-inch	Schedule 40
12-inch to 24-inch	1/4-inch
30-inch to 36-inch	5/16-inch
42-inch to 48-inch	3/8-inch
54-inch	1/2-inch

5. Wherever called for, a coupling, Dresser Style 38, Rockwell, or equal shall be used. Unless otherwise specified, the sleeve length shall be 5-inch and the sleeve thickness shall be 1/16-inch greater than the pipe wall thickness.

6. Welded joints shall be used wherever specified or shown on the Drawings. Welding shall comply with the specifications of AWWA covering such Work.

7. Unless otherwise specified, at each connection to an existing buried pipeline a pair of insulated flanges shall be used to completely insulate the new line from the old one. The system to be used shall be submitted to the Engineer for his approval. Flange gaskets shall be full face at least 1/8-inch thick molded phenolic with neoprene facings. Molded phenolic sleeves shall encase each bolt from outside face of flange to outside face. Sleeves shall be 1/16-inch thick. A 1/8-inch thick molded phenolic washer shall be installed under each nut and bolt head.

8. Joint harnesses, harness couplings, lock couplings, flange adapters with set screws, and other flexible restrained joints shall be provided as called for on the Drawings.

9. Where flanged joints are shown on the Drawings, flanges conforming to the requirements of AWWA C207, Table 1, Class D shall be used. All flanged joints shall have full faced gaskets.

C. Stainless Steel Pipe:

1. Stainless steel pipe 12-inch diameter and smaller shall be designed and fabricated in accordance with either ASTM A312 or ASTM A778. Stainless steel pipe larger than 12-inch diameter shall be designed and fabricated in accordance with either ASTM A409 or ASTM A778. The interior surface of the pipe shall be smooth with no protrusions, stiffeners, or bracing. The pipe and fittings shall be constructed of 304L stainless steel.

2. Stainless steel pipe shall have the following minimum wall thickness:

Pipe Diameter	Minimum Wall Thickness
4-inch to 14-inch	0.109-inch (12 gauge)
16-inch to 18-inch	0.140-inch (10 gauge)
20-inch to 24-inch	0.172-inch (8 gauge)

   a. Stainless steel requiring threading shall be minimum Schedule 40.

   b. Stainless steel requiring grooving shall be minimum Schedule 10.

3. Fittings shall conform to either ASTM A403 or ASTM A774 and shall have the same wall thickness and structural properties as the pipe. All bends shall be long radius smooth type. Mitered bends will not be acceptable.

4. Flanges where required shall be ASTM A182-F304L flanges with full facing gaskets and centering rings. Flange bolts shall be stainless steel.

5. Wherever possible, butt weld fittings shall be used for field welding. All welds shall be made by a certified welder and shall conform to procedures for which the welder has been certified. The Contractor shall submit certification statements for the welders and the methods employed. Belled end fittings may be used in lieu of butt weld fittings on air lines.

6. All welds shall have full penetration and be smooth and without protrusions on the interior of the pipe. Weld metal shall be equal to or greater than the parent metal. Any cracks or blow holes appearing on the surface of a welding bead shall be ground away before depositing the next bead.

7. All stainless-steel surfaces shall be passivated by the following procedures:

   a. All outside weld areas shall be wire brushed to remove weld splatter. Brushes shall be stainless steel and used only on stainless steel.

b. All stainless-steel assemblies and parts shall be completely immersed in a pickling solution of 6% nitric acid and 3% hydrofluoric acid at 140 degrees F for a minimum of 15 minutes. Parts shall be free of iron particles or other foreign material after this procedure.

c. Previously pickled parts shall be neutralized by immersion in a tap water.

D. Polyvinyl Chloride Pipe (PVC):

1. Pipe shall meet the requirements of AWWA C900, and unless otherwise specified shall be Class 235, and have a standard thermoplastic pipe dimension ratio (D.R.) of 18.0.

2. All fittings and specials shall be as specified for ductile iron pressure pipe.

3. Polyvinyl chloride pipe joints shall be integral bell push-on type meeting the requirements of ASTM D3139. Gaskets shall be rubber ring type meeting the requirements of ASTM F477. Where called for on the Drawings, flanged joints shall be used. Flanged joints shall be supplied with 1/16-inch thick full-faced gaskets of suitable material for the application. Flange bolts and nuts shall be stainless steel.

E. Chlorinated Polyvinyl Chloride Pipe (CPVC):

1. Chlorinated polyvinyl chloride pipe, Schedule 40 or 80 as shown on the Drawings shall conform to ASTM F441. CPVC fittings shall be Schedule 80 socket type and conform to ASTM F439.

2. The method of joining shall be as recommended by the piping manufacturer.

2.04 PROCESS AND PRESSURE PIPE NUTS AND BOLTS

A. Nuts and bolts used on buried pressure pipe and fittings in contact with earth shall be Cor-Blue coated low alloy steel and have a minimum yield strength of 45,000 psi complying with ANSI A21.11 and AWWA C111.

B. Nuts and bolts encased in grout on concrete pressure pipe shall conform to recommendations of the pipe manufacturer.

C. All other nuts and bolts shall be low carbon steel in conformance with the chemical and mechanical requirements of ASTM A307, Grade B. Higher strength bolts will be acceptable.

2.05 PIPE HANGERS AND SUPPORTS

A. Pipe hangers and supports shall be as specified in Section 15010.

2.06 COATINGS AND LININGS OF PROCESS AND PRESSURE PIPE

A. Coatings and linings where required shall conform to the following requirements unless otherwise indicated in Part 4 of this Section or on the Drawings.

B. Ductile Iron Pipe:

1. Ductile iron pipe, and fittings unless otherwise specified, shall be lined on the interior with a standard thickness cement lining meeting ANSI A21.4 and AWWA C104. A seal coat of bituminous material shall be applied in conformance with the above Specifications. Piping used for compressed air shall not receive a cement lining.

2. All pipe buried underground shall be coated on the outside with a standard coating of coal tar or asphalt, 1 mil thick unless otherwise specified. The finished coating shall be continuous, smooth, neither brittle when cold nor sticky when exposed to the sun, and shall be strongly adherent to the pipe. The coating materials, after drying 48 hours, shall impart no objectionable color, odor, or taste to water standing in contact with the coating for a minimum of 48 hours.

3. Where approved, the bituminous material used for an interior seal coat may be used for exterior coating of pipe buried underground.

4. All pipe used within buildings and structures and which are to receive field coats of paint shall not be coated with any black bituminous paint. Such pipe, after proper cleaning, shall be painted with one coat of primer paint that is compatible with the field coats. Painting specifications shall be followed for cleaning and painting.

C. Prestressed Concrete Pipe and Asbestos-Cement Pipe:

1. Prestressed concrete pipe and asbestos-cement pipe require no special interior or exterior lining or coating, unless otherwise specified.

D. Steel Pipe:

1. Steel pipe shall be shop lined on the inside with centrifugally spun cement mortar lining or field applied-in-place cement lining, in accordance with AWWA C205 and C602. If pipe is field lined, it shall be given an inside shop coat of bituminous primer after sandblasting before shipment to the Site.

2. The outside of all buried steel pipe shall receive a coat of an approved bituminous primer, followed by a coat of coal tar enamel into which shall be bonded a single layer of felt wrap, and finished with a single wrap of craft paper unless otherwise specified. All materials and application procedures to be in full accordance with the pertinent sections of AWWA C203. Protective coatings are to be shop applied.

3. The outside of steel pipe inside of buildings and structures, and exposed exterior shall be properly cleaned and shop painted with one coat of primer that is compatible with field coats.

2.07 BEDDING MATERIAL

A. Unless otherwise shown on the Drawings or specified herein, all pipe bedding material shall be in conformance with Section 02200.

B. Concrete bedding and encasement in lieu of standard bedding material shall be installed as shown on the Drawings or specified.

C. All underdrain pipe shall be bedded in AASHTO No. 67 aggregate in lieu of the standard bedding material to a depth shown on the Drawings.

2.08 PIPE ESCUTCHEONS

A. Split-type escutcheons shall be used for piping passing through finished wall, floors, or ceiling. Escutcheons shall be brass plated or chromium plated Model 3A by Ritter, Model 284 by Fee & Mason, or equal.

2.09 WALL PIPE AND SLEEVES

A. Type A Wall Pipe:

1. Cast iron wall pipe shall be used where noted on the Drawings.
2. Wall pipe shall be cast in place with joints as indicated on the Drawings.
3. Where wall pipe is flush with wall, bolt holes shall be tapped for studs.

B. Type B Sleeve:

1. Type B sleeves are for use in exterior walls.
2. Type B sleeves consist of casting in place a cast iron sleeve two sizes larger than the service pipe with couplings on both ends of the sleeve.
3. Service pipe shall be caulked in place with oakum. The oakum shall be covered with a minimum of 1-inch of lead wool on both ends.

C. Type C Sleeve:

1. Type C sleeves are used in exterior walls and other walls as designated on the Drawings.
2. Type C shall be a modular mechanical type seal of interlocking synthetic rubber links.
3. Unless otherwise indicated, the seal shall be suitable for corrosive service in a temperature range of minus 40 degrees F to 250 degrees F. The pressure plates shall be of delrin plastic for good resistance to organic compounds. The bolts and nuts shall be of 18-8 stainless steel. The sealing elements shall be of EPDM rubber which has high resistance to most organic and inorganic materials.

D. Type D Floor Sleeve:

1. Type D sleeves are used for pipes passing through floors.

2. Type D sleeves consist of casting in place a Schedule 40 steel sleeve with four anchors in the floor slab. The sleeve shall be one size larger than the service pipe or 1-inch larger than the flange on the service pipe. The sleeve shall extend 1-inch above the finish floor surface.

E. Type E Sleeve:

1. Type E wall sleeves shall be used where noted on the Drawings.

2. Type E sleeves consist of casting in place a mechanical joint, cast iron wall sleeves meeting the requirements of AWWA C110 and C111.

3. Each Type E sleeve shall be sealed using plain rubber gaskets, follower glands, and mechanical joint studs meeting the requirements of AWWA C111 on both ends.

F. Type F Sleeve:

1. Type F sleeves shall be used for passing through existing masonry walls.

2. Type F sleeves shall be constructed as detailed on the Drawings using 15-pound felt paper and sealant.

G. Type G Sleeve:

1. Type G sleeves used for passing through gastight floors shall be similar to Type C sleeves with the addition of non-shrink grout as shown on the Drawings.

H. Type H Sleeve:

1. Type H sleeves shall be similar to Type G sleeves and used for passing through gastight walls.

2. Type H sleeves shall be as detailed on the Drawings.

I. All wall pipes and sleeves shall be coated or lined in accordance with the appropriate materials for its service.

2.10 EXPANSION JOINTS

A. Expansion joints as specified below shall be installed as per Section 15010.

B. Expansion joint construction shall include a neoprene inner tube extending through the bore to the outside edge of both flanges. The inner tube shall be covered with a flexible multiple layer fabric carcass of high strength rubber impregnated synthetic fibers with steel wire or reinforcement rings integral with the fabric to assure sufficient rigidity for vacuum service and high pressure. An outer cover coated with Hypalon paint shall cover the carcass and provide full protection against ozone and weathering.

C. Flange faces shall be neoprene covered and drilled to match drilling in mating flanges. Flange faces shall also be backed by split steel flange retaining rings.

D. All expansion joints shall be suitable for service temperatures of 225 degrees F.

E. All expansion joints used for vacuum service shall be capable of withstanding a 30-inch Hg vacuum.

F. Expansion joints shall have recommended working pressures compatible with the service for which they are installed.

G. All expansion joints shall be equipped with control units to restrict excess axial compression and elongation. Control units shall consist of plates bolted to pipe flanges on each end of the expansion joint and long control bolts extending between pipe flanges.

H. Expansion joints on pipes used for digester gas service shall be the open arch type.

I. Expansion joints on sludge piping shall be of filled arch construction to prevent solids accumulation at the joint.

J. Expansion joints on pipes used for fuel oil and digester gas service shall have Buna-N tubes.

K. For those locations where expansion joints are used to replace valves, spool pieces, or other short sections, standard single arch expansion joints may be of insufficient length. At these locations double, triple, and quad arch expansion joints shall be used as required.

L. Expansion joints shall be Mercer Rubber Company Style 500-700 or equal.

PART 3 EXECUTION

3.01 PRODUCT HANDLING

A. Care shall be taken in handling and transporting to avoid damaging pipes and their coatings. Loading and unloading shall be accomplished with the pipe under control at all times and under no circumstances shall the pipe be dropped. Pipe shall be securely wedged and restrained during transportation and supported on blocks when stored in the shop or field.

B. Store all pipe on a flat surface so as to support the barrel evenly. It is not recommended that pipe be stacked higher than 4-feet. Plastic pipe, if stored outside, shall be covered with an opaque material to protect it from the sun’s rays.

3.02 PREPARATION OF TRENCH

A. Trench excavation shall conform to requirements of Section 02200.

B. Unless otherwise specified or called for on the Drawings, the width of trench at the top of pipe 24-inch in diameter or less shall not exceed the outside diameter of the pipe or encasement, plus 9-inch on each side of the pipe measured to the face of the trench or to the back of the sheeting when used. For pipe having a diameter greater than 24-inch, the width of trenches at the top of the pipe shall not exceed the outside diameter of the pipe or encasement, plus 15-inch on each side of the pipe measured as specified above.

C. Unless otherwise directed or called for on the Drawings, all pipe trenches shall be excavated below the proposed pipe invert as required to accommodate the depths of pipe bedding material as scheduled on the Drawings.

3.03 PIPE INSTALLATION

A. General:

1. All loose dirt shall be removed from the bottom and the trench backfilled with specified bedding material to pipe laying grade as detailed on the Drawings. Bell holes shall be dug in the bedding where necessary and the pipe shall be placed and supported on bedding material the full length of the barrel. Bedding material shall then be placed 4-inch maximum depth along both sides of the pipe and tamped firmly under the pipe haunches. Additional bedding material shall be placed and compacted in 6-inch layers to the height shown on the Drawings or as directed. A mechanical tamper shall be used when installing bedding material for pipe 24-inch diameter and larger. The remainder of the trench shall be backfilled as specified and called for on the Drawings.
2. All pipe shall be laid to lines and grades in conformance with Section 01800.
3. Wherever piping passes through walls or floors, a wall casting pipe or sleeve of the type indicated on the Drawings shall be installed. Escutcheons shall be provided for pipe passing through finished walls, floors, or ceilings.
4. Pipe Anchoring:
    a. Disjointing hydrostatic pressure at bends, valves, plugs, tees, and wyes shall be counteracted by restrained joints or reinforced concrete anchorage as directed on the Drawings or specified.
    b. Thrust blocks shall be installed only where directed or specifically called for on the Drawings, unless otherwise specified. Installation shall be in conformance with Drawings.
    c. Approved joint restraints shall be installed for the distance from each side of each bend, valve, plug, tee, or wye in locations shown or scheduled on the Drawings.
    d. Reinforced concrete joint anchorage shall be installed in conformance with the Drawings.
5. Unless shown otherwise on the Drawings, all buried pipe carrying liquids shall be installed with a minimum cover of 5-feet. Pressure piping which carries gases shall be installed with a minimum cover of 4-feet. When new piping crosses existing utilities and other obstructions which force a change in elevation or horizontal alignment, the Contractor shall install the new piping at a deeper elevation, or new alignment to avoid the obstructions unless otherwise instructed by the Engineer. Such changes in elevation or alignment shall be made either by installing fittings or by deflecting joints in accordance with the

pipe manufacturer's recommendations. Such Work shall be performed at no additional cost to the Owner. To the extent possible, pressure and process piping shall be installed at a constant grade. All changes in grade and alignment shall be approved by the Engineer.

B. Sewer Pipe:

1. The laying of pipe in finished trenches shall be commenced at the lowest point, with the bell end or groove end laid upgrade. All pipe shall be laid with ends abutting and true to line and grade. They shall be carefully centered to form a sewer with a uniform invert of line and grade shown on the Drawings. Laser beams shall be used to maintain line and grade unless other methods are approved by the Engineer.

2. Where holes are cast in concrete pipe for handling, they shall be completely filled with non-shrinking mortar after the pipe is placed. A metal disc of proper size may be inserted near the bottom of the hole to retain the mortar until hardened. Wood plugs or rocks intended to plug the hole for retention of the mortar will not be permitted.

3. Joints:

a. O-Ring and Chemically Welded Joints - Pipe jointing surfaces shall be clean and dry when preparing surfaces for joining. Lubricants, primers, adhesives, etc., shall be used as recommended by the pipe or joint manufacturer's specifications. The jointing materials or factory fabricated joints shall then be placed, fitted, joined, and adjusted in such a manner as to obtain a watertight joint. Trenches shall be kept water-free and as dry as possible during bedding, laying, and jointing. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to prevent movement of the pipe from any cause.

b. Non-shrinking Mortar Joints - Where specified or shown on the Drawings, joints of concrete pipe sewers shall be thoroughly pointed full inside circumference with a non-shrinking mortar in conformance with the material manufacturer's instructions. The mortar shall be tightly packed and the interior face of the joint shall be left smooth and continuous with the interior face of the pipe. Pointing shall not be done until the backfill over the pipe is placed and compacted.

4. Connections to Existing Sewers:

a. Unless otherwise specified, shown on the Drawings, or directed, connections to existing sewers shall be made as follows:

1) Vitrified clay pipe, plain concrete pipe, and asbestos cement pipe, 15-inch diameter and smaller, and larger diameter at the option of the Contractor, shall be connected by removing a

section of the existing sewer and inserting connecting fittings using specified flexible connection couplings.

2) Reinforced concrete pipe and larger sizes of asbestos cement pipe and plain concrete pipe, unless otherwise shown on the Drawings, shall be connected by coring the existing sewer pipe wall and inserting a flexible watertight connector to receive the new pipe.

3) Polyvinyl chloride pipe, ABS pipe, and ABS truss pipe shall be connected in conformance with the manufacturer's recommendations as approved by the Engineer.

b. Connections shall be made in conformance with the jointing materials manufacturer's recommendations and as directed by the Resident Project Representative.

C. Underdrain Pipe:

1. Underdrain pipe shall be laid in a manner conforming to the laying of sewer pipe.

2. In addition, underdrain pipe shall be laid with perforations on the underside.

3. The ends of all pipelines shall be closed with stoppers to prevent entry of soil or other foreign materials.

D. Process and Pressure Pipe:

1. Pipe and appurtenances shall be installed true to line, grade, and location; with joints centered, spigots home; pipe properly supported and restrained against movement; and all valve stems plumb.

2. All elbows, tees, plugs, etc., shall be properly anchored, blocked, or otherwise restrained to prevent movement of the pipe in the joints due to internal or external pressure.

3. The open ends of all pipes and special castings shall be plugged or otherwise closed with a watertight plug to the approval of the Resident Project Representative before leaving the Work for the night, and at other times of interruption of the Work. All pipe ends which are to be permanently closed shall be plugged or capped and restrained against internal pressure.

4. Where new or existing pipe requires cutting in the field it shall be done in a manner to leave a smooth end at right angles to the pipe centerline. The finished cut must be approved by the Resident Project Representative.

5. Joints:

a. Gaskets - Just prior to joining the pipes, the surfaces of the joint rings shall be wiped clean and the joint rings and rubber gaskets shall be liberally lubricated with an approved type of vegetable oil soap. The

spigot end, with the gasket placed in the groove, shall be entered into the bell of the pipe already laid, making sure that both pipes are properly aligned. Before the joint is fully "home," the position of the gasket in the joint shall be determined by means of a suitable feeler gauge supplied by the pipe manufacturer. If the gasket is found not to be in proper position, the pipes shall be separated and the damaged gasket replaced. The pipe is then forced "home" firmly and fully. In its final position, the joint between the pipes shall not be deflected more than 1/2-inch at any point.

b. Bell and Spigot Lead Joints - If used, the spigot of each pipe shall be fully seated in the bell of the adjoining pipe, adjusted to form a uniform annular space which shall be caulked with sterilized pre-molded rubber, forming a solid packing against which molten lead shall be poured and caulked. Lead, after caulking, shall have a depth of at least 2-inch for pipes 14-inch or less in diameter, and 2-1/2-inch for larger pipe. The melting pot shall be kept near the joint which shall be made by one pouring. Dross shall not be allowed to accumulate in the pot. All Work shall be performed by skilled workmen.

c. Electrical Continuity - Where specified, electrical continuity shall be provided in concrete and steel pressure pipes by welding an insulated #4RR copper cable across joints. The cable shall be welded to the steel of bell and spigot of concrete pressure pipe and across joints including each piece of coupling on jointed steel pipes.

d. Where new piping is to be connected into an existing joint, said joint shall be cleaned sufficiently to result in a liquid- or gastight seal. If applicable, a new gasket shall be supplied and installed.

3.04 SLEEVES AND WALL PIPE

A. Type A wall pipes shall be provided for all pipes passing through the exterior walls unless other sleeve types or wall pipes are designated on the Drawings. Type C sleeves shall be provided in interior walls unless designated otherwise on the Drawings.

B. At all points where piping passes through floors, Type D sleeves shall be provided, unless otherwise designated on the Drawings.

C. Other sleeve types and wall pipe shall be provided as indicated on the Drawings.

D. All wall pipes and sleeves shall be coated or lined in accordance with the appropriate materials for its service.

3.05 RESERVED

3.06 RESERVED

3.07 RESERVED

3.08 PRESSURE AND LEAKAGE TESTS FOR PROCESS AND PRESSURE PIPE

A. The Contractor shall furnish the pump, pipe connections, taps, gauges, auxiliary water container, bulkheads, plugs, and other necessary equipment and make pressure and leakage tests of all lines including the joint between existing and new pipes unless otherwise directed by the Engineer.

B. Tests shall be conducted on all pipelines or valved sections thereof as directed by the Resident Project Representative. Testing of pipelines laid in excavation or bedded in concrete shall be done prior to backfilling or placing concrete cover, except restrained sections of pipe which shall be backfilling prior to testing, unless otherwise permitted by the Engineer. Tests on lines anchored or blocked by concrete shall not be conducted until the concrete has taken permanent set.

C. The line or section thereof to be tested shall be filled slowly with water to expel all air. Hydrostatic pressure shall be applied by pumping water from an auxiliary supply. The test pressure shall be maintained two hours minimum and additional time as required for thorough inspection to find any leaks or defects in the force main and appurtenances. Unless indicated otherwise in Part 4, the test pressure shall be 100 pounds per square inch or 50% above the normal operating pressure, whichever is greater. Should the pipe section fail to pass the tests, the Contractor shall find and correct failures and repeat the tests until satisfactory results are obtained.

D. Leakage tests shall be made simultaneously with or following completion of pressure tests of all lines or valved sections thereof. Leakage is defined as the quantity of water added to the pipe under test to maintain the required test pressure for a specified time. The leakage test pressure shall be not less than the maximum operating pressure of the section under test. The duration of the leakage test shall be not less than two hours. Allowable leakage for buried piping shall not exceed 9 gallons per inch of pipe diameter per mile of pipe in 24 hours. For piping not buried, any leakage during the test is unacceptable.

E. Lines that conduct fuel oil, gasoline, or chemicals that would have a deleterious effect upon the pipeline or process when mixed with water shall be purged after the pressure and leakage tests. Purging shall be performed with air or an inert gas such as nitrogen or carbon dioxide. Purging shall be continued for a minimum of two hours after all visible water has disappeared.

F. Testing of lines governed by other authorities, i.e. natural gas, shall be witnessed and approved by the authority.

3.09 DISINFECTION OF POTABLE WATER MAINS

A. After the pressure test and prior to disinfecting, the lines shall be thoroughly flushed through hydrants, fixtures or by other means as approved by the Engineer.

B. The Contractor shall furnish required materials and apparatus and perform the Work of disinfections. All temporary and permanent materials, apparatus and appurtenances shall have the same NSF 61 approval as the installed Work.

C. All water lines shall be cleaned and disinfected in accordance with federal, state, and local codes and AWWA C651 as follows:

1. Liquid sodium hypochlorite by means of a suitable solution feed machine or pump. Sodium hypochlorite storage conditions and durations shall be controlled to minimize deterioration.

2. Calcium hypochlorite as tablets, powder. Tablets or powder shall be placed in the water line during construction. The water line shall be filled, carefully, with potable water to produce a uniform solution.

3. Calcium hypochlorite as a water mixture. The calcium hypochlorite powder shall be mixed with water to form a paste and then thinned to a slurry, to be introduced into the pipe by pumping.

D. The dosage of chlorinating agent shall be of the amount to produce a minimum chlorine residual of 50 parts of chlorine per million. Tests with the DPD method shall be made at selected points to determine the residual.

E. Treated water shall be retained in the lines for sufficient time to accomplish the desired disinfection but not less than 24 hours. Valves in the line shall be operated during the retention period.

F. Following disinfection, all treated water shall be flushed from the lines at their extremities until the replacement water throughout the lines shall, upon test, be chemically and bacteriologically acceptable.

1. Two or more successive sets of samples taken at 24-hour intervals shall indicate microbiologically satisfactory water before the lines are placed into service.

2. Should the initial treatment prove ineffective, the disinfection shall be repeated until the test shows acceptable results.

G. All testing shall be done by a laboratory acceptable to the public authority having jurisdiction, and all costs shall be paid for by the Contractor.

H. The disposal of heavily chlorinated water shall be coordinated with the Owner and regulatory agencies. The heavily chlorinated water may require the addition of a dechlorinating chemical prior to release to a storm sewer or to the environment. The dechlorinating method shall be approved by the Owner and Engineer. The heavily chlorinated water shall not be released to sanitary sewers without permission from the Owner of the sanitary sewer system.

3.10 INSTRUMENTATION CONNECTIONS

A. The Contractor shall make all necessary allowances for and install all controls and instrumentation furnished under any Contract Division and which require in-line connection to process and pressure piping.

B. The Contractor shall provide all necessary mounting bosses, pipe and boss taps, plugs, tees, and any miscellaneous appurtenances to allow connection of Instrumentation and Controls and their associated piping to process and pressure piping.

C. Thermowells complete with all appurtenances listed in Division 16 shall be furnished and installed under that Division. Thermowells complete with all appurtenances which are not included in the list in Division 16 and are to be installed in piping under this Section, shall be furnished and installed under this Section.

D. Instrumentation and Controls are furnished and specified under various Sections including Section 16902. Any schedules shown in Section 16902 are not guaranteed to be complete.

PART 4 SPECIAL PROVISIONS

4.01 PIPE SCHEDULE

A. Pipe Schedule is on Drawings.

4.02 PIPE RESTRAINTS

A. All process or pressure pipe joints which are not encased in concrete shall be mechanically restrained.

END OF SECTION

PIPE TYPE SCHEDULE

SERVICE	SIZE	MATERIAL	JOINT TYPE	JOINT RESTRAINT	TESTING	NOTES
YARD PIPING						
NG	ALL	PE 15195	FUSION-WELD			1
NPW	ALL	HDPE 15140	COMPRESSION OR BUTT FUSION			1
TD	10"	DIP 15210	15210	15210 RESTRAINED JOINTS	15210	5 AND 6
FE-1	ALL	DIP OR PVC. 02555 OR 15210	02550 AND 15250	N/A	02550 OR 15210	5
FE-2	30"	RCP (CLASS III) PVC (SDR 26) 02550	02550	N/A	02550	
ML	ALL	DIP 15210	15210	15210 RESTRAINED JOINTS	15210	5 AND 6
RAS	8"	DIP 15210	15210	15210 RESTRAINED JOINTS	15210	5 AND 6
RS	ALL	DIP 15210	15210	15250 RESTRAINED JOINTS	15250	5
SA	ALL	02550 OR 15210	02550 AND 15210	N/A	02550 OR 15210	
SC	6"	PVC SDR 35 02550	02550	N/A	02550	
SC	8"	DIP GLASS LINED 2.01	15210	N/A	15210	5
ST	ALL	02550 2.01	02550	N/A	02550	
WAS	6"	DIP 15210	15210	15210 RESTRAINED JOINTS	15210	5 AND 6
WATER (CITY)	12" and below	DIP 02550	15210	15210 RESTRAINED JOINTS	15210	2 AND 6
GRIT	ALL	15210 GLASS LINED	15210	15210 RESTRAINED JOINTS	15210	5 AND 6

1. HYDRONIC PIPE PRESSURE TESTING SHALL BE IN ACCORDANCE WITH THE APPLICABLE STATE MECHANICAL CODE.
2. SEE SPECIFICATION 15210.
3. SEE SPECIFICATION 15140
4. SEE SPECIFICATION 02550
5. BURIED DIP: POLYETHYLENE ENCASEMENT PER AWWA C105; PROVIDE COR-BLUE OR EQUAL BOLTS.
6. RESTRAIN JOINTS REQUIRED PER THE JOINT RESTRAIN TABLE
7. RESTRAIN ALL JOINTS

1

GENERAL REQUIREMENTS
A. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN AND PAY FOR NPDES PERMIT FOR STORM WATER DISCHARGE IF THE PROJECT DISTURBS 1 OR MORE ACRES OF GROUND. IF PROJECT DISTURBS LESS THAN 1 ACRE BUT IS PART OF A LARGER PLAN OF DEVELOPMENT OR SALE, THE CONTRACTOR MAY ALSO NEED A PERMIT TO DISCHARGE STORMWATER FROM THE SITE.
B. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING AN EROSION CONTROL PLAN IN ACCORDANCE WITH THE REQUIREMENTS OF THE CLEAN WATER ACT, 33 USC SECTION 1251 ET SEQ. AND THE OWPCA, ORC 6111.01 ET SEQ. AND RELATED RULES. THE CONTRACTOR WARRANTS AND AGREES THAT IT IS EQUIPPED TO LIMIT WATER POLLUTION FOR ITS ACTIVITY ACCORDING TO APPLICABLE FEDERAL AND STATE STANDARDS.
C. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PREVENT OR LIMIT POLLUTION OF AIR AND WATER RESULTING FROM HIS OPERATIONS.
D. THE CONTRACTOR SHALL PERFORM WORK REQUIRED TO PREVENT SOIL FROM ERODING OR OTHERWISE ENTERING ONTO ALL PAVED AREAS AND INTO NATURAL WATERCOURSES, DITCHES, AND PUBLIC SEWER SYSTEMS, AND TO PREVENT DUST ATTRIBUTABLE TO HIS OPERATIONS FROM ENTERING THE ATMOSPHERE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY.
E. EXCESS SOIL THAT IS STOCKPILED SHALL BE REMOVED OR REGRADED WITHIN 15 DAYS OF THE COMPLETION OF CONSTRUCTION.
F. IF WORK IS SUSPENDED FOR ANY REASON CONTRACTOR SHALL MAINTAIN THE SOIL EROSION AND SEDIMENTATION CONTROLS IN GOOD OPERATING CONDITION DURING THE SUSPENSION PERIOD. WHEN SUSPENSION PERIOD WILL EXCEED ONE MONTH THE CONTRACTOR SHALL SEED FERTILIZE AND MULCH DISTURBED AREAS LEFT EXPOSED DURING WORK SUSPENSIONS.

STREETS, SIDEWALKS AND DRIVEWAYS
A. STREETS, HAUL ROADS, AND DETOURS AND BYPASS ROADS SHALL BE SWEPT BY AUTOMATIC SELF-CONTAINED SWEEPERS.
B. EXCESSIVE DIRT ON PAVEMENTS SHALL BE REMOVED BY MEANS OF HAND SHOVELING OR APPROPRIATE MECHANICAL EQUIPMENT AND THE AREA SWEPT AS DIRECTED ABOVE.
C. SIDEWALKS AND DRIVEWAYS SHALL BE CLEANED BY MEANS OF SHOVELS AND HAND BROOMS OR APPROPRIATE MECHANICAL EQUIPMENT.
D. DUST ON UNSURFACED STREETS OR PARKING AREAS AND ANY REMAINING DUST ON SURFACED STREETS SHALL BE CONTROLLED WITH CALCIUM CHLORIDE DUST PALLIATIVE.
E. THE CONTRACTOR SHALL COMPLY WITH THE ABOVE REQUIREMENTS ON A DAILY BASIS. IF THE CONTRACTOR FAILS TO PERFORM THE ABOVE WORK IN A SATISFACTORY MANNER, ALL WORK, EXCEPT CLEANUP OPERATIONS, SHALL BE STOPPED UNTIL THE CONTRACTOR HAS COMPLIED WITH THE ABOVE REQUIREMENT.

EROSION AND SEDIMENT CONTROL
A. THE CONTRACTOR SHALL INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS TO REMAIN DORMANT (UNDISTURBED) FOR MORE THAN 45 DAYS WITHIN SEVEN DAYS.
1.SUCH PRACTICES MAY INCLUDE: TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, MATTING SOD STABILIZATION, VEGETATIVE BUFFER STRIPS, PHASING AND PROTECTION OF TREES.
B. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DISTURBED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.
C. WHEN SEASONAL CONDITIONS PROHIBIT THE APPLICATION OF TEMPORARY OR PERMANENT SEEDING, NON-VEGETATIVE SOIL STABILIZATION PRACTICES, SUCH AS MULCHING AND MATTING, SHALL BE USED.
D. A STABILIZATION CONSTRUCTION ENTRANCE SHALL BE PROVIDED TO REDUCE VEHICLE TRACKING OF SEDIMENT. THE PAVED STREET ADJACENT TO THE SITE ENTRANCE SHALL BE SWEPT A MINIMUM OF DAILY, OR AS NEEDED, TO REMOVE ANY EXCESS MUD, DIRT, OR ROCK BEING TRACKED FROM THE SITE.
1.DUST AND SEDIMENT ALONG ANY STREET DUE TO CONSTRUCTION ON THIS SITE IS TO BE SWEPT A MINIMUM OF ONCE AT THE END OF THE DAY OR AS NECESSARY TO PREVENT A BUILD-UP OF DUST AND SOIL ON THE PAVEMENT SURFACE.
E. DUMP TRUCKS HAULING FROM THE CONSTRUCTION SITE SHALL BE COVERED WITH A TARPAULIN.
F. NO MORE THAN 200-FEET OF TRENCH SHALL BE OPEN AT ANY GIVEN TIME. TRENCH OPENING, LAYING OF PIPE, AND BACKFILLING SHOULD OCCUR SO AS TO MINIMIZE THE AMOUNT OF DISTURBED AREA.
G. THE CONTRACTOR SHALL MINIMIZE THE WIDTH OF HIS WORK AREA.
H. EXISTING TREES, SHRUBS, AND OTHER GROUND COVER VEGETATION SHALL BE PRESERVED WHERE POSSIBLE. TREE REMOVAL WILL BE LIMITED TO THAT NECESSARY FOR CONSTRUCTION AND WILL BE LIMITED FURTHER TO THE PERMANENT EASEMENT WHEREVER POSSIBLE. NO TREE REMOVAL WILL BE PERMITTED OUTSIDE THE TEMPORARY EASEMENT.
I. STORM WATER RUNOFF AND NATURAL STREAM FLOW SHALL BE INTERCEPTED OR DIVERTED WHEN ORIGINATING UPGRADE AWAY FROM THE CONSTRUCTION SITE SO AS TO MINIMIZE THE AMOUNT OF FLOW OVER THE CONSTRUCTION SITE.
J. ALL DEWATERING FLOWS ARE TO BE SETTLED IN SILTATION BASINS OR DIRECTED THROUGH FILTERS BEFORE DISCHARGE TO STABILIZED SITES, SUCH AS STREAM OR STORM SEWERS, AND NOT ONTO EXPOSED SOILS, STREAM BANKS, OR ANY OTHER SITES WHERE THE FLOW COULD CAUSE EROSION.
K.WHEN CONSTRUCTION OCCURS NEAR STORM SEWER INLETS, EROSION CONTROL MEASURES SUCH AS INLET FILTERS OR HAY BALES SHALL BE USED TO PREVENT SILT FROM ENTERING THE STORM SEWERS.

SEDIMENT CONTROL
A. CONTRACTOR SHALL CONTROL EROSION AND TRAP SEDIMENT FROM ALL SITES REMAINING DISTURBED FOR MORE THAN 14 DAYS. SUCH PRACTICES SHALL INCLUDE AMONG OTHERS, SEDIMENT TRAPS, SEDIMENT BASINS, SILT FENCES, AND STORM DRAIN INLET PROTECTION. SILT FENCE FABRIC SHALL BE ODOT ITEM 712.09 TYPE C GEOTEXTILE FABRIC.
B. TIMING - SEDIMENT CONTROL STRUCTURES SHALL BE FUNCTIONAL THROUGHOUT EARTH-DISTURBING ACTIVITY. SEDIMENT PONDS AND PERIMETER SEDIMENT BARRIERS SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING AND WITHIN SEVEN DAYS FROM THE START OF GRUBBING. THEY SHALL CONTINUE TO FUNCTION UNTIL THE UPSLOPE DEVELOPMENT AREA IS RESTABILIZED.
C. SETTLING PONDS - CONCENTRATED STORM WATER RUNOFF FROM DISTURBED AREAS FLOWING AT RATES WHICH EXCEED THE DESIGN CAPACITY OF SEDIMENT BARRIERS SHALL PASS THROUGH A SEDIMENT SETTLING POND. THE FACILITY'S STORAGE CAPACITY SHALL BE 67 CUBIC YARDS PER ACRE OF DRAINAGE AREA.
D. SEDIMENT BARRIERS - SHEET FLOW FROM RUNOFF FROM DENUDED AREA SHALL BE INTERCEPTED BY SEDIMENT BARRIERS. SEDIMENT BARRIERS, SUCH AS SEDIMENT FENCES OR DIVERSIONS DIRECTING RUNOFF TO SETTLING FACILITIES, SHALL PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM SEDIMENT TRANSPORTED BY SHEET FLOW.
E. OTHER EROSION AND SEDIMENT CONTROL PRACTICES SHALL PREVENT SEDIMENT-LADEN WATER FROM ENTERING DRAIN SYSTEMS, UNLESS THE STORM DRAIN SYSTEM DRAINS TO A SETTLING POND. THESE PRACTICES SHALL DIVERT RUNOFF FROM DISTRIBUTED AREAS AND STEEP SLOPES WHERE PRACTICABLE AND STABILIZE CHANNELS AND OUTFALLS FROM EROSIVE FLOWS.

CONSTRUCTION OF SLOPES
A. THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS WHEN WORKING ON SLOPES EXCEEDING 4:1.
1.THE PIPELINE SHALL BE CONSTRUCTED DURING DRY WEATHER, LOW FLOW PERIODS AS DETERMINED BY THE ENGINEER. THE CONSTRUCTION TIME FOR THIS WORK SHALL BE LIMITED TO THE SHORTEST TIME POSSIBLE IN ORDER TO MINIMIZE ENVIRONMENTAL IMPACTS.
2.CONSTRUCTION EQUIPMENT SHALL BE LIMITED TO TRENCHING EQUIPMENT OR RUBBER TIRED BACKHOES IN ORDER TO PREVENT SOIL EROSION AND MAINTAIN SLOPE STABILIZATION.
3.BIODEGRADABLE MESH SHALL BE USED FOR SLOPE STABILIZATION. THE MESH SHALL COVER THE ENTIRE WIDTH OF DISTURBED GROUND.
4.THE TRENCH SHALL BE BACKFILLED IMMEDIATELY AFTER INSTALLATION OF THE PIPE. THE DISTURBED AREAS SHALL BE GRADED, SEEDED, AND MULCHED WITHIN 24 HOURS AFTER BACKFILLING. THE CONTRACTOR SHALL MAINTAIN ALL SEEDED AND MULCHED AREAS IN ACCORDANCE WITH THE SPECIFICATIONS UNTIL FINAL ACCEPTANCE OF THE WORK.
5.THE CONTRACTOR SHALL PLACE STRAW OR HAY BALES AT THE BASE OF THE SLOPES FOR SEDIMENTATION CONTROL. THE BALES SHALL BE PLACED PRIOR TO CONSTRUCTION OF THE PIPELINE AND SHALL REMAIN UNTIL FINAL SEEDING HAS GERMINATED AND BECOME ESTABLISHED.

PROHIBITED CONSTRUCTION ACTIVITIES
A. DISPOSING OF EXCESS OR UNSUITABLE EXCAVATED MATERIAL IN WETLANDS OR FLOODPLAINS, EVEN WITH THE PERMISSION OF THE PROPERTY OWNER.
B. LOCATING STOCKPILE STORAGE AREAS IN ENVIRONMENTALLY SENSITIVE AREAS.
C. INDISCRIMINATE, ARBITRARY, OR CAPRICIOUS OPERATION OF EQUIPMENT IN ANY STREAM CORRIDORS, ANY WETLANDS, ANY SURFACE WATERS, OR OUTSIDE THE EASEMENT LIMITS.
D. PUMPING OF SEDIMENT-LADEN WATER FROM TRENCHES OR OTHER EXCAVATIONS DIRECTLY INTO ANY SURFACE WATERS, ANY STREAM CORRIDORS, ANY WETLANDS, OR STORM SEWERS; ALL SUCH WATER WILL BE PROPERLY FILTERED OR SETTLED TO REMOVE SILT PRIOR TO RELEASE.
E. DISCHARGING POLLUTANTS SUCH AS CHEMICALS, FUELS, LUBRICANTS, BITUMINOUS MATERIALS, RAW SEWAGE AND OTHER HARMFUL WASTE INTO OR ALONGSIDE OF RIVERS, STREAMS, IMPOUNDMENTS, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO.
F. PERMANENT OR UNSPECIFIED ALTERATION OF THE FLOW LINE OF ANY STREAM.
G. DAMAGING VEGETATION OUTSIDE OF THE CONSTRUCTION AREA.
H. DISPOSAL OF TREES, BRUSH, AND OTHER DEBRIS IN ANY STREAM CORRIDORS, ANY WETLANDS, ANY SURFACE WATERS, OR AT UNSPECIFIED LOCATIONS.
I. OPEN BURNING OF PROJECT DEBRIS WITHOUT A PERMIT.
J. DISCHARGING INJURIOUS SILICA DUST CONCENTRATIONS INTO THE ATMOSPHERE RESULTING FROM BREAKING, CUTTING, CHIPPING, DRILLING, BUFFING, GRINDING, POLISHING, SHAPING OR SURFACING CLOSER THAN 200 FEET TO PLACES OF RESIDENCES OR PLACES OF HUMAN OCCUPATION.
K. STORING CONSTRUCTION EQUIPMENT AND VEHICLES AND/OR STOCKPILING CONSTRUCTION MATERIALS ON PROPERTY, PUBLIC OR PRIVATE, NOT PREVIOUSLY SPECIFIED ON THE DRAWINGS OR NOT AUTHORIZED BY THE OWNER OR ENGINEER FOR SUCH PURPOSE.
L. RUNNING WELL POINT OR PUMP DISCHARGE LINES THROUGH PRIVATE PROPERTY OR PUBLIC PROPERTY AND RIGHTS-OF-WAY WITHOUT THE WRITTEN PERMISSION OF THE PROPERTY OWNER AND THE CONSENT OF THE ENGINEER.

DISPOSAL OF SOLID WASTE, SANITARY, AND TOXIC WASTE
A. SOLID, SANITARY, AND TOXIC WASTE MUST BE DISPOSED OF IN A PROPER MANNER IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. IT IS PROHIBITED TO BURN, BURY OR POUR OUT ONTO THE GROUND OR INTO STORM SEWERS ANY SOLVENTS, PAINTS, STAINS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FLUID, ANTIFREEZE, CEMENT CURING COMPOUNDS AND OTHER SUCH TOXIC OR HAZARDOUS WASTES.
B. NO SOLID (OTHER THAN SEDIMENT) OR LIQUID WASTE, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED IN STORM WATER RUNOFF.
C. WASH OUT OF CEMENT TRUCKS SHOULD OCCUR IN A DIKED, DESIGNATED AREA WHERE THE WASTEWATER CAN BE COLLECTED AND DISPOSED OF PROPERLY WHEN THEY HARDEN.
D. STORAGE TANKS SHOULD BE LOCATED IN DIKED AREAS AWAY FROM ANY DRAINAGE CHANNELS. THE DIKED AREA SHOULD HOLD A VOLUME 110% OF THE LARGEST TANK.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A SWPPP PREPARED FOR THE WORK. A COPY OF A STANDARD SWPPP TEMPLATE IS INCLUDED AS A REFERENCE. THE SWPPP SHALL BE PREPARED BY AN ENGINEER LICENSED IN THE STATE OF OHIO.
B. THE DRAWINGS SHOW RECOMMENDATIONS FOR POLLUTION PREVENTION MEASURES IS PROVIDED IN THE DRAWING SET. THE MEASURES SHOWN ON THE DRAWINGS SHALL BE CONSIDERED THE MINIMUM LEVEL OF POLLUTION PREVENTION.
C. THE CONTRACTOR SHALL ADHERE TO THE SWPPP IN ACCORDANCE WITH OEPA GUIDELINES.
D. THE SWPPP SHALL BE UPDATED AND MAINTAINED THROUGHOUT THE WORK.
E. A COPY OF THE SWPPP SHALL BE AVAILABLE AT THE SITE'S CONSTRUCTION OFFICE.

DEMOLITION AND RENOVATION / ASBESTOS ABATEMENT
A. PRIOR TO ANY DEMOLITION OR RENOVATION ACTIVITIES, A NOTIFICATION OF DEMOLITION AND RENOVATION/ABATEMENT SHALL BE SUBMITTED TO THE OHIO EPA DIVISION OF AIR POLLUTION CONTROL (DAPC) IN ACCORDANCE WITH APPLICABLE OHIO ADMINISTRATIVE CODE REQUIREMENTS.
B. THE OWNER SHALL RETAIN A CERTIFIED ASBESTOS EVALUATION SPECIALIST TO PERFORM A BUILDING AND EQUIPMENT INSPECTION FOR THE PRESENCE OF ASBESTOS-CONTAINING MATERIALS PRIOR TO DEMOLITION OR RENOVATION.
C. IF ASBESTOS-CONTAINING MATERIALS ARE IDENTIFIED, A LICENSED ASBESTOS ABATEMENT CONTRACTOR SHALL REMOVE ALL REGULATED ASBESTOS-CONTAINING MATERIALS PRIOR TO DEMOLITION. IF NO ASBESTOS-CONTAINING MATERIALS ARE IDENTIFIED, DEMOLITION MAY PROCEED FOLLOWING SUBMISSION OF THE REQUIRED NOTIFICATION.
D. THE NOTIFICATION OF DEMOLITION AND RENOVATION/ABATEMENT SHALL BE SUBMITTED A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE START OF ASBESTOS ABATEMENT AND/OR DEMOLITION ACTIVITIES. ASBESTOS ABATEMENT AND DEMOLITION ACTIVITIES MAY BE INCLUDED UNDER A SINGLE NOTIFICATION, WHEN APPLICABLE.
E. THE CONTRACTOR PERFORMING THE DEMOLITION AND/OR ABATEMENT WORK SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL APGPLICABLE FEDERAL, STATE, AND LOCAL AIR POLLUTION CONTROL REGULATIONS. THE OWNER SHALL VERIFY THAT ALL REQUIRED INSPECTIONS AND NOTIFICATIONS HAVE BEEN COMPLETED PRIOR TO THE COMMENCEMENT OF DEMOLITION ACTIVITIES.

CIVIL
PIPE SCHEDULE AND NOTES
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	ADDENDUM 2	REVISIONS AFTER ISSUED FOR BID	BY
5				
4				
3				
2				
1	10/09/26			

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JOB NO. 904-8119.002
SCALE AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
JAH	RGW	EBK

STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026
SHEET NO.
C-0.5
21 OF 247

TOL-8119002\02-C-0.5 PIPE SCHEDULE & NOTES
10/16/2026 12:20 PM - KRILL
10/16/2026 12:20 PM

MATCH LINE SHEET C-104.1

MATCH LINE SHEET C-104.3

FUTURE CLARIFIER 3

CLARIFIER 2

CLARIFIER 1

OXIDATION DITCH

ELECTRICAL BUILDING

HEADWORKS BUILDING

SERVICE BUILDING

Existing Building

RAS/WAS PUMP STATION

SPLITTER BOX

GRIT REMOVAL

POST AERATION

U.V.

EQ BASIN PUMP STATION

DIVERSION WEIR

FIRE HYDRANT ASSEMBLY WITH WATCH VAVLE (VILLAGE STANDARD)

SEE STORM 4 PROFILE

SEE SANITARY INFLUENT SEWER 2 PROFILE

SEE SANITARY INFLUENT SEWER 1 PROFILE

SEE SANITARY 3 PROFILE

CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION OF EXISTING WATER LINE

CONTRACTOR TO FIELD VERIFY SIZE AND LOCATION OF EXISTING GAS LINE

3" SPA SEE NOTE 1

Chain Link Fence

Gravel

Grass

Woods Area

Asphalt Pavement

Grass Area

ABANDONED

B-1 B-2 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10 B-11 B-12 B-14 B-15

CB-ST-1 CB-ST-2 CB-ST-3

MH-SA-1 MH-SA-2 MH-SA-3 MH-SA-4 MH-SA-6 MH-SA-7 MH-SA-8

NOTES:
1. 3" SCH. 40 CONDUIT WITH LONG RADIUS SWEEP ELBOWS AND CAP ENDS

YARD PIPING
CIVIL
PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/19/26	ADDENDUM 2	PAL

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JOB NO. 904-8119.002

SCALE 1"=20'

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

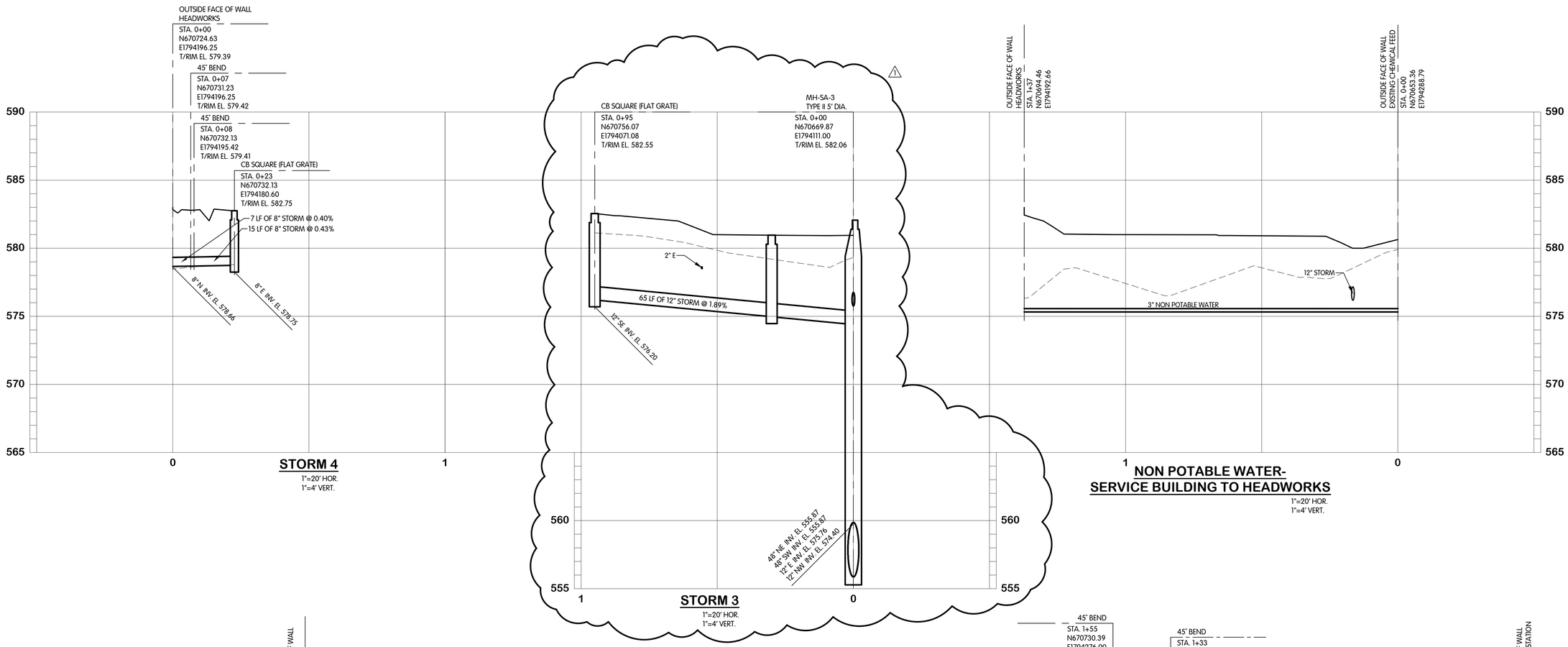
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PAL	BJD	JAH

STATUS: ISSUED FOR RE-BID

DATE: AUGUST 2026

SHEET NO.
C-104.2
30 OF 247

TOL-8119002\C-C-104.2 YARD PIPING PLAN B
10/15/2026 10:38 AM - BDRILL
10/15/2026 10:39 AM



YARD PIPING
CIVIL
PIPING PROFILES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
3			
2	10/09/26	ADDENDUM 2	PAL
1			

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JOB NO.	904-8119.002
SCALE	AS INDICATED

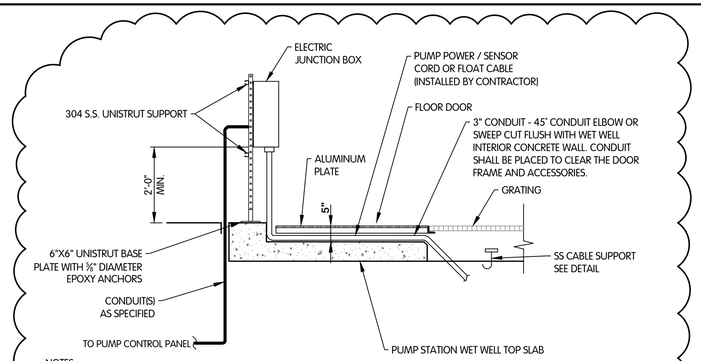
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DESIGNED	DRAWN	CHECKED
JAH	BJD	JAH

STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026

SHEET NO.
C-104.7
35 OF 247

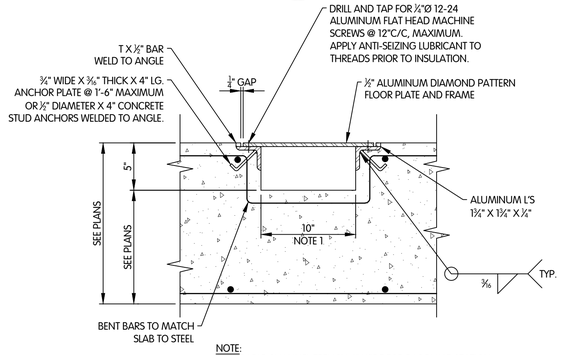
TDL-8119002\CIV\C-104.7 YARD PIPING PROFILES
10/09/2026 9:14 AM BDRILL
10/15/2026 10:36 AM



NOTES:
1. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SURFACES SHALL BE COATED WITH BITUMINOUS MATERIAL.
2. THE CONTRACTOR SHALL COORDINATE THE CABLE CHANNEL LOCATION WITH THE PUMP RAIL CONNECTION TO THE TOP SLAB, FLOOR DOOR AND THE FLOOR DOOR DRAIN LOCATION.

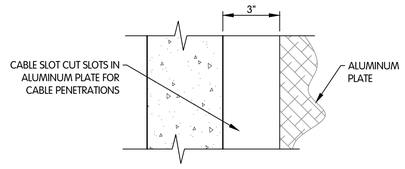
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A CABLE CHANNEL DETAILS
1/2" = 1'-0"

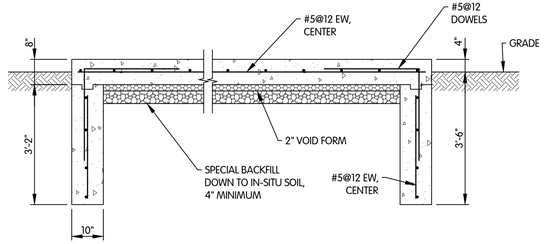


NOTE:
1. CABLE CHANNEL TRENCH 6" WIDE FOR RAS PUMP STATION.

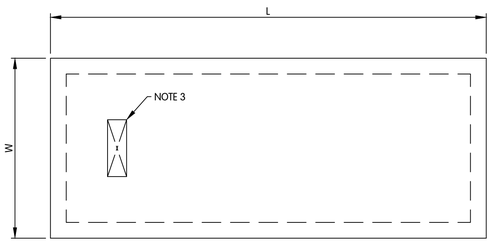
B CABLE CHANNEL TRENCH DETAILS
½"=1'-0"



C DETAIL
3"=1'-0"



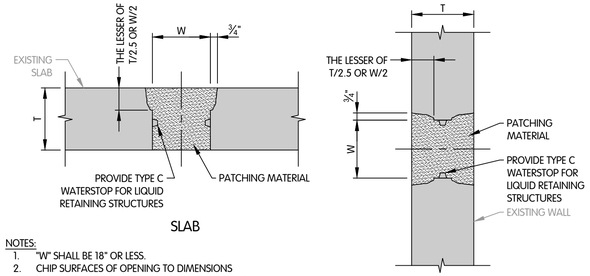
SECTION



PLAN

NOTES:
1. GENERATOR PAD: W=8'-8", L=23'-2"; MECHANICAL UNIT PADS: MAU-2-1 W=5'-8" L=9'-0"; MAU-11-1 W=7'-5" L=7'-10", AIR HANDLING UNIT: RTU-10-1 W=5'-2" L=8'-2".
2. THE PROVIDE DIMENSIONS ARE APPROXIMATE. THE PAD SHALL BE 12" LARGER THAN FURNISHED GENERATOR AND 6" LARGER THAN FURNISHED MECHANICAL UNITS ON ALL SIZES. THE CONTRACTOR SHALL COORDINATE THE DIMENSIONS OF THE PAD.
3. PROVIDE OPENINGS IN SLAB FOR UTILITIES AS REQUIRED BY THE EQUIPMENT MANUFACTURER. REINFORCE THESE OPENINGS PER THE "TYPICAL ADDITIONAL REINFORCEMENT AT OPENINGS" DETAIL.
4. PROVIDE BALLARDS AROUND THE EQUIPMENT PLAN WHEN SHOWN ON THE SITE PLAN.
5. PROVIDE CORNER BARS PER DETAIL TCD-07.

TYPICAL EXTERIOR EQUIPMENT PAD
NTS

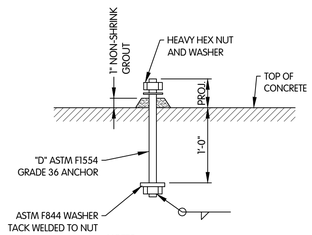


SLAB

WALL

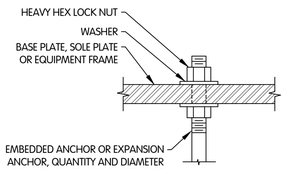
NOTES:
1. "W" SHALL BE 18" OR LESS.
2. CHIP SURFACES OF OPENING TO DIMENSIONS SHOWN. FILL OPENING WITH POLYMER-MODIFIED CEMENTITIOUS PATCHING MATERIAL.

TYPICAL DETAILS FOR PATCHING OF ABANDONED OPENINGS
NTS

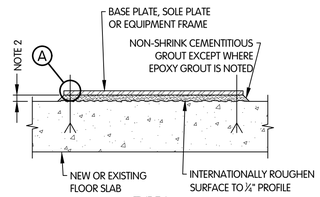


NOTES:
1. THE QUANTITY AND DIAMETER OF ANCHOR BOLTS SHALL BE PROVIDED BY THE PRE-ENGINEERED BUILDING MANUFACTURER.
2. TYPE C ANCHOR SHALL BE USED FOR BUILDING COLUMNS.

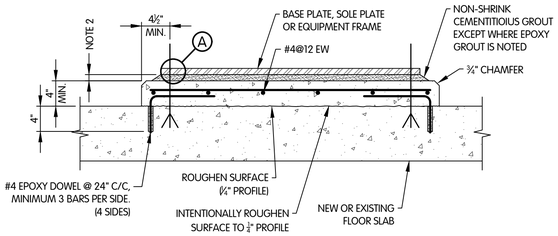
TYPE C ANCHOR BOLT
NTS



DETAIL A
(TYPICAL) NTS

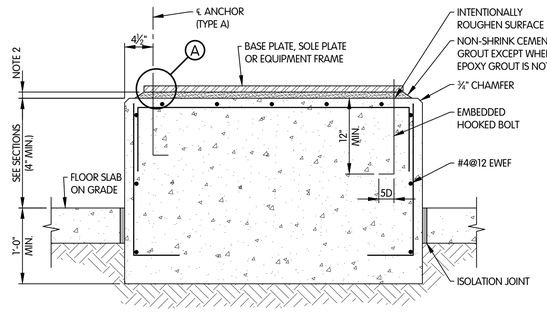


TYPE I
(WITHOUT CONCRETE BASE PAD)

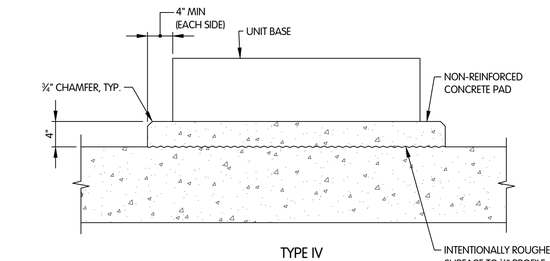


NOTE:
WHERE HEIGHT EXCEEDS 12" ADD #4@12 HORIZONTALLY TO EACH FACE.

TYPE II
(WITH CONCRETE BASE PAD)



TYPE III



TYPE IV

EQUIPMENT BASE NOTES:
1. CONCRETE BASE PAD DIMENSIONS SHALL BE 4" LARGER THAN FURNISHED EQUIPMENT BASE ON ALL SIDES, UNLESS NOTED OTHERWISE.
2. GROUT THICKNESS UNDER EQUIPMENT BASES SHALL BE AS FOLLOWS:
   A. 3" MAXIMUM UNLESS NOTED OTHERWISE
   B. 1" MINIMUM FOR NON-SHRINK CEMENTITIOUS GROUT, U.N.O.
   C. 2" MINIMUM FOR EPOXY GROUT, U.N.O.
3. WHEN BASE IS ON ELEVATED SLAB THE SLAB BARS SHALL NOT BE CUT. USE REBAR FINDER EQUIPMENT TO LOCATE BARS AND ADJUST ANCHORAGE LOCATIONS TO MISS FLOOR BARS.

TYPICAL EQUIPMENT BASE DETAILS (EQBD)
NTS

STRUCTURAL DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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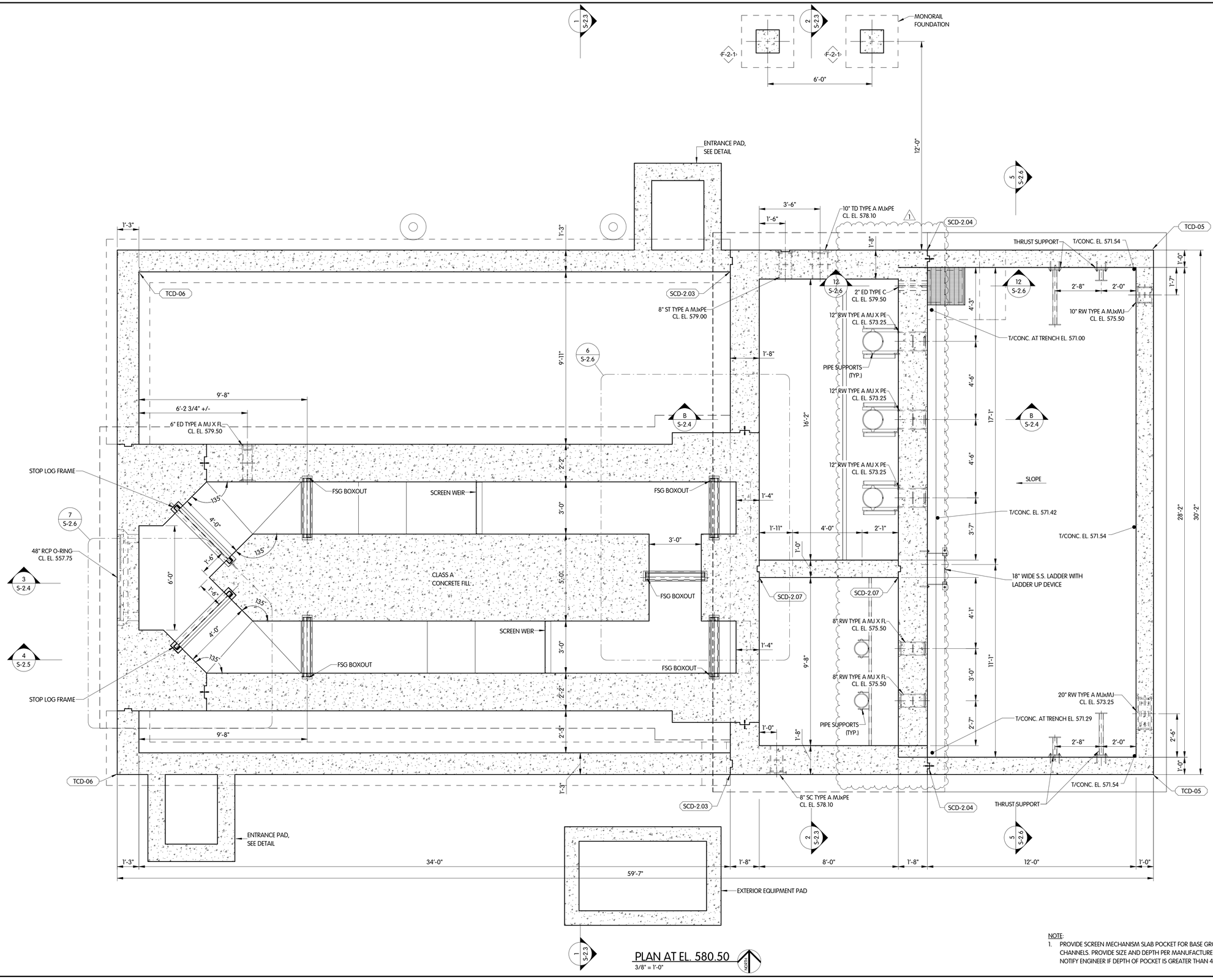
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S-0.12
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PLAN AT EL. 580.50

3/8" = 1'-0"

NORTH

NOTE:
1. PROVIDE SCREEN MECHANISM SLAB POCKET FOR BASE GROUTING IN BOTH CHANNELS. PROVIDE SIZE AND DEPTH PER MANUFACTURER'S REQUIREMENTS. NOTIFY ENGINEER IF DEPTH OF POCKET IS GREATER THAN 4 INCHES.

HEADWORKS BUILDING STRUCTURAL PLAN AT EL. 580.50

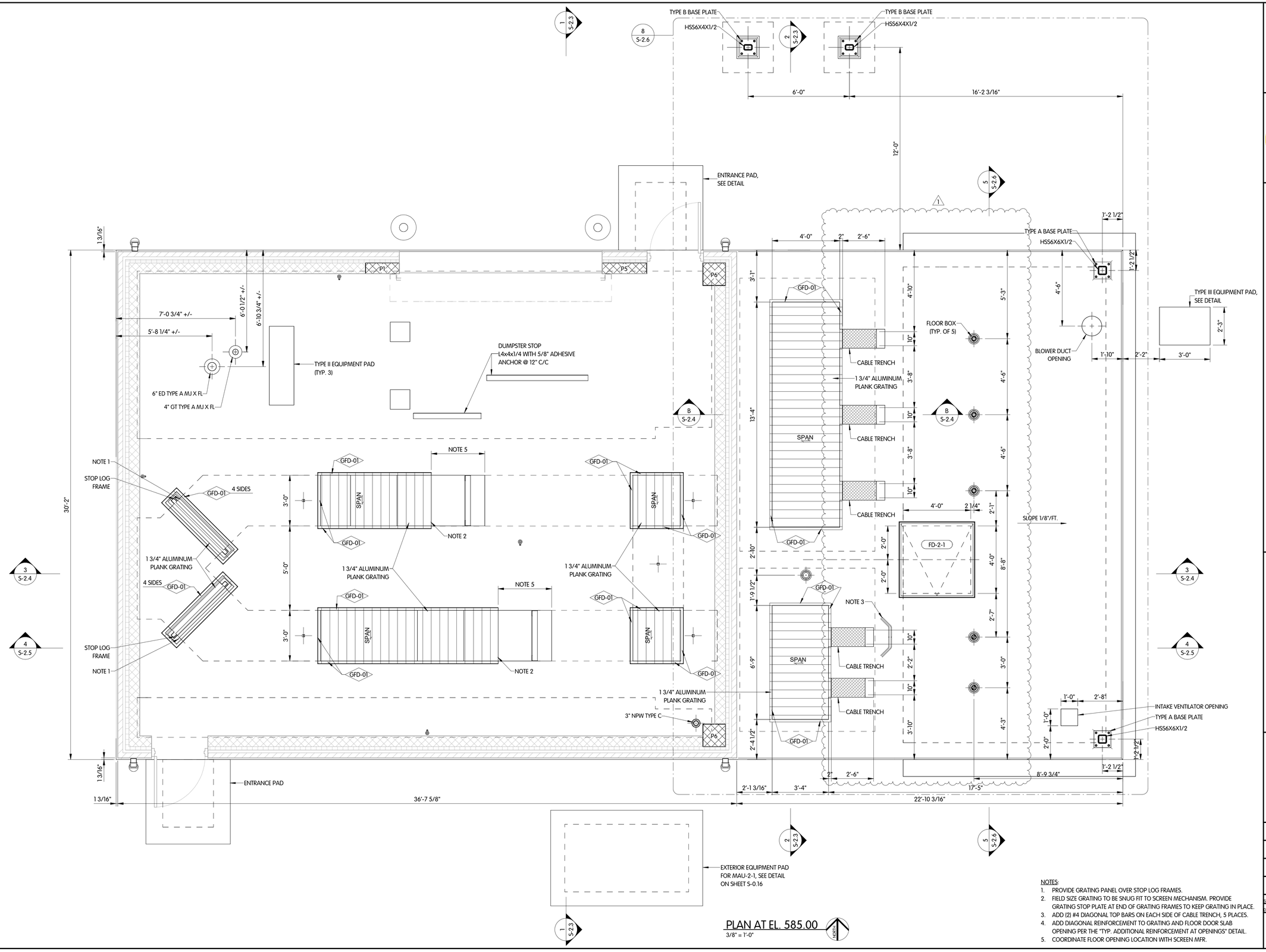
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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CHECKED	JDN
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PLAN AT EL. 585.00

3/8" = 1'-0"

NOTES:
1. PROVIDE GRATING PANEL OVER STOP LOG FRAMES.
2. FIELD SIZE GRATING TO BE SNUG FIT TO SCREEN MECHANISM. PROVIDE GRATING STOP PLATE AT END OF GRATING FRAMES TO KEEP GRATING IN PLACE.
3. ADD (2) #4 DIAGONAL TOP BARS ON EACH SIDE OF CABLE TRENCH, 5 PLACES.
4. ADD DIAGONAL REINFORCEMENT TO GRATING AND FLOOR DOOR SLAB OPENING PER THE "TYP. ADDITIONAL REINFORCEMENT AT OPENINGS" DETAIL.
5. COORDINATE FLOOR OPENING LOCATION WITH SCREEN MFR.

HEADWORKS BUILDING STRUCTURAL PLAN AT EL. 585.00

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	10/9/26 ADDENDUM 2	JAH

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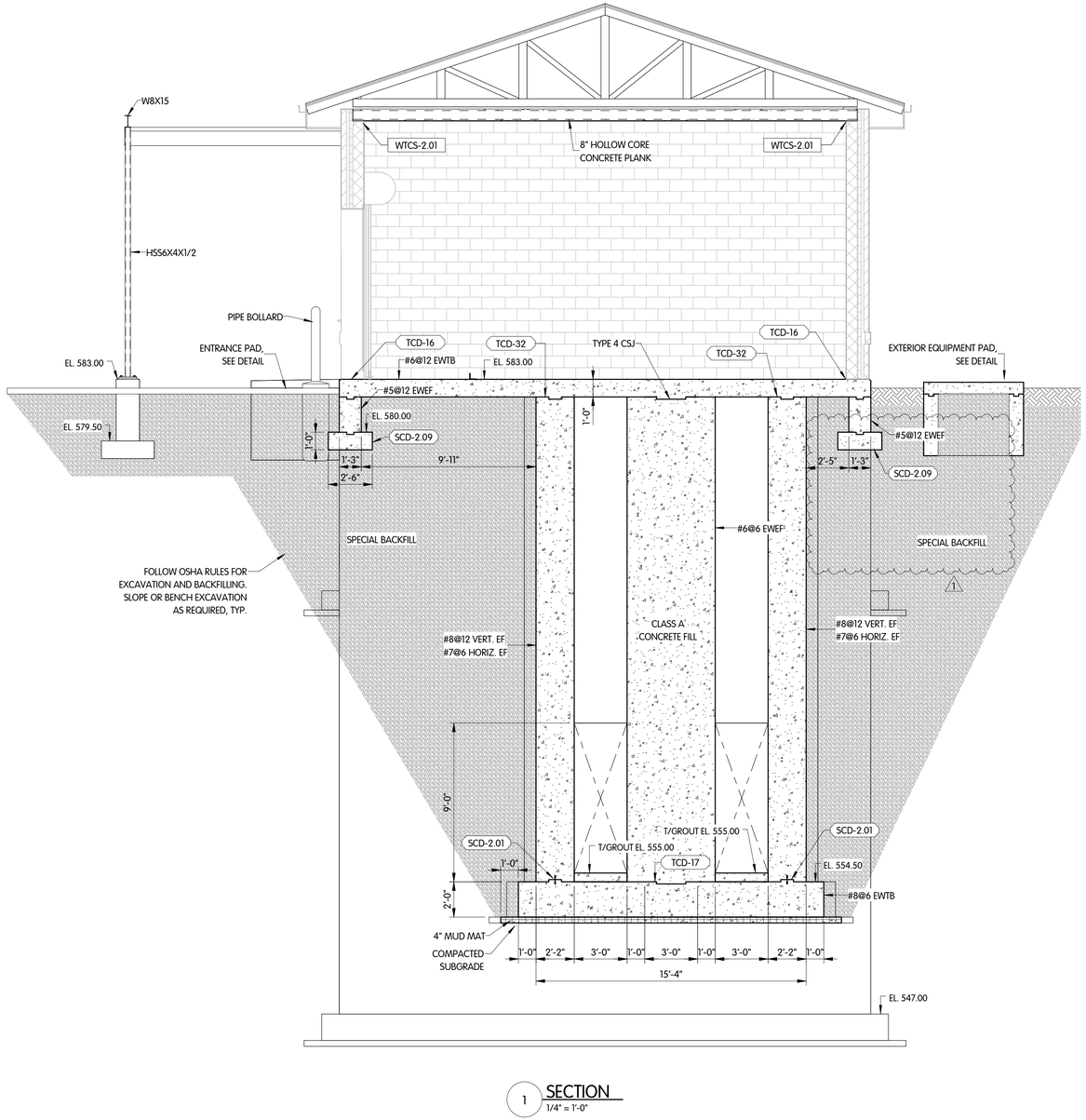
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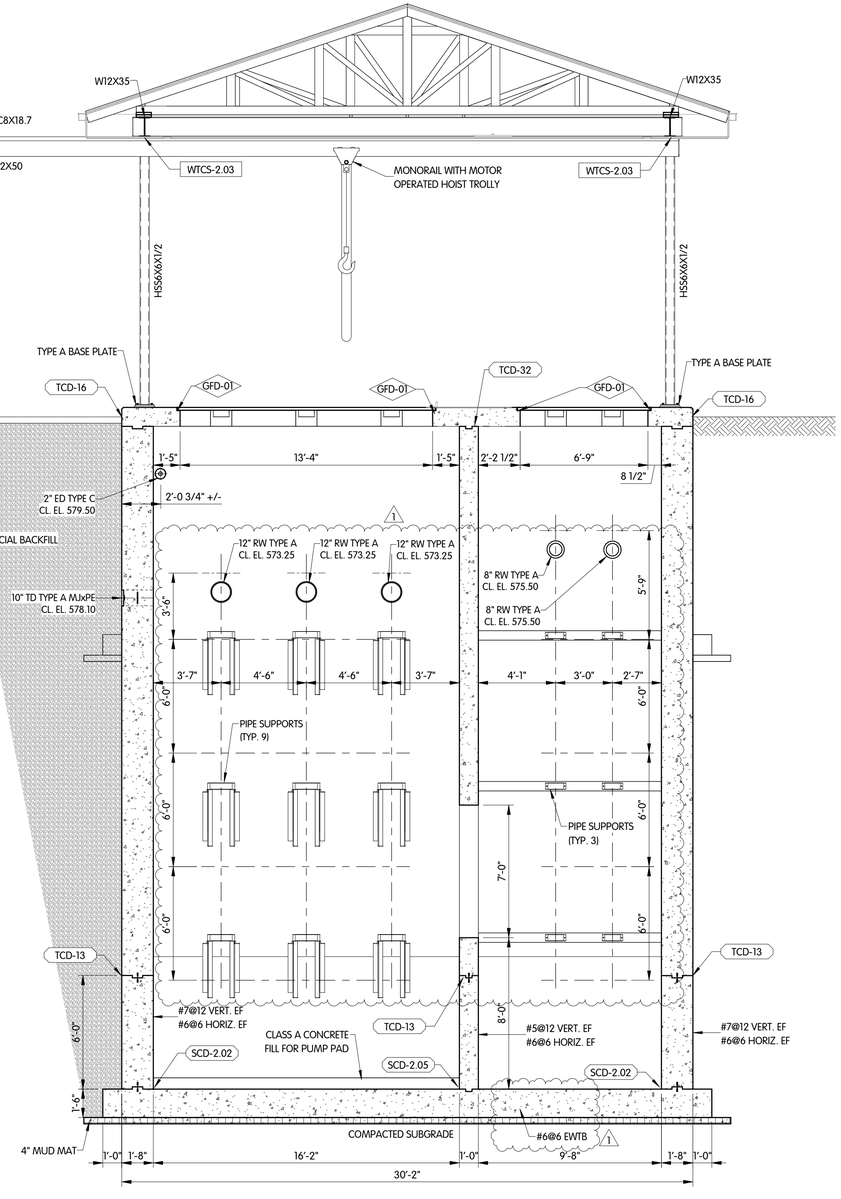
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1 SECTION
1/4" = 1'-0"



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

HEADWORKS BUILDING STRUCTURAL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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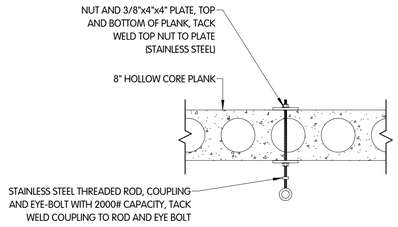
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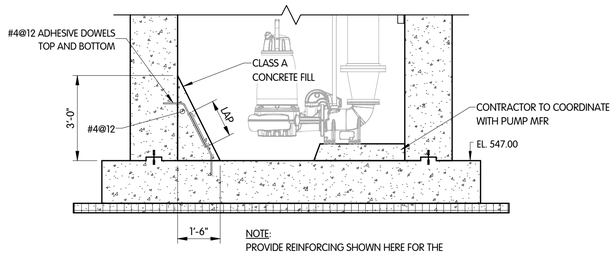
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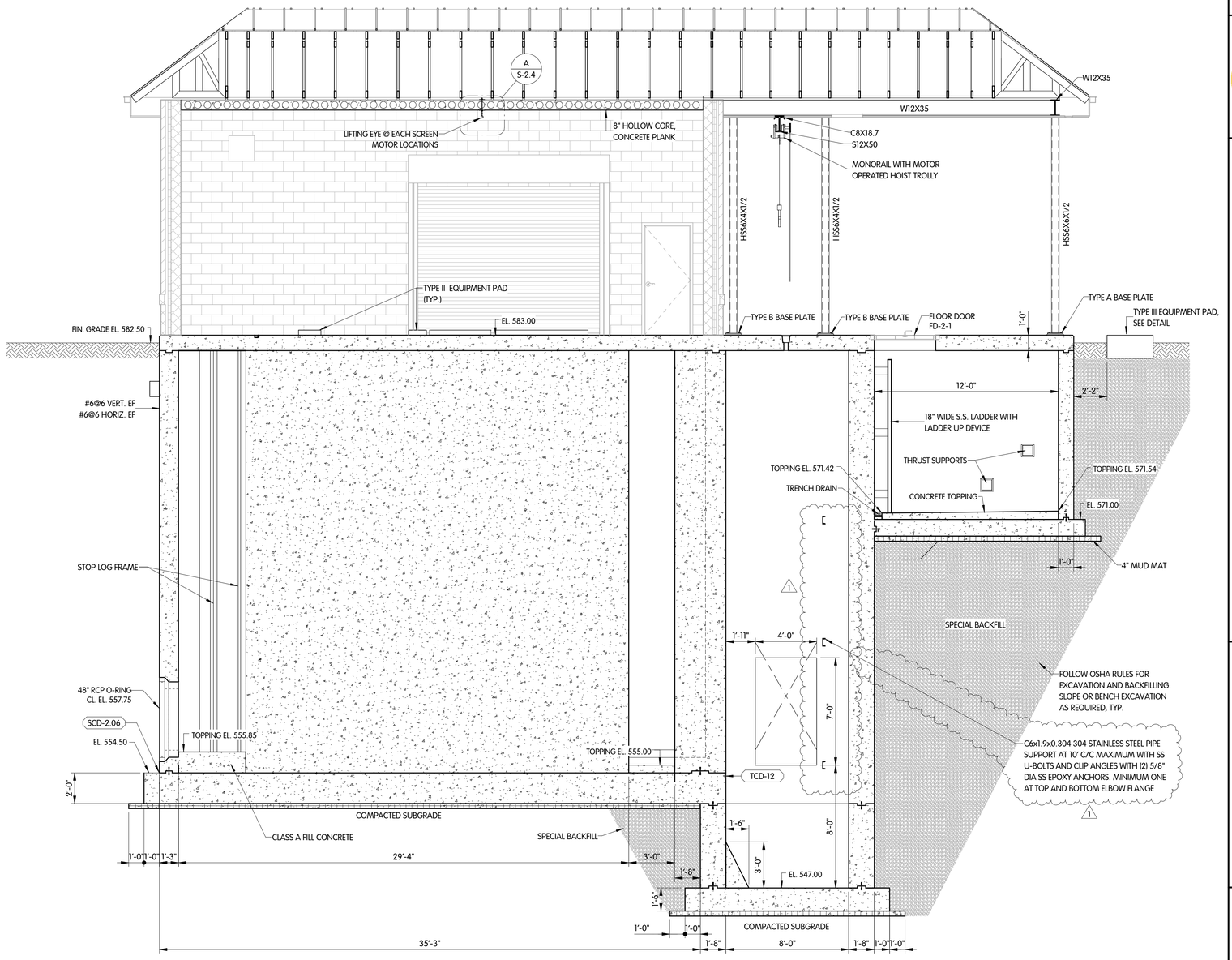
NOTE:
COORDINATE LOCATION WITH BAR SCREEN AND DEBRIS BASKET MANUFACTURER. PLANK SHALL BE DESIGNED TO SUPPORT THIS LOAD.

A LIFTING EYE DETAIL
1" = 1'-0"



NOTE:
PROVIDE REINFORCING SHOWN HERE FOR THE CONCRETE FILL AT THE DRY WEATHER PUMP WELL.

B WET WEATHER PUMP BASE DETAIL
3/8" = 1'-0"



NOTE:
1. REFER TO SECTION 4 ON S-2.5 FOR REINFORCING NOT SHOWN HERE.

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

HEADWORKS BUILDING
STRUCTURAL
SECTION AND DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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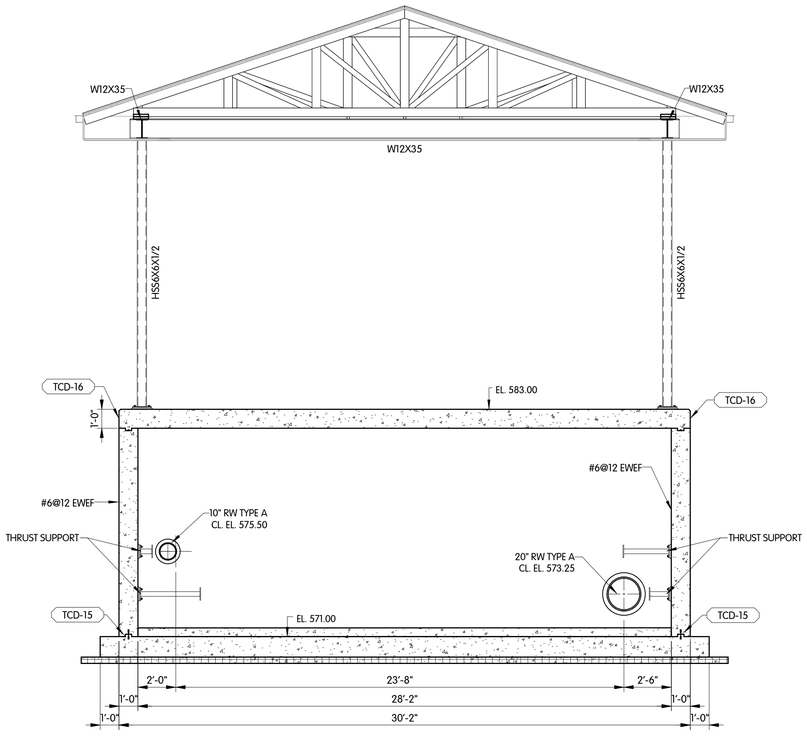
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JDN	RGW	JDN

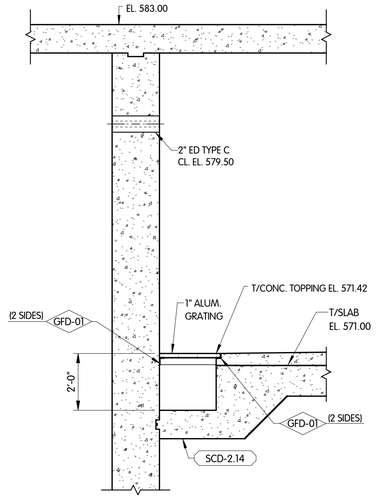
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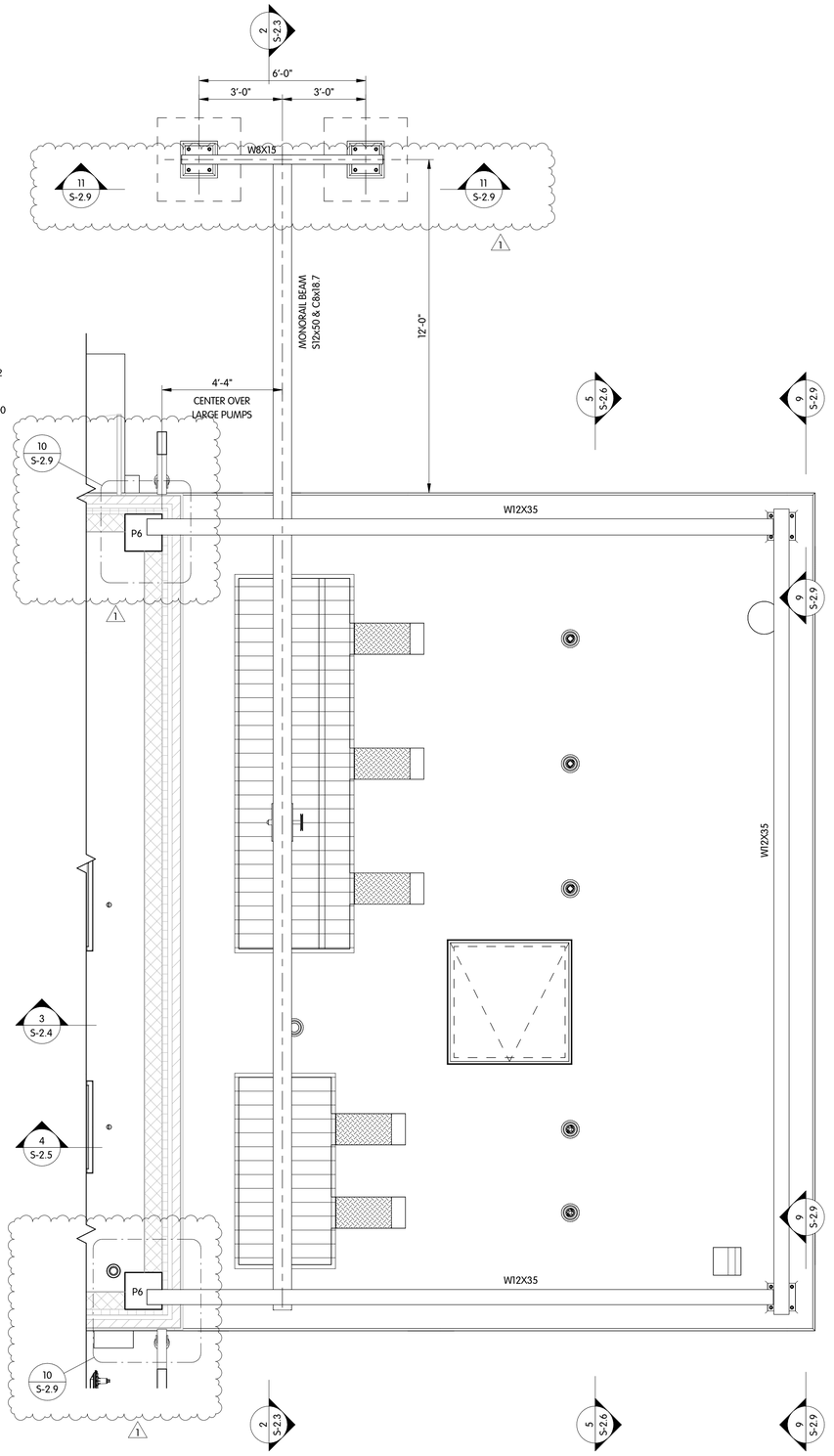


NOTE:
REFER TO DETAIL ON S-0.5.

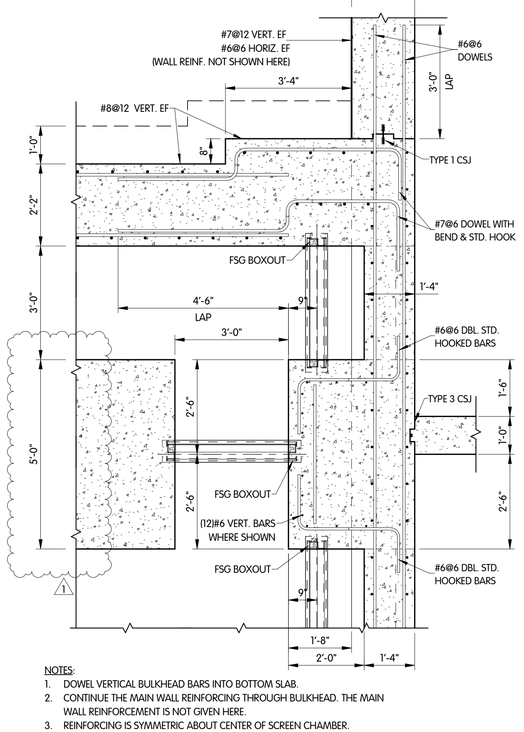
5 SECTION
1/4" = 1'-0"



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

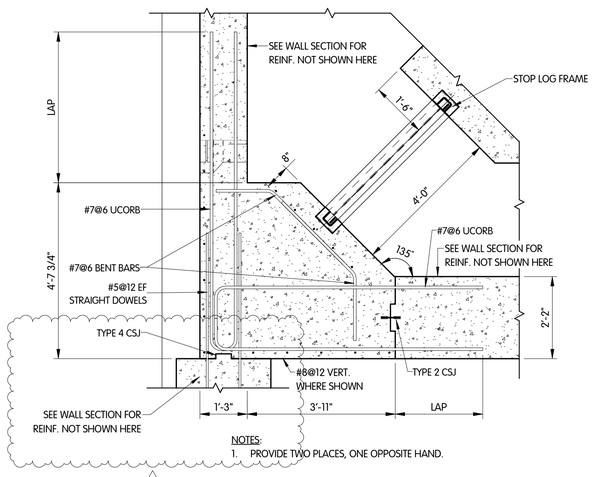


8 PARTIAL PLAN @ EL. 597.00
3/8" = 1'-0"
NORTH



NOTES:
1. DOWEL VERTICAL BULKHEAD BARS INTO BOTTOM SLAB.
2. CONTINUE THE MAIN WALL REINFORCING THROUGH BULKHEAD. THE MAIN WALL REINFORCEMENT IS NOT GIVEN HERE.
3. REINFORCING IS SYMMETRIC ABOUT CENTER OF SCREEN CHAMBER.

6 PARTIAL PLAN AT EL. 579.00
1/2" = 1'-0"
NORTH



NOTES:
1. PROVIDE TWO PLACES, ONE OPPOSITE HAND.

7 PARTIAL PLAN AT EL. 580.00
1/2" = 1'-0"
NORTH

HEADWORKS BUILDING STRUCTURAL SECTION AND PARTIAL PLANS

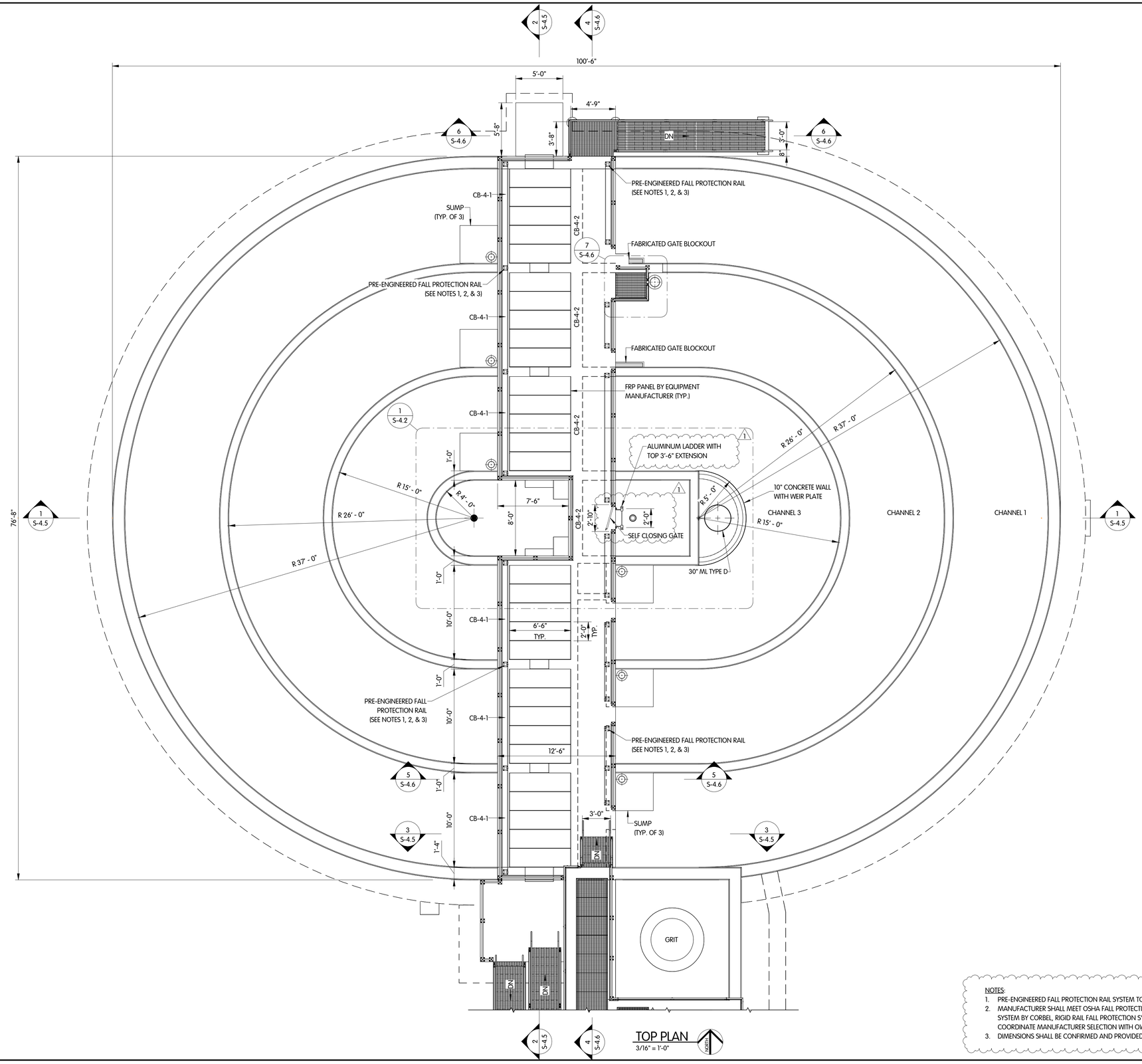
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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TOP PLAN

3/16" = 1'-0"

1

NOTES:

1. PRE-ENGINEERED FALL PROTECTION RAIL SYSTEM TO BE DESIGNED FOR TWO PERSON USE.
2. MANUFACTURER SHALL MEET OSHA FALL PROTECTION REQUIREMENTS TETHER TRACK FALL PROTECTION SYSTEM BY CORBEL, RIGID RAIL FALL PROTECTION SYSTEMS BY SIMPLIFIED SAFETY, OR EQUAL. COORDINATE MANUFACTURER SELECTION WITH OWNER.
3. DIMENSIONS SHALL BE CONFIRMED AND PROVIDED BY MANUFACTURER OF EQUIPMENT.

OXIDATION DITCH STRUCTURAL TOP PLAN AND DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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SCALE: 3/16" = 1'-0"

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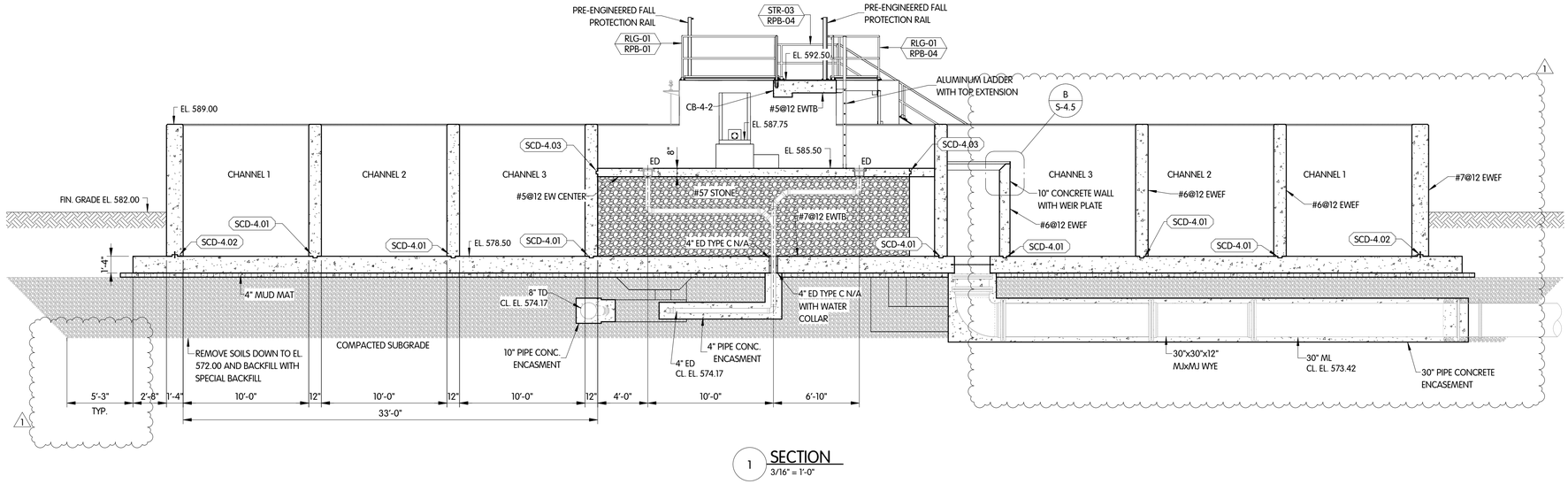
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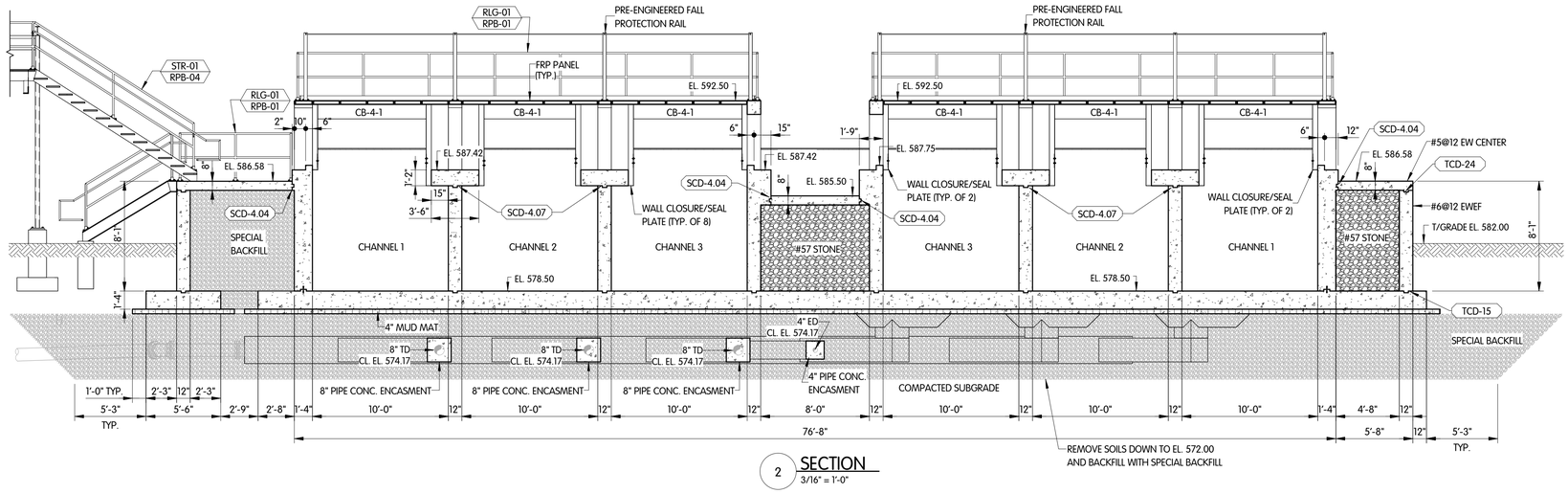
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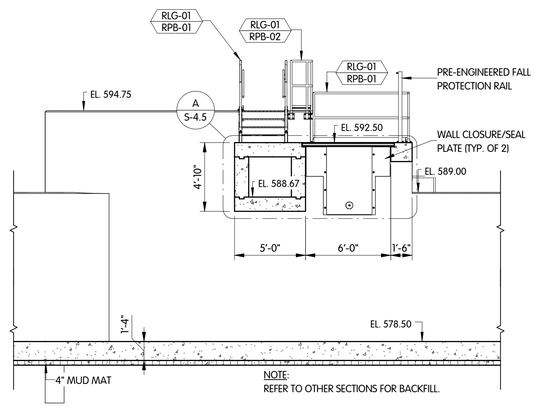
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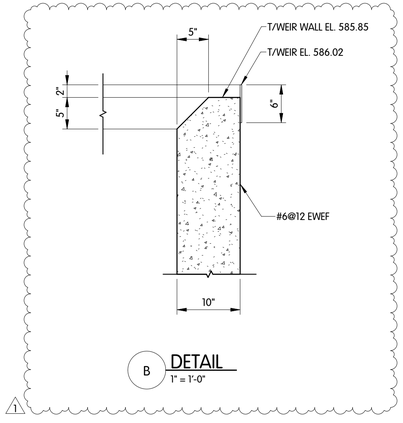
1 SECTION
3/16" = 1'-0"



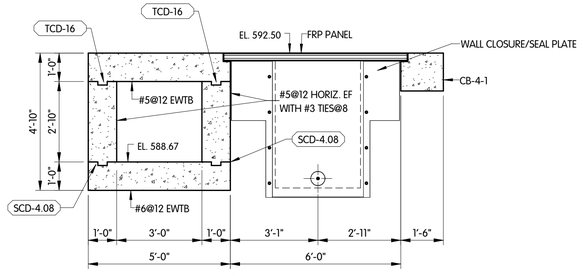
2 SECTION
3/16" = 1'-0"



3 SECTION
3/16" = 1'-0"



B DETAIL
1" = 1'-0"



A DETAIL
3/8" = 1'-0"

NOTE:
1. DIMENSIONS SHALL BE CONFIRMED AND PROVIDED BY MANUFACTURER OF EQUIPMENT.

OXIDATION DITCH
STRUCTURAL
SECTIONS AND DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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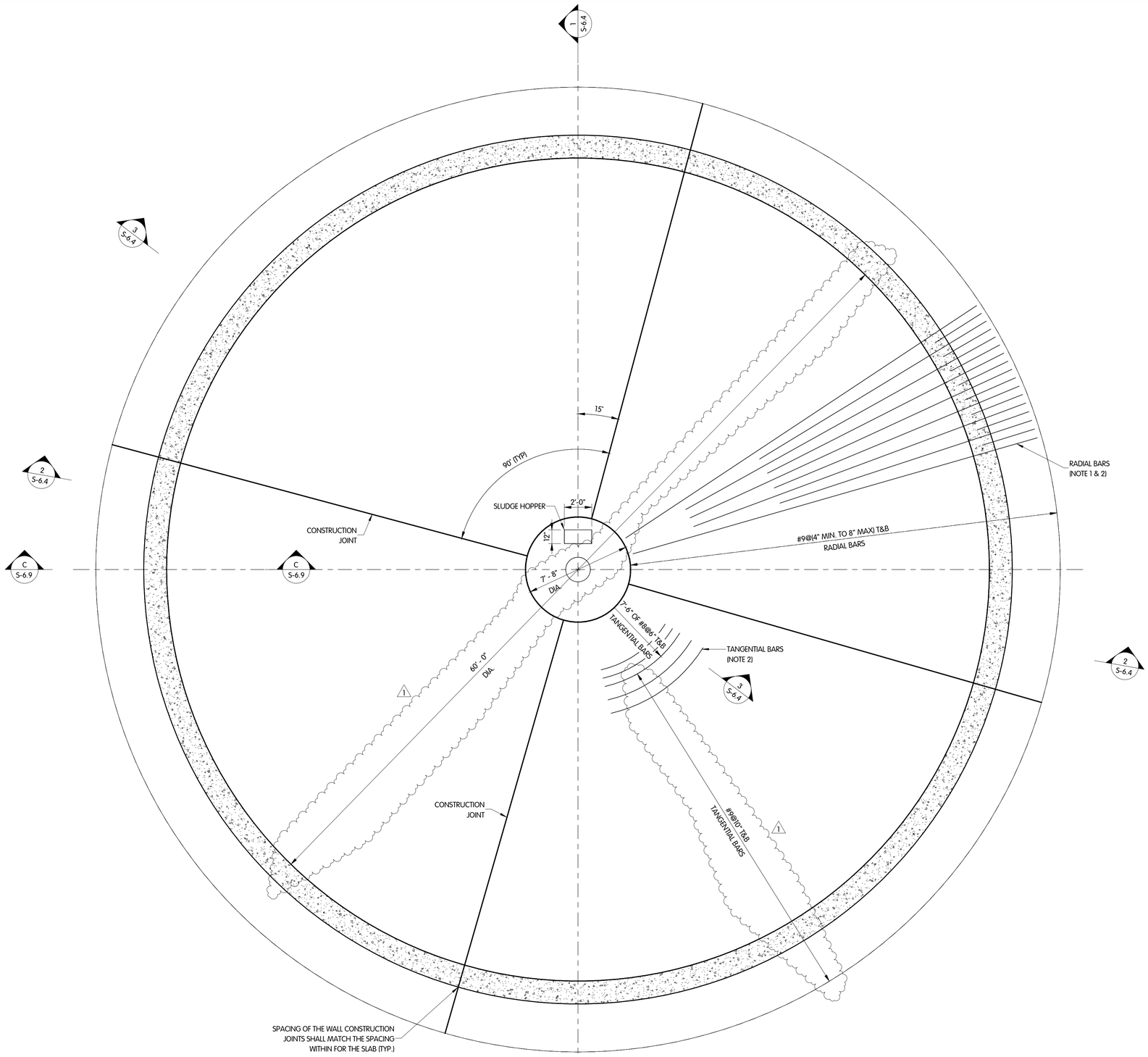
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PLAN CUT AT EL. 568.50

1/4" = 1'-0"

NORTH

NOTES:

1. THE RADIAL BARS SHALL BE BENT AS REQUIRED TO MATCH THE SLOPE OF THE BASE SLAB.
2. NOT ALL THE BASE SLAB BARS ARE SHOWN, PROVIDE RADIAL AND TANGENTIAL BARS AROUND THE ENTIRE CIRCUMFERENCE OF THE SLAB.

CLARIFIER I
STRUCTURAL
PLAN CUT AT EL. 568.50

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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JOB NO.: 904-8119.002

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

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DESIGNED	DRAWN	CHECKED
RRP	RGW	JDN

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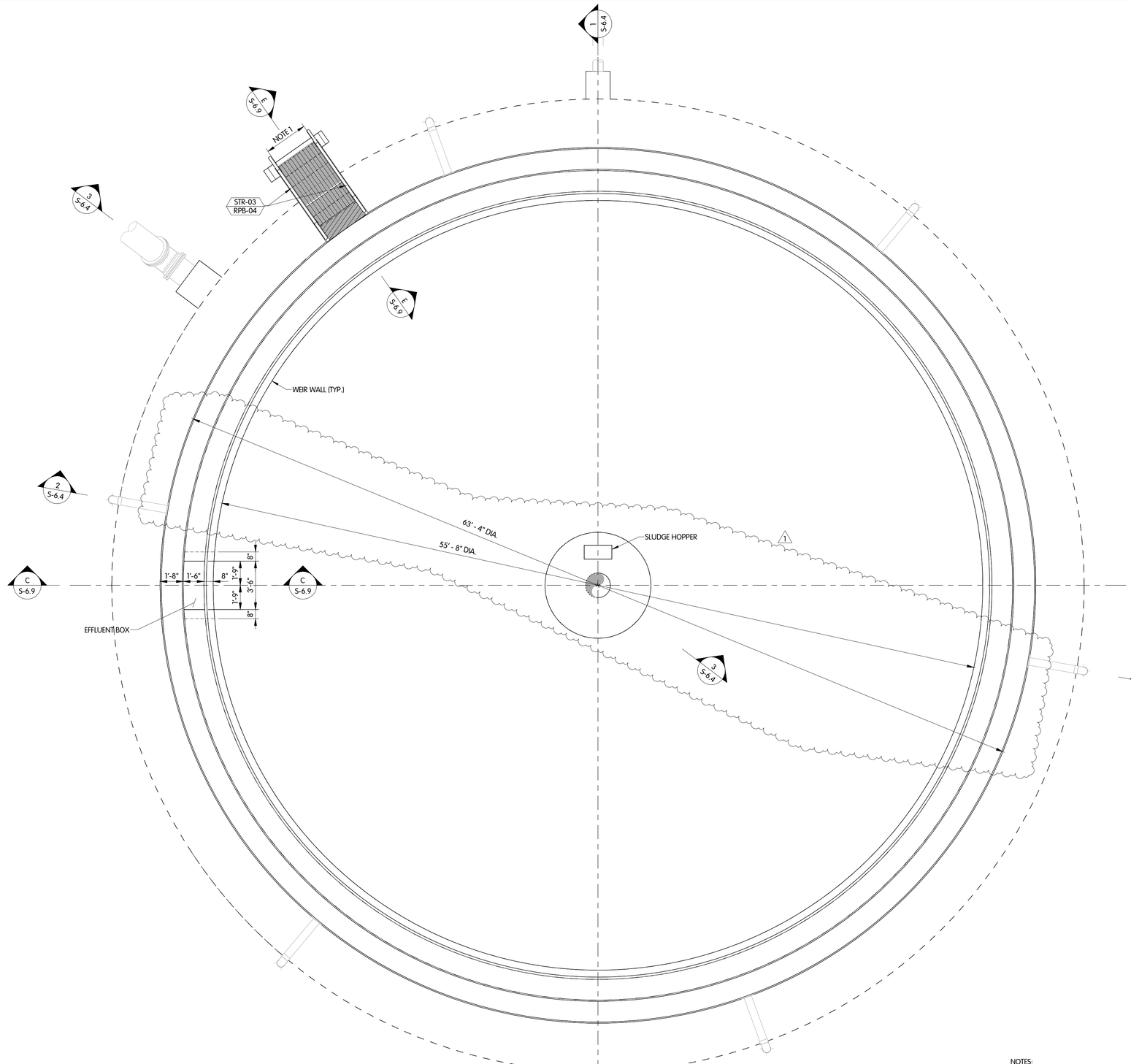
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PLAN AT EL. 585.50

1/4" = 1'-0"

NOTES:

1. STAIR WIDTH TO MATCH WIDTH OF WALKWAY PROVIDED BY EQUIPMENT MANUFACTURER, NOT SHOWN.

CLARIFIER I
STRUCTURAL
PLAN AT EL. 585.50

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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JOB NO.: 904-8119.002

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

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
RRP	RGW	JDN

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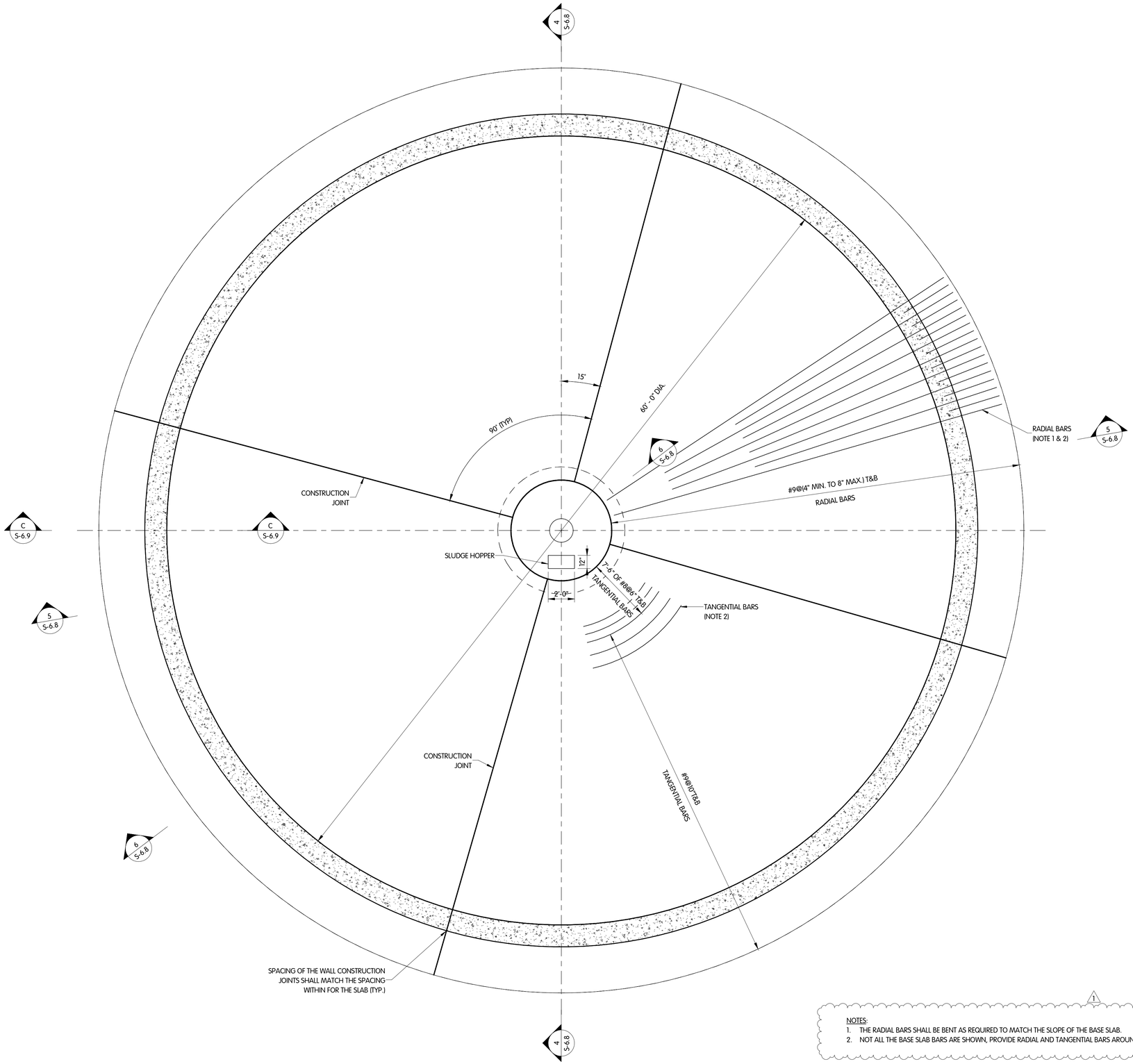
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PLAN CUT AT EL. 568.50

1/4" = 1'-0"

NORTH

1

NOTES:
1. THE RADIAL BARS SHALL BE BENT AS REQUIRED TO MATCH THE SLOPE OF THE BASE SLAB.
2. NOT ALL THE BASE SLAB BARS ARE SHOWN, PROVIDE RADIAL AND TANGENTIAL BARS AROUND THE ENTIRE CIRCUMFERENCE OF THE SLAB.

CLARIFIER 2
STRUCTURAL
PLAN CUT AT EL. 568.50

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

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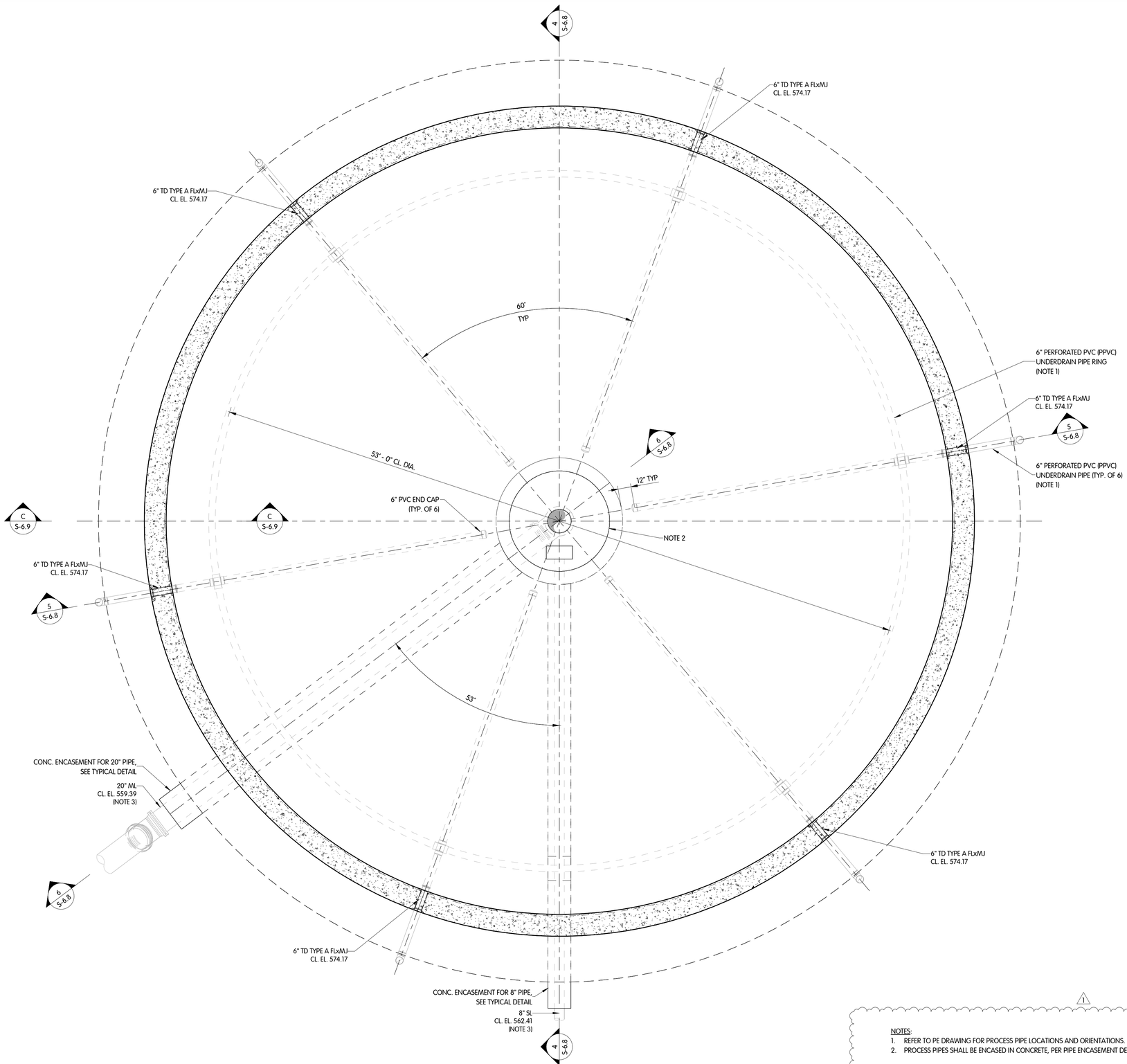
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SCALE: 1/4" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

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RRP	RGW	JDN

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DATE: AUGUST 2026

SHEET NO.
S-6.5
106 OF 247

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PLAN CUT AT EL. 574.67

1/4" = 1'-0"

NORTH

1

NOTES:
1. REFER TO PE DRAWING FOR PROCESS PIPE LOCATIONS AND ORIENTATIONS.
2. PROCESS PIPES SHALL BE ENCASED IN CONCRETE, PER PIPE ENCASEMENT DETAIL.

CLARIFIER 2
STRUCTURAL
PLAN CUT AT EL. 574.67

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

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

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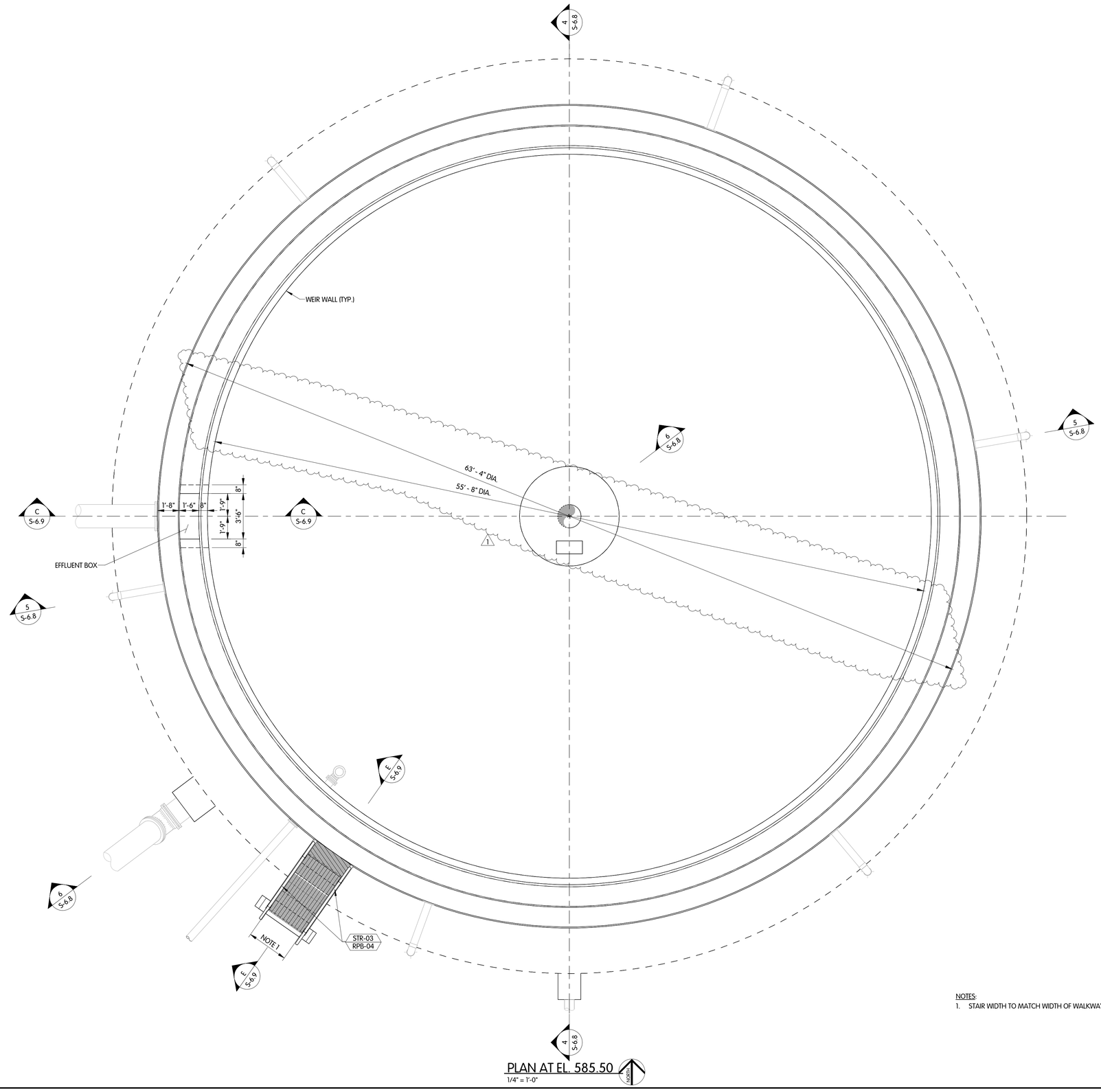
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RRP	RGW	JDN

STATUS: ISSUED FOR RE-BID

DATE: AUGUST 2026

SHEET NO.
S-6.6
107 OF 247

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PLAN AT EL. 585.50

1/4" = 1'-0"

NOTES:

1. STAIR WIDTH TO MATCH WIDTH OF WALKWAY PROVIDED BY EQUIPMENT MANUFACTURER, NOT SHOWN.

CLARIFIER 2
STRUCTURAL
PLAN AT EL. 585.50

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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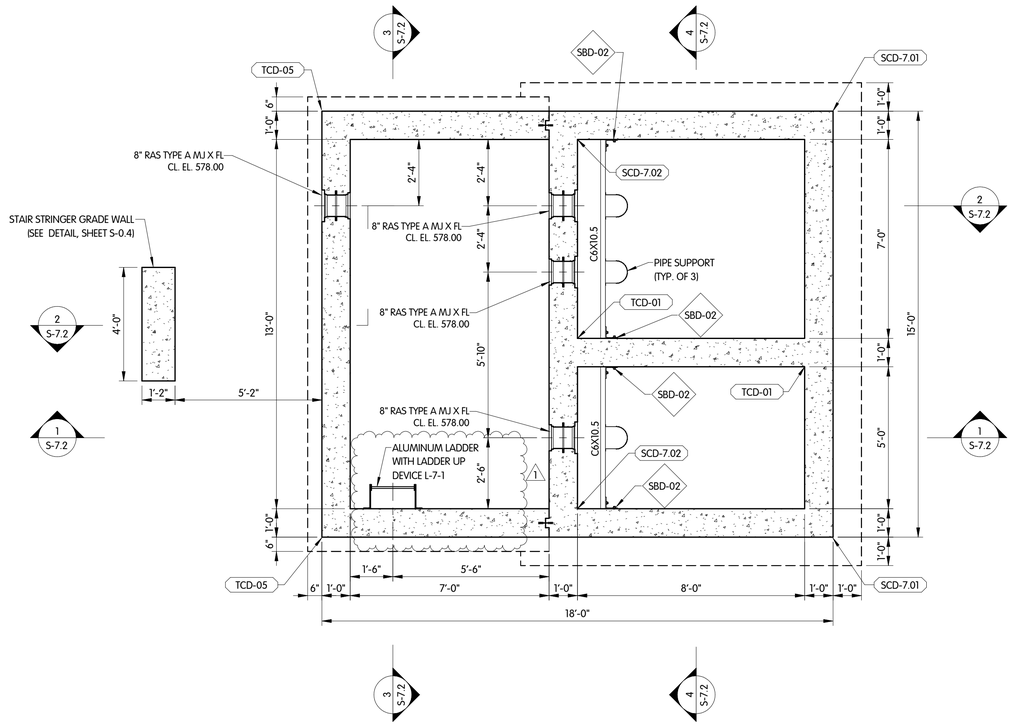
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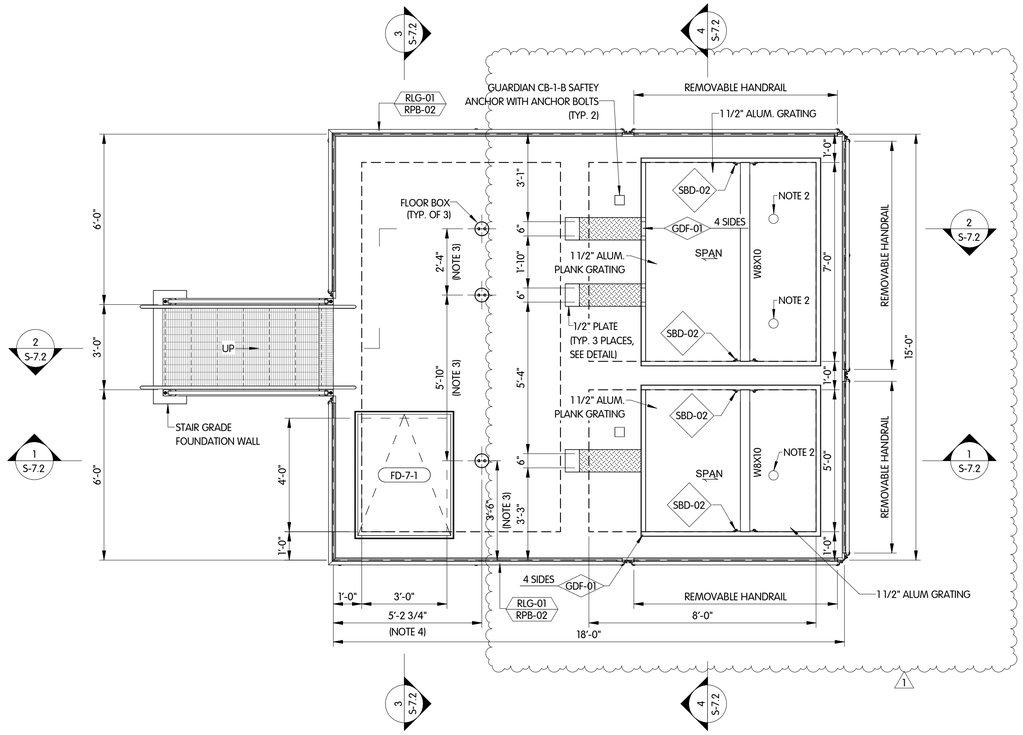
DATE: AUGUST 2026

SHEET NO.
S-6.7
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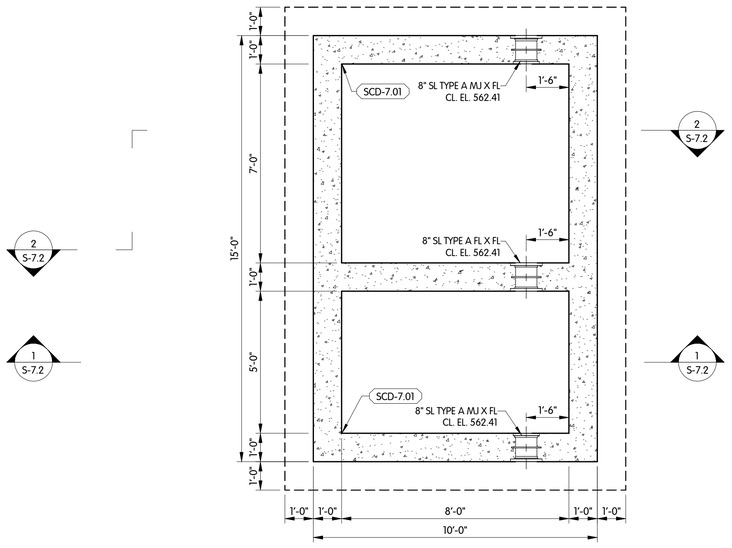
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PLAN @ EL. 578.00
3/8" = 1'-0"



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



PLAN @ EL. 566.00
3/8" = 1'-0"

NOTES:
1. PROVIDE BANDED 4" HOLE THROUGH GRATING AT OPERATING NUT AND VALVE STEM LOCATIONS.
2. LOCATE FLOOR BOX IN THE FIELD AFTER VALVE LOCATION IS KNOWN.

RAS PUMP STATION
STRUCTURAL
PLANS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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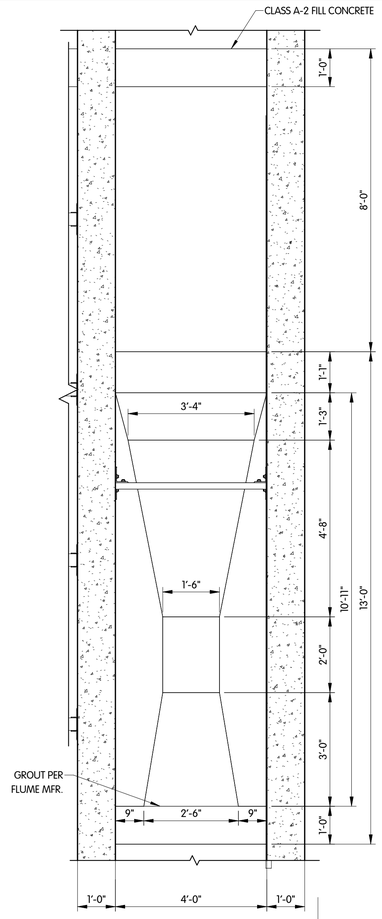
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JOB NO.: 904-8119.002
SCALE: 3/8" = 1'-0"
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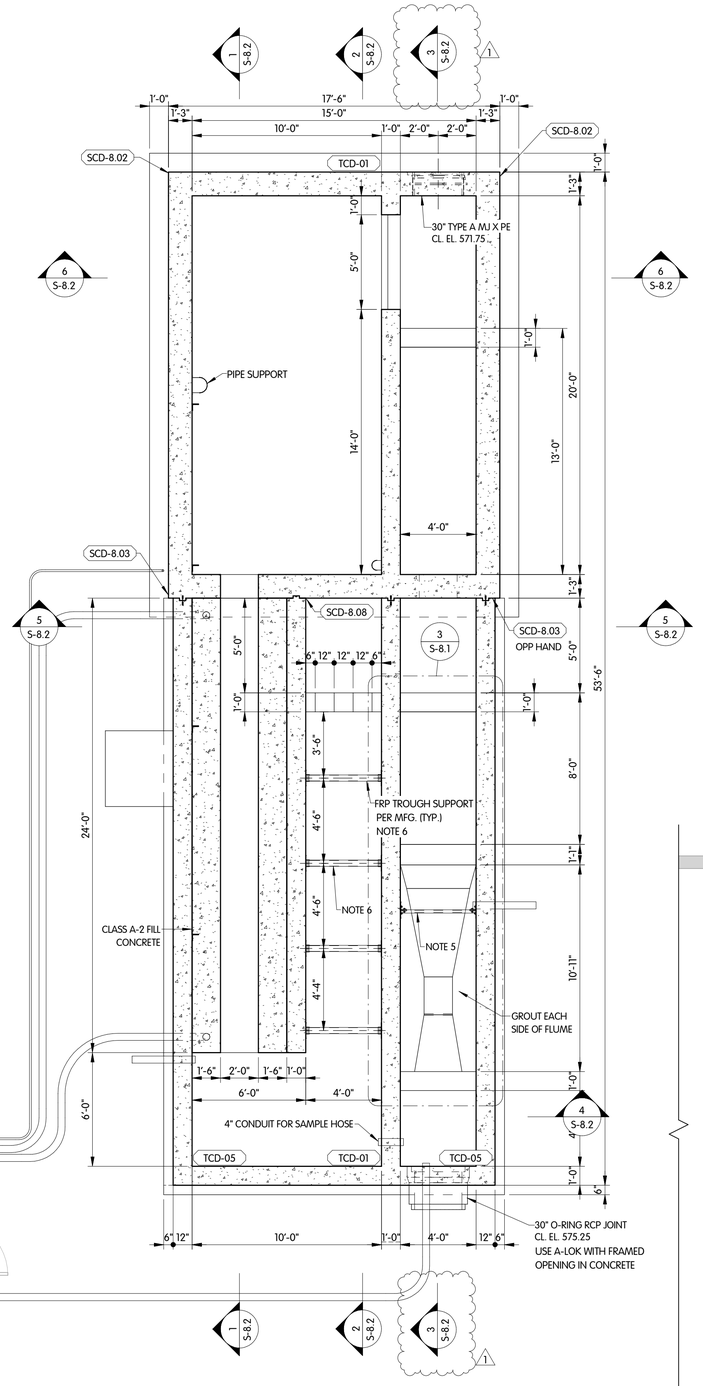
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JDN	RGW	JDN

STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026
SHEET NO.
S-7.1
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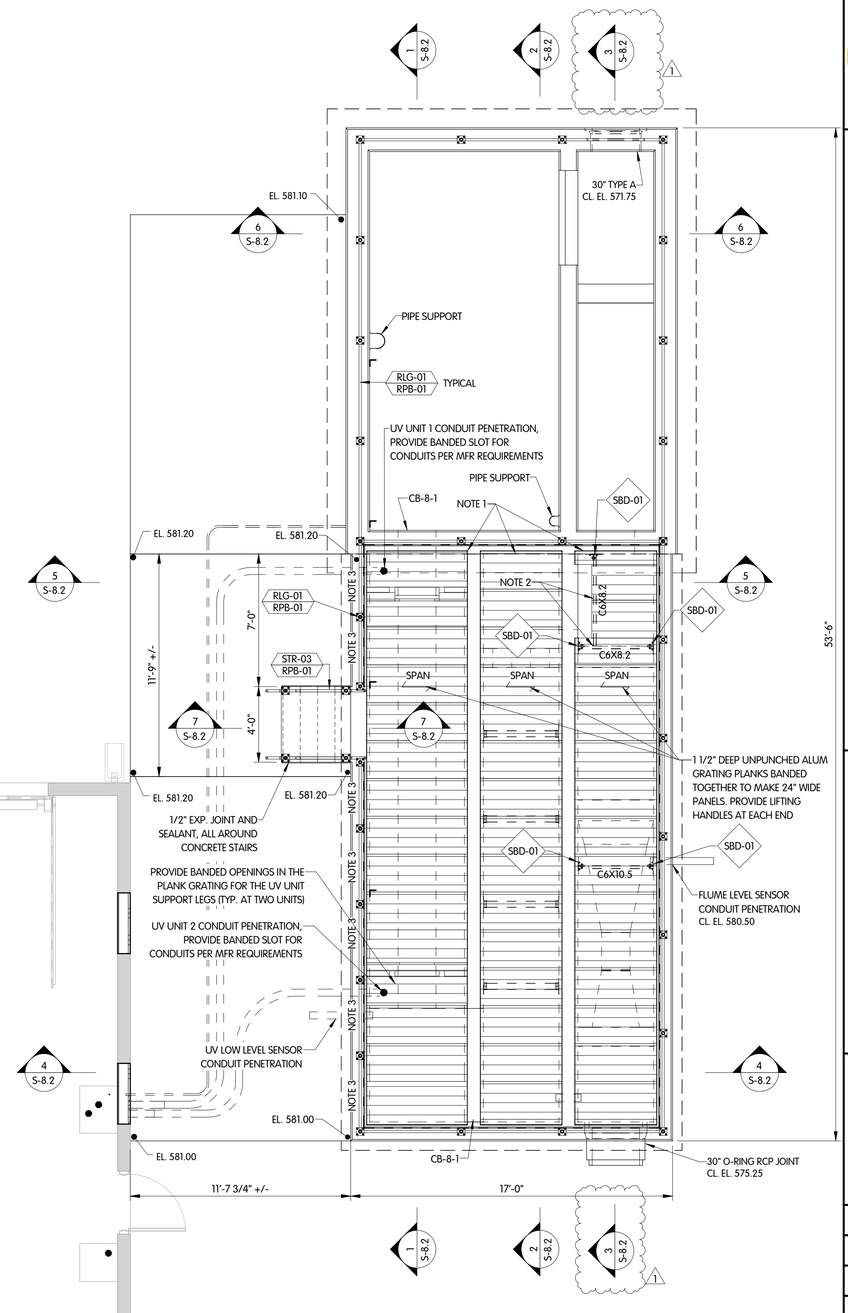


3 DETAIL
1/2" = 1'-0"



PLAN AT EL. 582.00
1/4" = 1'-0"

NOTES:
1. PROVIDE GFD-01 GRATING FRAME ON ALL SIDES OF THE GRATING PLANKS.
2. GRATING SUPPORT FRAMING PLACED CLOSE TO GATE. FIELD VERIFY LOCATIONS.
3. REMOVABLE HANDRAIL SECTIONS NOT GREATER THAN 4'-0".
4. COORDINATE CONDUIT PENETRATIONS WITH UV MANUFACTURER.
5. ULTRASONIC LEVEL SENSOR SUPPORT. C6x10.5 AND CLIP ANGLES WITH (2)5/8" DIAMETER ADHESIVE ANCHORS, TYPICAL BOTH ENDS (ALL COMPONENTS STAINLESS STEEL).
6. TROUGH SUPPORT LOCATIONS PER MANUFACTURER.



SERVICE BUILDING
(SEE SHEET S-15.1)

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

U.V.
STRUCTURAL
PLANS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

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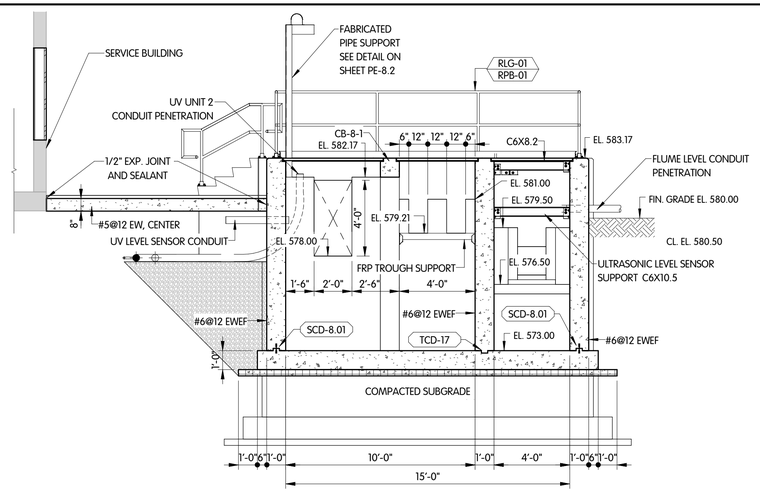
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SCALE: AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
JDN	RGW	JDN

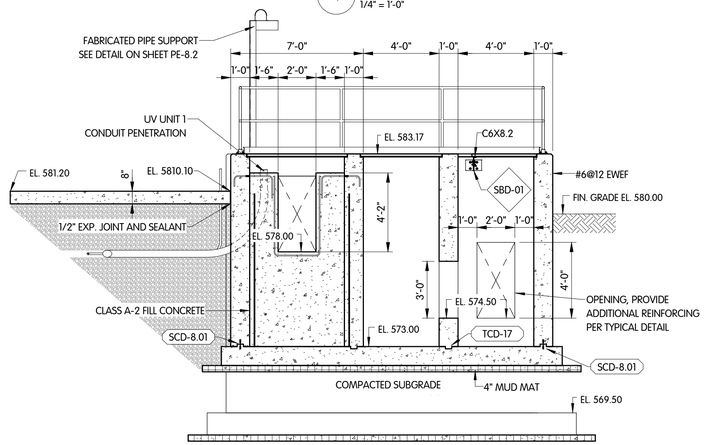
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DATE: AUGUST 2026

SHEET NO.
S-8.1
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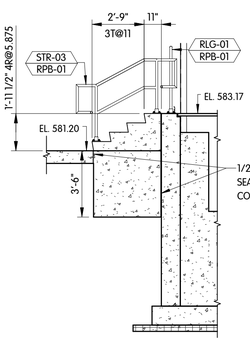
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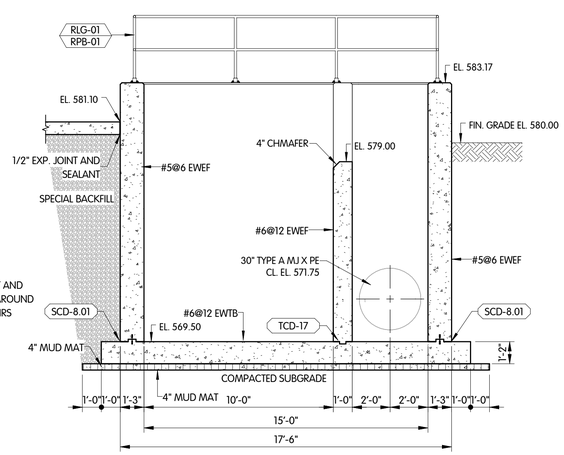
4 SECTION
1/4" = 1'-0"



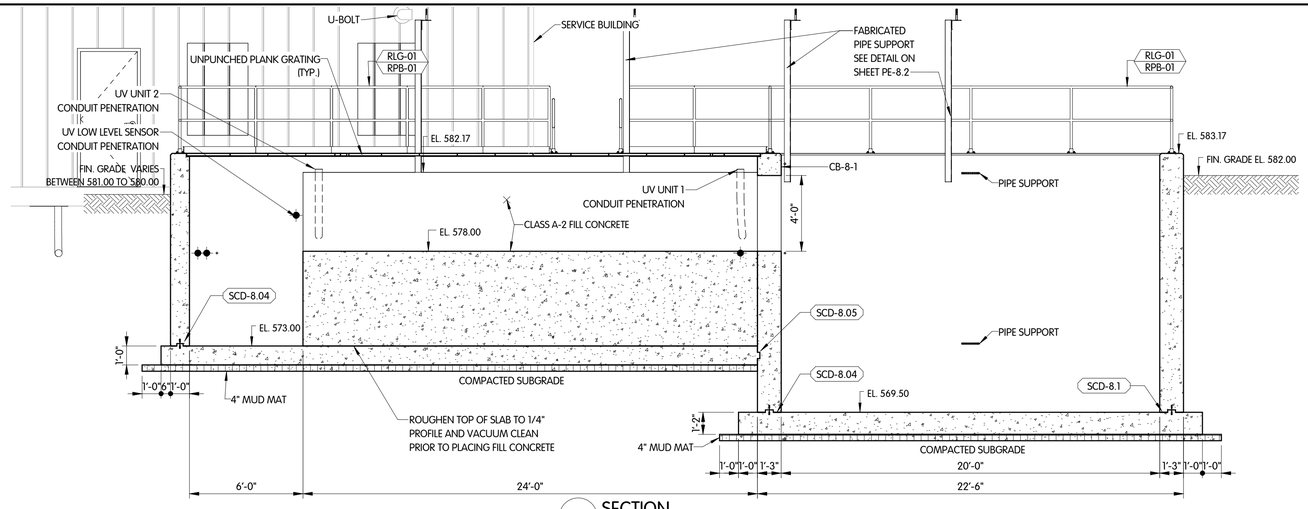
5 SECTION
1/4" = 1'-0"



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



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



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

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

NOTES:
1. SEE THIS SECTION FOR REINFORCING, UNO.
2. WHEN TAGS ARE NOT PROVIDED FOR CONCRETE JOINTS REFER TO THE TYPICAL CONCRETE JOINT DETAILS TCD-## FOR LIQUID/SOIL RETAINING STRUCTURES.

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

NOTE:
1. AFTER PIPE JOINT IS MADE, BED PIPE IN TYPE B CONCRETE TO HAUNCH OF PIPE.

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U. V.
STRUCTURAL
SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

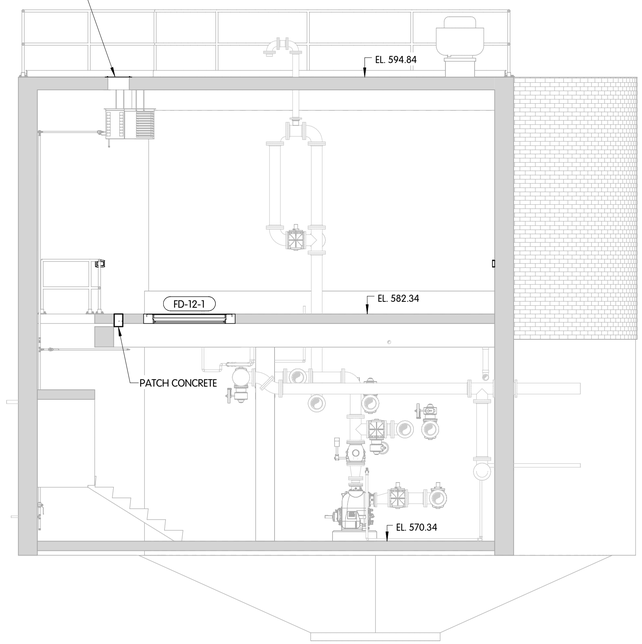
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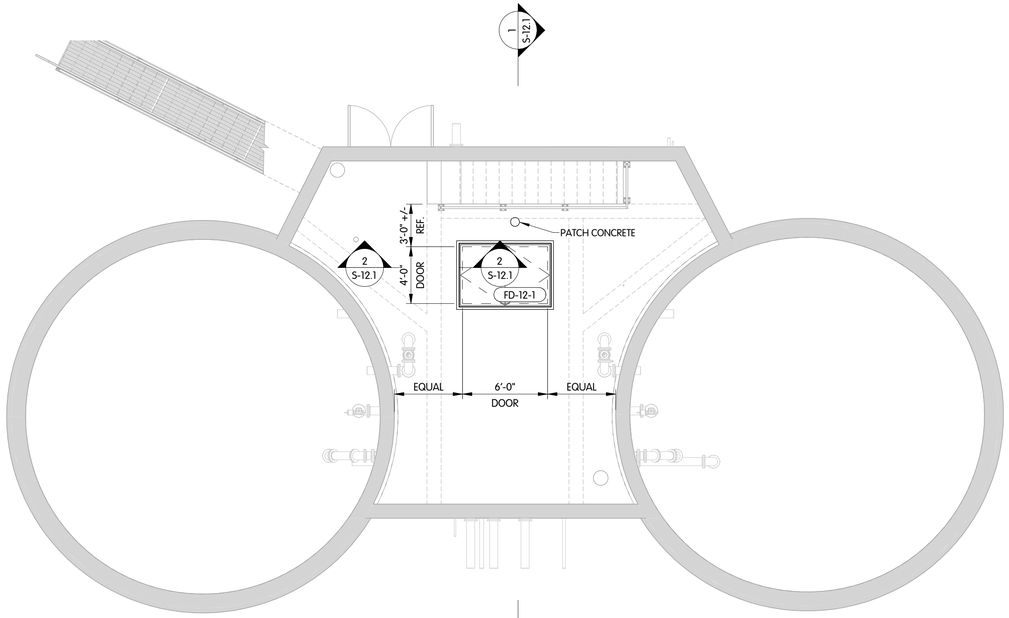
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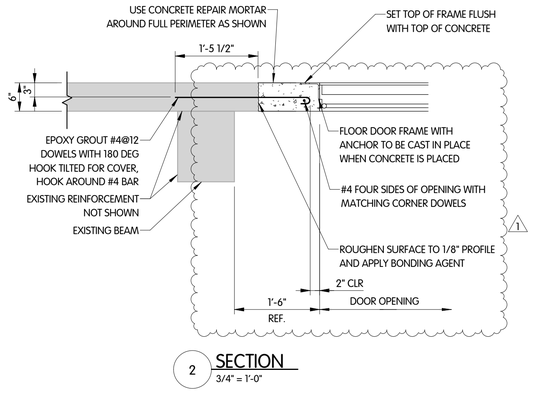
SHEET NO.
S-8.2
115 OF 247



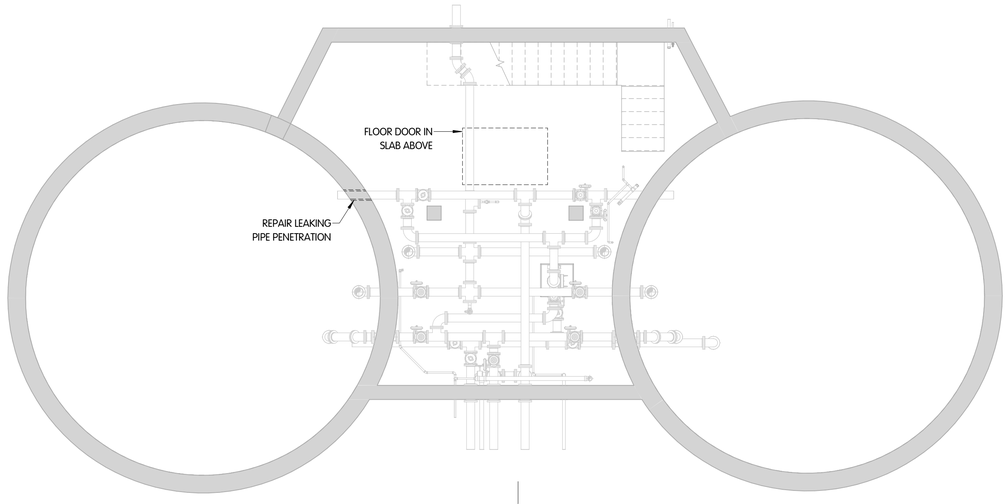
1 SECTION
1/4" = 1'-0"



PLAN AT EL. 593.00
3/16" = 1'-0"



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



PLAN AT EL. 580.00
3/16" = 1'-0"

DIGESTER CONTROL BUILDING
STRUCTURAL
PLANS AND SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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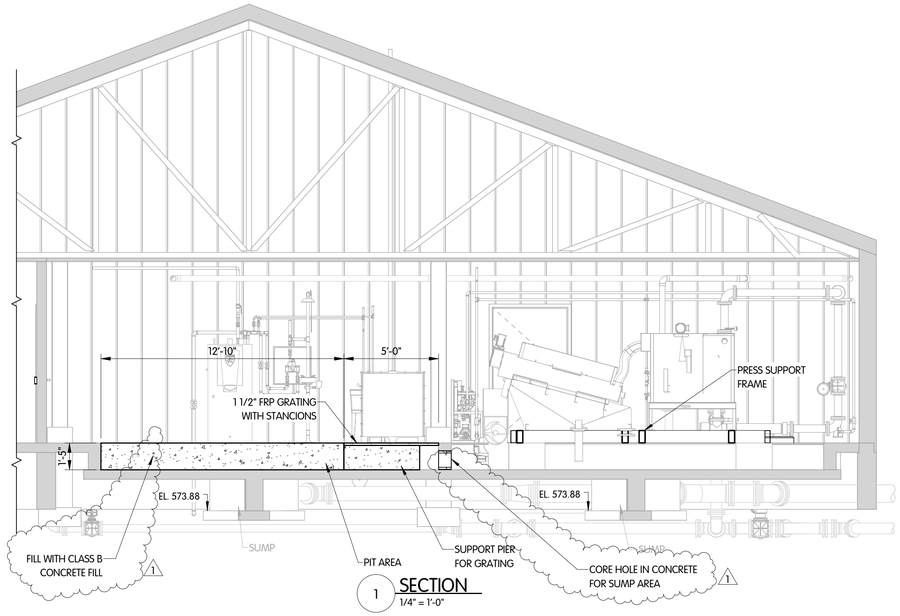
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DESIGNED	DRAWN	CHECKED
PDM	RGW	JDN

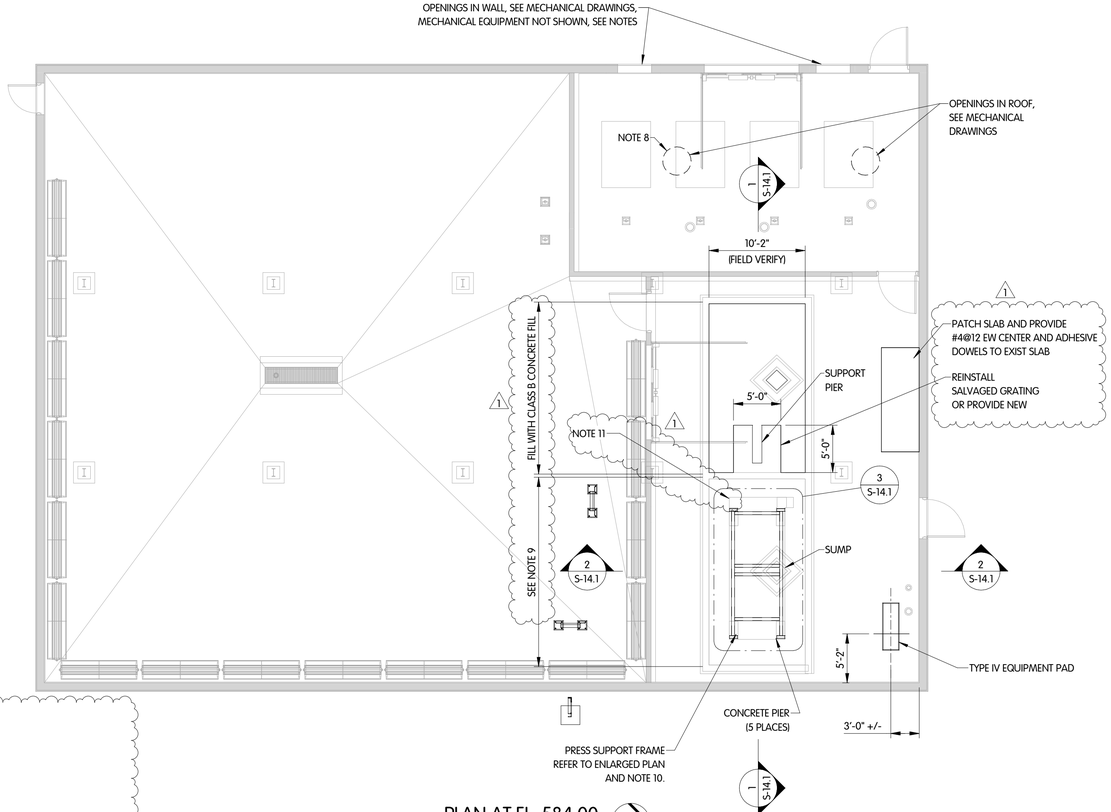
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SHEET NO.
S-12.1
120 OF 247

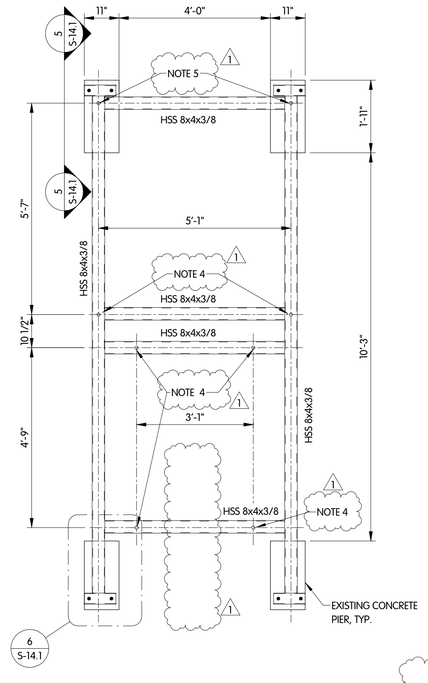
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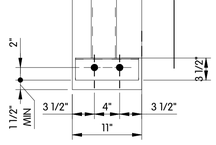
1 SECTION
1/4" = 1'-0"



PLAN AT EL. 584.00
1/8" = 1'-0"

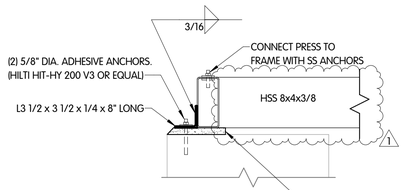


3 ENLARGED PRESS PLAN VIEW
1/2" = 1'-0"



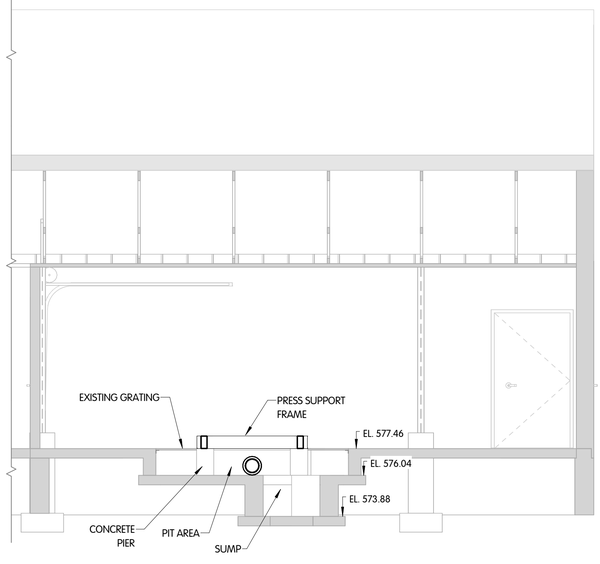
NOTE: TYPICAL OF ALL (4) SIDES

6 DETAIL
1" = 1'-0"



NOTES:
1. TYPICAL OF ALL (4) CORNERS
2. ALL MATERIALS ARE STAINLESS STEEL

5 SECTION
1" = 1'-0"



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

NOTES:
1. FIELD VERIFY THE PIER LOCATIONS AND SIZES.
2. DIMENSIONS ARE APPROXIMATE. ADJUST TO PRESS MANUFACTURER REQUIRED DIMENSIONS.
3. PROVIDE FULL-PENETRATION TUBE TO TUBE WELDED STAINLESS STEEL SUPPORT FRAME. GRIND WELDS SMOOTH.
4. ANCHOR PRESS ATTACHMENT POINTS TO TUBE FRAME WITH SS THROUGH BOLTS. (TYP 6 LOCATIONS). ANCHOR LOCATIONS TO BE VERIFIED BY THE PRESS MANUFACTURER.
5. ANCHOR PRESS ATTACHMENT POINTS TO TUBE FRAME WITH SS BOLTS. (TYP 2 LOCATIONS). USE THE END OF THE TUBE AS ACCESS POINT FOR BOLT INSTALLATION. ANCHOR LOCATIONS TO BE VERIFIED BY THE PRESS MANUFACTURER.

BLOWER BUILDING
STRUCTURAL
PLAN AND SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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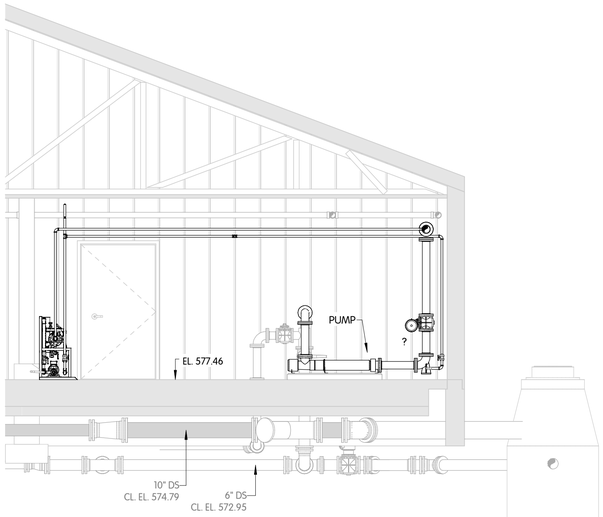
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RRP	RGW	PDM

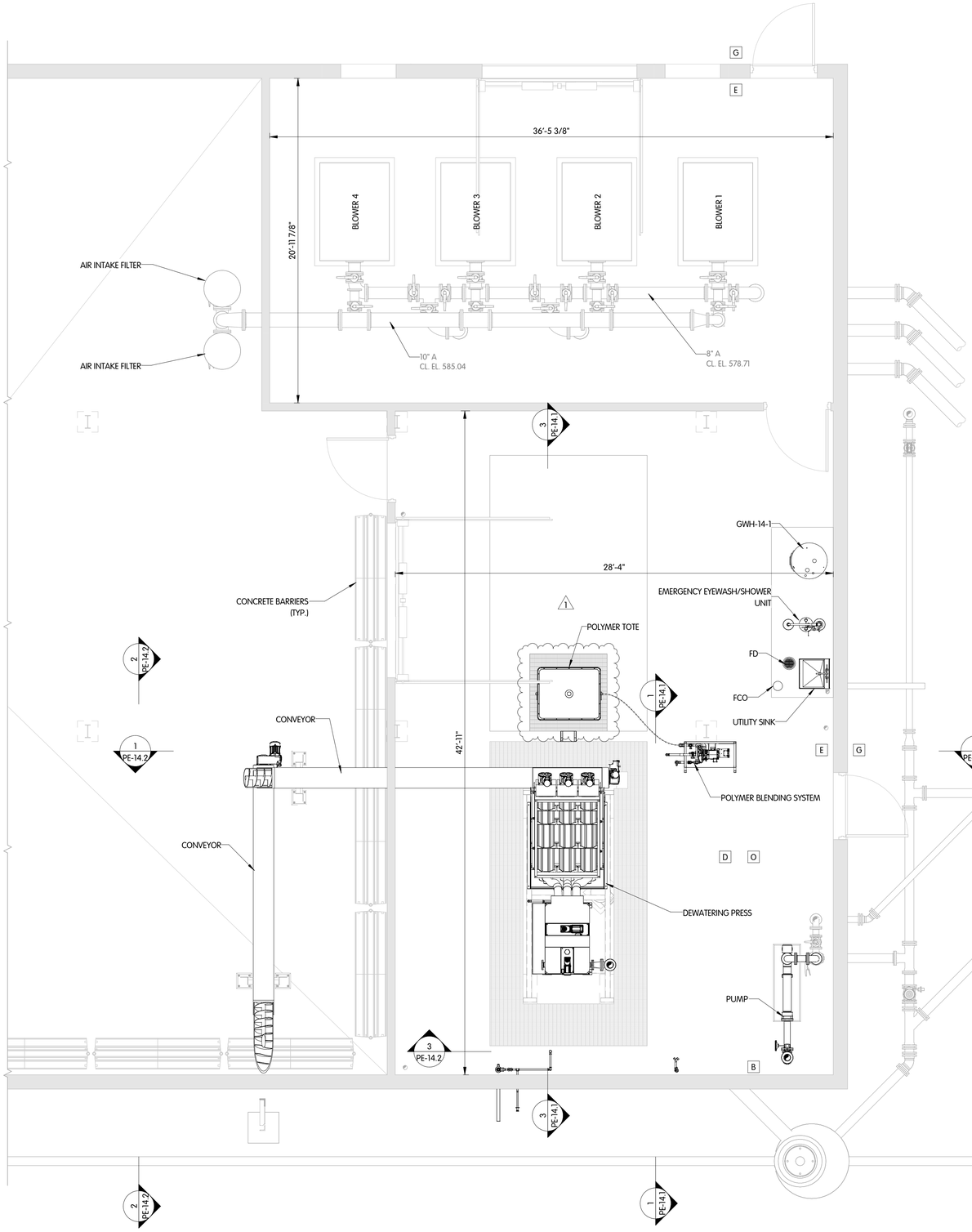
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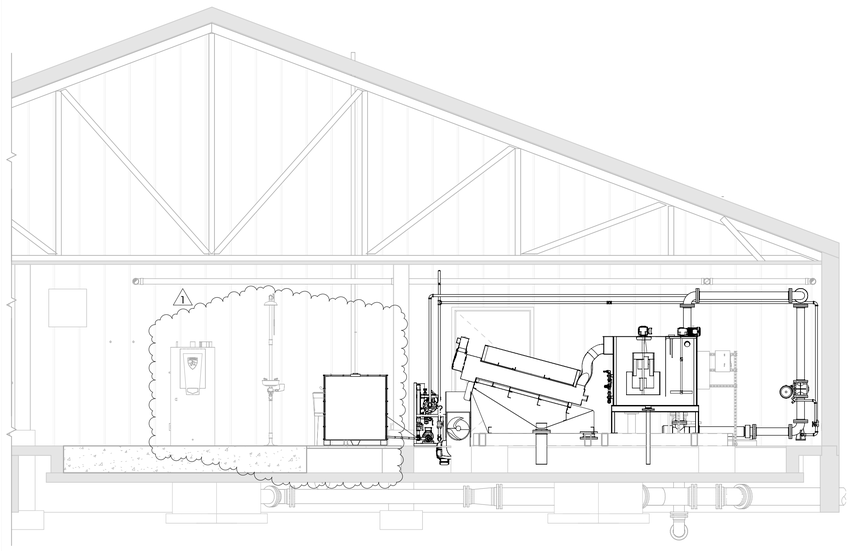
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1 SECTION
1/4" = 1'-0"



PARTIAL PLAN AT EL. 584.00
1/4" = 1'-0"
NORTH



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

BLOWER BUILDING
PIPING & EQUIPMENT
PLAN AND SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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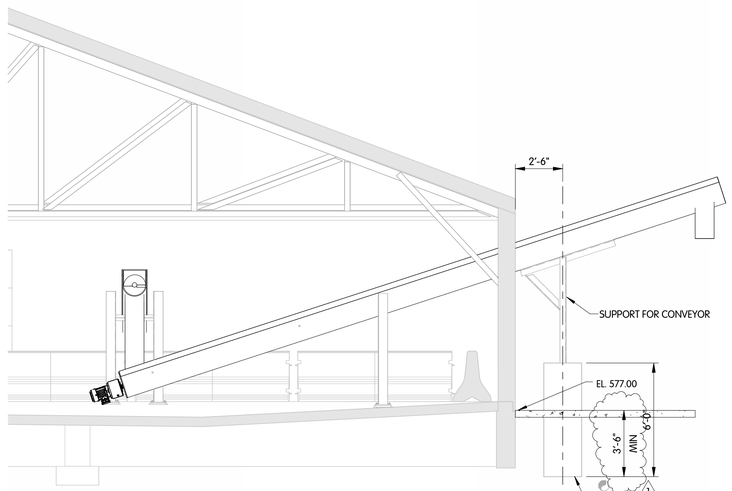
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JAH	RGW	PAL

STATUS: ISSUED FOR RE-BID

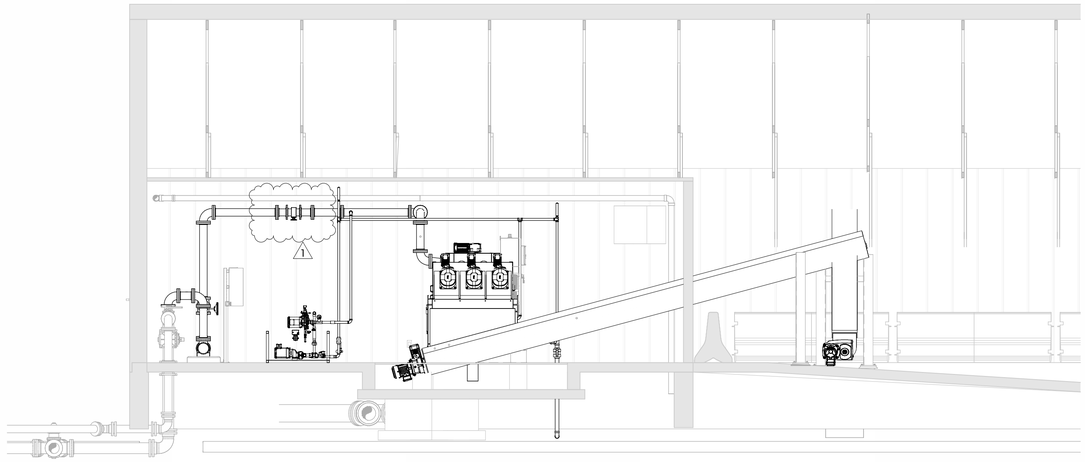
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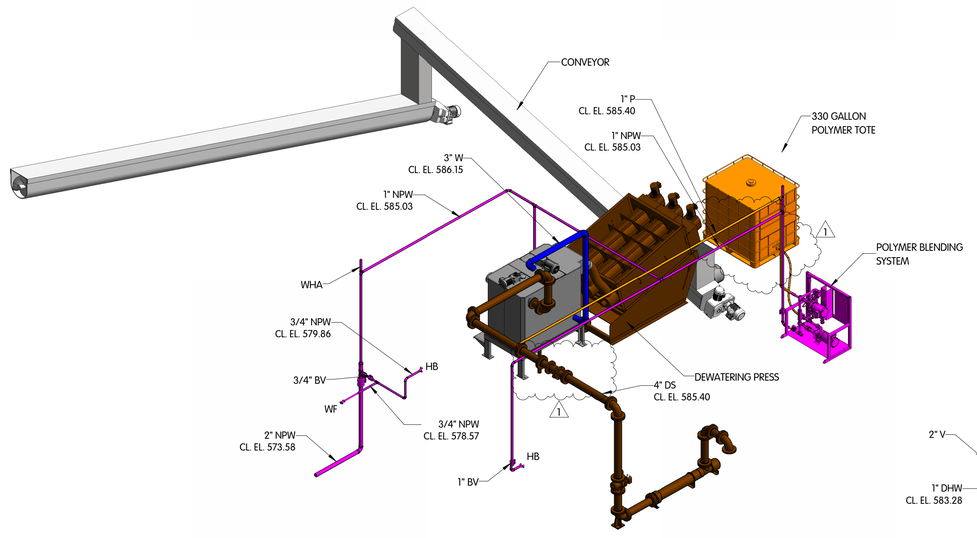
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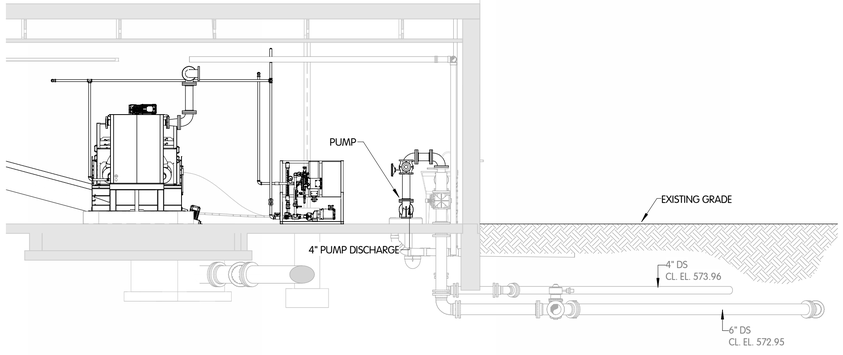
2 SECTION
1/4" = 1'-0"



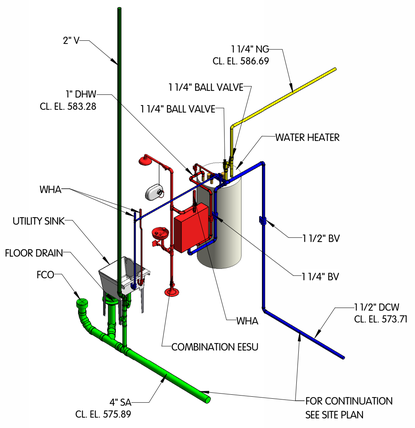
1 SECTION
1/4" = 1'-0"



PRESS-POLYMER



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



PLUMBING-ISOMETRIC

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BLOWER BUILDING
PIPING & EQUIPMENT
SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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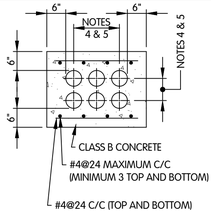
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STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026

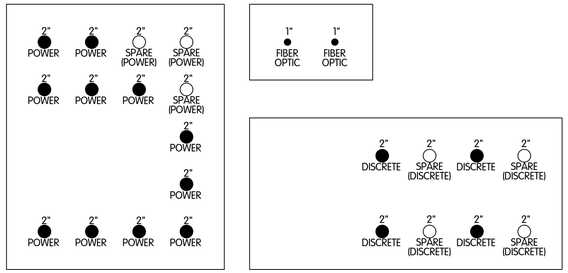
SHEET NO.
PE-14.2
156 OF 247



TYPICAL CONCRETE ENCASED CONDUIT DETAIL

NTS

NOTES:
1. ALL DUCT BANKS TO BE REINFORCED.
2. REINFORCING SHOWN IS TYPICAL FOR ALL SIZES OF DUCT BANKS.
3. 7½" MINIMUM SPACING EXCEPT TO SIGNAL AND ETHERNET CONDUIT.
4. SIGNAL OR ETHERNET CONDUITS TO BE MAINTAINED 12" MINIMUM FROM ALL OTHER.
5. THE CONCRETE ENCASEMENT OF ANY NUMBER OF CONDUITS ONE THROUGH SIX CONDUIT(S) SHALL USE THIS DETAIL AS AN EXAMPLE OF AN INSTALLATION. CROSS SECTIONAL SIZE SHALL VARY WITH THE NUMBER OF CONDUITS REQUIRED. MAXIMUM 6 CONDUITS WIDE AT SPACING INDICATED.
6. ALL CONDUITS BETWEEN MANHOLES SHALL BE 4" PVC. CONDUITS BETWEEN MANHOLES AND BUILDINGS SHALL BE PER SINGLE LINE DRAWING.
7. CONCRETE USED FOR ENCASEMENT SHALL BE DYED RED PRIOR TO PLACEMENT.



FROM EMH-1B TO EMH-6

A **BURIED CONDUIT** 1" = 1'-0"

FROM EMH-4 TO EMH-7

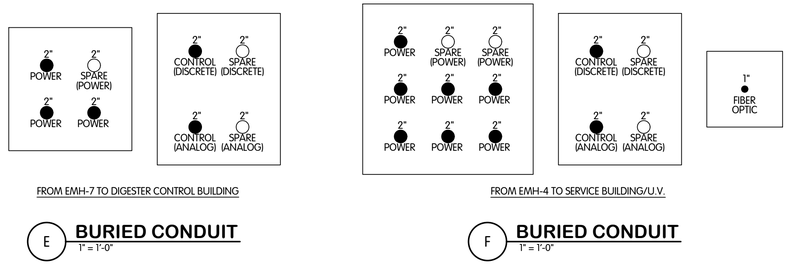
B **BURIED CONDUIT** 1" = 1'-0"

FROM EMH-7 TO BLOWER BUILDING

C **BURIED CONDUIT** 1" = 1'-0"

FROM EMH-1A (ELECTRICAL BUILDING) TO EMH-5 (GRIT/OXIDATION DITCH)

D **BURIED CONDUIT** 1" = 1'-0"



FROM EMH-7 TO DIGESTER CONTROL BUILDING

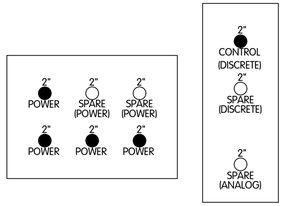
E **BURIED CONDUIT** 1" = 1'-0"

FROM EMH-4 TO SERVICE BUILDING/U.V.

F **BURIED CONDUIT** 1" = 1'-0"

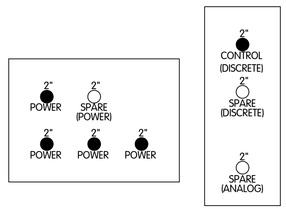
FROM ELECTRICAL BUILDING TO EMH-2 TO EMH-3

H **BURIED CONDUIT** 1" = 1'-0"



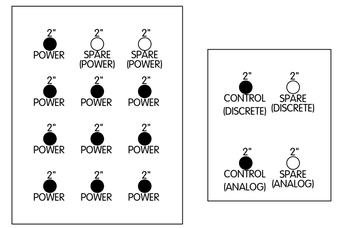
FROM EMH-3 TO CLARIFIER 1

J **BURIED CONDUIT** 1" = 1'-0"



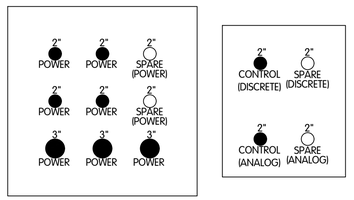
FROM EMH-3 TO CLARIFIER 2

K **BURIED CONDUIT** 1" = 1'-0"



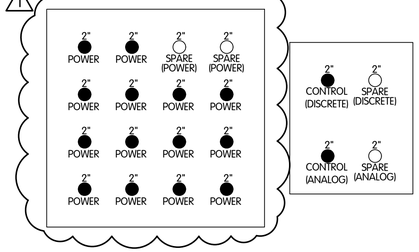
FROM EMH-3 TO RAS/WAS PUMP STATION

L **BURIED CONDUIT** 1" = 1'-0"



FROM EMH-3 TO RAS/WAS PUMP STATION

M **BURIED CONDUIT** 1" = 1'-0"



FROM EMH-1A TO HEADWORKS BUILDING

N **BURIED CONDUIT** 1" = 1'-0"



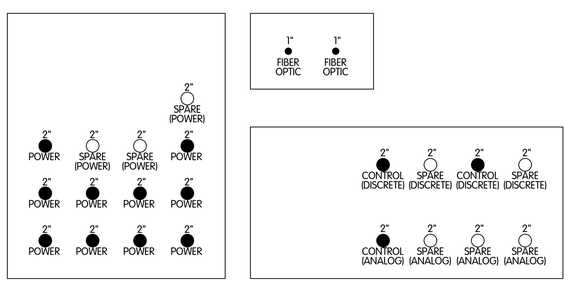
FROM EQ GENERATOR TO EMH-1C

O **BURIED CONDUIT** 1" = 1'-0"



FROM EQ PUMP STATION TO EMH-1C

P **BURIED CONDUIT** 1" = 1'-0"



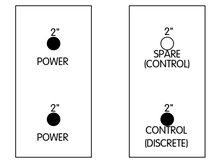
FROM EMH-6 TO EMH-4

Q **BURIED CONDUIT** 1" = 1'-0"



FROM EMH-6 TO 100-MH SA-1

R **BURIED CONDUIT** 1" = 1'-0"



FROM EMH-1C TO EMH-?

S **BURIED CONDUIT** 1" = 1'-0"

ELECTRICAL DUCT BANK SECTIONS AND DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

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www.JHeng.com

JOB NO. 904-8119.002
SCALE AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE
DESIGNED EBK | DRAWN RGW | CHECKED
STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026
SHEET NO. E-0.4
185 OF 247

T:\OL-8119\902_ED\7-E-0.4 - DUCT BANK DETAILS.dwg
10/7/2026 11:44 AM KRILL
10/9/2026 2:00 PM

MDP-10						
LOAD DESCRIPTION	SIZE (Amps)	VOLTS	PHASES	DEMAND AMPS	DEMAND VOLT-AMPS	DEMAND FACTOR
MCC-10A	450	480	3	237	196746	DUTY
MCC-10B	400	480	3	254	210963	DUTY
PP-10	250	480	3	140	116474	DUTY

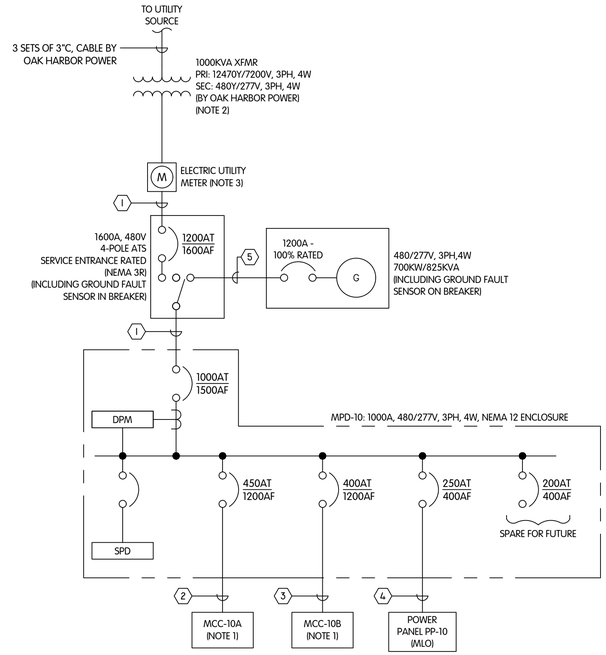
DEMAND AMPS @ 480V-3PH: 630A

MCC-10A									
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
SCREEN 1	HEADWORKS BUILDING	ATL	3 HP	480	3	4.8	3991	DUTY	3991
WASHER/COMPACTOR 1	HEADWORKS BUILDING	ATL	1 HP	480	3	2.1	1746	DUTY	1746
UV HSC-1	SERVICE BUILDING	N/A	2.5 KVA	480	3	3.0	2500	DUTY	2500
RAW DRY WEATHER PUMP 1	RAW WEATHER PUMP STATION	VFD	25 HP	480	3	34.0	28267	DUTY	28267
RAW WET WEATHER PUMP 1	RAW WEATHER PUMP STATION	VFD	50 HP	480	3	65.0	54040	DUTY	54040
RAW WET WEATHER PUMP 3	RAW WEATHER PUMP STATION	VFD	50 HP	480	3	65.0	54040	STANDBY	0
AERATOR ROTOR ASSEMBLY 1	OXIDATION DITCH	VFD	15 HP	480	3	21.0	17459	DUTY	17459
AERATOR ROTOR ASSEMBLY 3	OXIDATION DITCH	VFD	7.5 HP	480	3	11.0	9145	DUTY	9145
CLARIFIER 1 DRIVE	CLARIFIER 1	ATL	1 HP	480	3	2.1	1746	DUTY	1746
RAS/WAS PUMP 1	RAS/WAS PUMP STATION	VFD	10 HP	480	3	14.0	11639	DUTY	11639
RAS/WAS PUMP 2	RAS/WAS PUMP STATION	VFD	10 HP	480	3	14.0	11639	DUTY	11639
[EXISTING] TRANSFER PUMP	DIGESTER BUILDING	ATL	7.5 HP	480	3	11.0	9145	DUTY	9145
BOOSTER PUMP 1	SERVICE BUILDING	ATL	3 HP	480	3	4.8	3991	DUTY	3991
BOOSTER PUMP 2	SERVICE BUILDING	ATL	3 HP	480	3	4.8	3991	DUTY	3991
EUH-2-1	RAW WEATHER PS	N/A	5 kW	480	3	6.0	5000	DUTY	5000
EUH-15-1	SERVICE BUILDING	N/A	5 kW	480	3	6.0	5000	DUTY	5000
EUH-15-2	SERVICE BUILDING	N/A	5 kW	480	3	6.0	5000	DUTY	5000
POST-AERATION BLOWER	SERVICE BUILDING	VFD	20 HP	480	3	27.0	22447	DUTY	22447

MCC-10B									
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
SCREEN 2	HEADWORKS BUILDING	ATL	3 HP	480	3	4.8	3991	DUTY	3991
WASHER/COMPACTOR 2	HEADWORKS BUILDING	ATL	1 HP	480	3	2.1	1746	DUTY	1746
GRIT PUMP	GRIT PUMP ROOM	VFD	5 HP	480	3	7.6	6319	DUTY	6319
GRIT CLASSIFIER	HEADWORKS BUILDING	ATL	1/3 HP	480	3	0.9	748	DUTY	748
RAW DRY WEATHER PUMP 2	RAW WEATHER PUMP STATION	VFD	25 HP	480	3	34.0	28267	DUTY	28267
RAW WET WEATHER PUMP 2	RAW WEATHER PUMP STATION	VFD	50 HP	480	3	65.0	54040	DUTY	54040
MOTORIZED HOIST	HEADWORKS BUILDING	ATL	1 HP	480	3	2.1	1746	DUTY	1746
AERATOR ROTOR ASSEMBLY 2	OXIDATION DITCH	VFD	15 HP	480	3	21.0	17459	DUTY	17459
AERATOR ROTOR ASSEMBLY 4	OXIDATION DITCH	VFD	7.5 HP	480	3	11.0	9145	DUTY	9145
CLARIFIER 2 DRIVE	CLARIFIER 2	ATL	1 HP	480	3	2.1	1746	DUTY	1746
CLARIFIER 3 DRIVE [FUTURE]	CLARIFIER 3 [FUTURE]	ATL	1 HP	480	3	2.1	1746	STANDBY	0
RAS/WAS PUMP 3	RAS/WAS PUMP STATION	VFD	10 HP	480	3	14.0	11639	STANDBY	0
POLYMER PREPERATION SYSTEM	SLUDGE HANDLING BUILDING	N/A	~1 HP	480	3	2.2	1829	DUTY	1829
EUH-3-1	GRIT PUMP ROOM	N/A	7.5 kW	480	3	9.0	7500	DUTY	7500
EUH-3-2	GRIT PUMP ROOM	N/A	7.5 kW	480	3	9.0	7500	DUTY	7500
UV PDC XFMR	SERVICE BUILDING	N/A	45 KVA	480	3	54.1	45000	DUTY	45000
FC-10-1	ELECTRICAL BUILDING	N/A	10.8 A	480	3	10.8	8962	DUTY	8962
HP-10-1	ELECTRICAL BUILDING	N/A	18 A	480	3	18.0	14965	DUTY	14965

PP-10									
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
FSG-1-1	100-MH SA-1	ATL	1 HP	480	3	2.1	1746	DUTY	1746
TV-13-1	DIGESTER BUILDING	N/A	1 HP	480	3	2.1	1746	DUTY	1746
TV-13-2	DIGESTER BUILDING	N/A	1 HP	480	3	2.1	1746	DUTY	1746
TV-13-3	DIGESTER BUILDING	N/A	1 HP	480	3	2.1	1746	DUTY	1746
LP-12 XFMR	DIGESTER BUILDING	N/A	10 KVA	480	1	20.8	10000	DUTY	10000
LP-10 XFMR	ELECTRICAL BUILDING	N/A	15 KVA	480	1	31.3	15000	DUTY	15000
FRONT GATE OPERATOR	FRONT GATE	ATL (CP)	1 HP	480	3	5.0	4157	DUTY	4157
PV-3-3	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
PV-3-4	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
PV-3-5	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
PV-3-6	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-3-1	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-3-2	GRIT PUMP ROOM	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-2-1	HEADWORKS	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-2-2	HEADWORKS	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-2-3	HEADWORKS	ATL	1 HP	480	3	2.1	1746	STANDBY	0
FSG-2-4	HEADWORKS	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-2-5	HEADWORKS	ATL	1 HP	480	3	2.1	1746	DUTY	1746
MAU-2-1	HEADWORKS	N/A	2 HP	480	3	3.4	2827	DUTY	2827
EF-2-1	HEADWORKS	ATL	2 HP	480	3	3.4	2827	DUTY	2827
MPZ-2	HEADWORKS	N/A	10 KVA	480	1	20.8	10000	DUTY	10000
HEADWORKS O/H DOOR	HEADWORKS	ATL	1/2 HP	480	3	1.1	915	DUTY	915
MPZ-4	OXIDATION DITCH	N/A	5 KVA	480	1	10.4	5000	DUTY	5000
FSG-4-1	OXIDATION DITCH	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-4-2	OXIDATION DITCH	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-4-3	OXIDATION DITCH	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-4-4	OXIDATION DITCH	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-4-5	OXIDATION DITCH	ATL	1 HP	480	3	2.1	1746	DUTY	1746
MPZ-7	RAS/WAS PUMP STATION	N/A	5 KVA	480	1	10.4	5000	DUTY	5000
LP-15 XFMR	SERVICE BUILDING	N/A	25 KVA	480	1	52.1	25000	DUTY	25000
FSG-8-1	UV STRUCTURE	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FSG-8-2	UV STRUCTURE	ATL	1 HP	480	3	2.1	1746	DUTY	1746

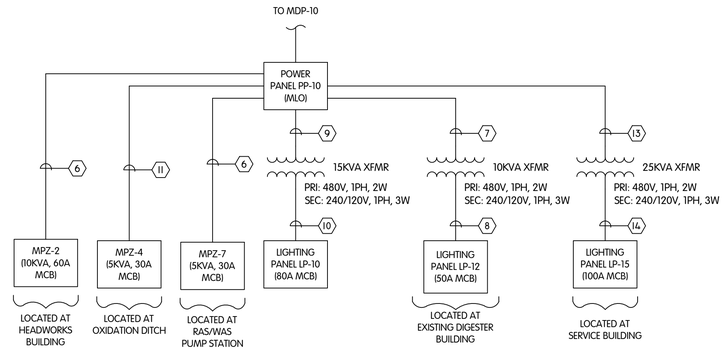
1



PLANT SINGLE-LINE DIAGRAM

NTS

CONDUIT AND WIRE SCHEDULE	
NO.	CONDUIT AND WIRE
1	4 SETS OF (4"C, 4#350 KCMIL & 1#3/0 GND)
2	2 SETS OF (2"C, 3#4/0 & 1#2 GND)
3	2 SETS OF (2"C, 3#3/0 & 1#2/0 GND)
4	2"C, 3#250 KCMIL & 1#4 GND
5	4 SETS OF (4"C, 4#400 KCMIL, 1#4/0 GND)
6	1"C, 2#10 & 1#10 GND
7	1"C, 2#6 & 1#6 GND
8	1"C, 3#8 & 1#10 GND
9	1"C, 2#8 & 1#10 GND
10	2"C, 3#4 & 1#8 GND
11	1"C, 2#12 & 1#12 GND
12	1"C, 2#6 & 1#6 GND
13	2"C, 2#2 & 1#4 GND
14	2"C, 3#2 & 1#8 GND



POWER PANEL PP-10 PARTIAL SINGLE-LINE DIAGRAM

NTS

NOTES:
1. SEE MCC-10A SINGLE LINE DIAGRAM AND MCC-10B SINGLE DIAGRAM FOR CONTINUATION.
2. UTILITY TRANSFORMER SECONDARY CABLE TERMINATIONS TO BE MADE BY OAK HARBOR POWER.
3. METERING SOCKET AND CONDUIT FURNISHED AND INSTALLED BY CONTRACTOR. METERING CURRENT TRANSFORMERS AND WIRING FURNISHED AND INSTALLED BY OAK HARBOR POWER.

ELECTRICAL
PLANT SINGLE LINE DIAGRAM AND LOAD SCHEDULES

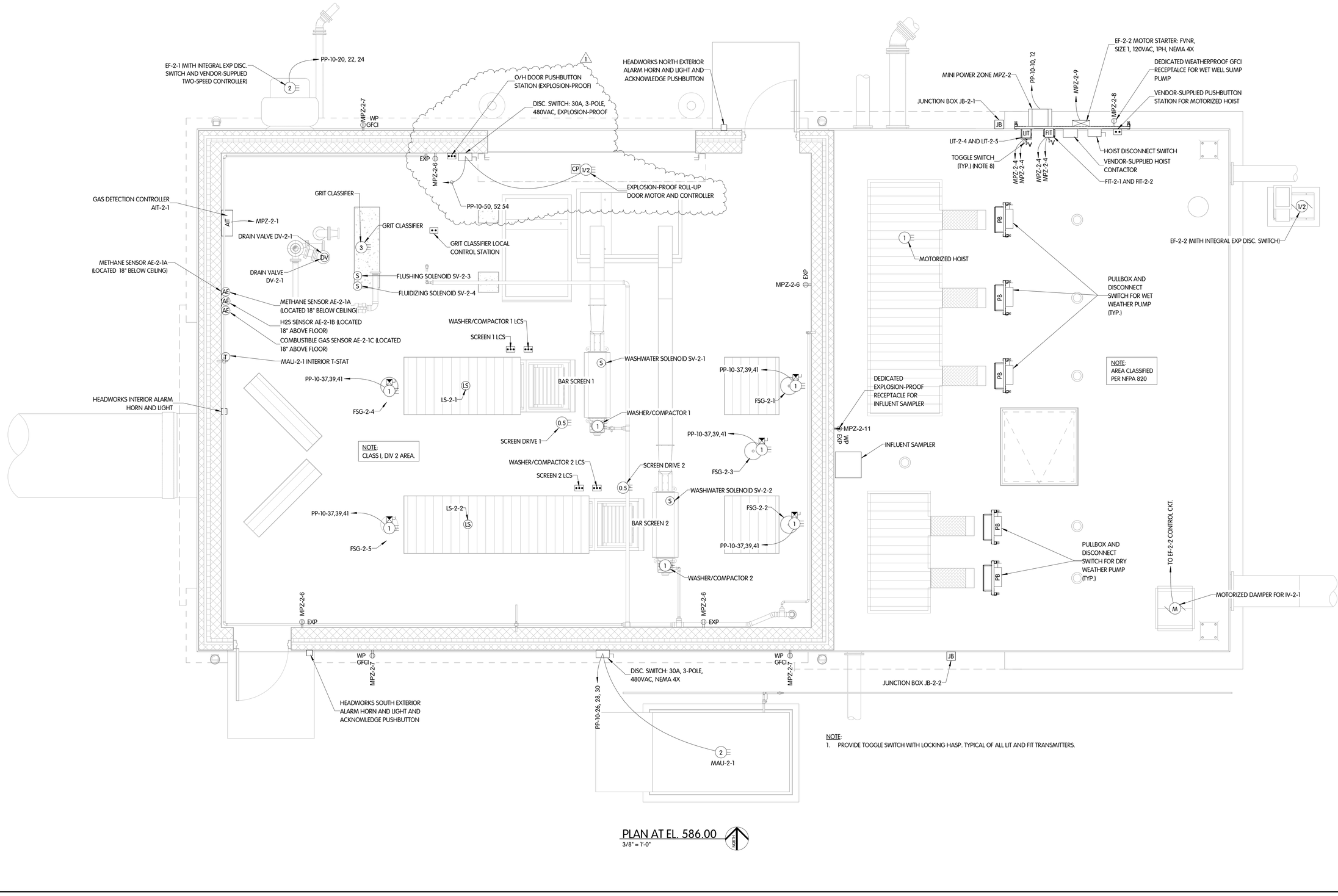
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/9/26	ADDENDUM 2	JAH

Jones & Henry Engineers, Ltd.
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JOB NO. 904-8119.002
SCALE AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE
DESIGNED EBK | DRAWN AAE | CHECKED EBK
STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026
SHEET NO. E-101.1
190 OF 247

T:\OL-8119\002_EOI\E-101.1
10/9/2026 2:01 PM - RRILL
10/9/2026 2:01 PM



PLAN AT EL. 586.00

3/8" = 1'-0"

NORTH

HEADWORKS BUILDING
ELECTRICAL
POWER PLAN AT EL. 586.00

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	10/27/26	ADDENDUM 1	JAH

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JOB NO.: 904-8119.002

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

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

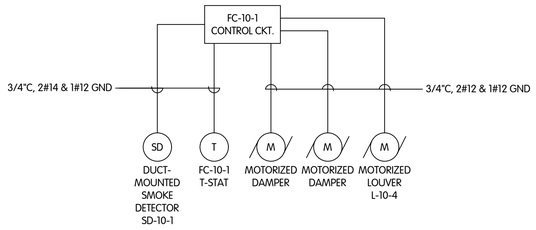
DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR RE-BID

DATE: AUGUST 2026

SHEET NO.
E-2.1
197 OF 247

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10/27/2026 10:13:59 AM



FAN COIL FC-10-1 CONTROL CKT. INTERFACE DIAGRAM

NOTE:
1. CONTRACTOR SHALL COORDINATE FINAL WIRING WITH SELECTED EQUIPMENT.

PANELBOARD DESIGNATION/TAG	**LP-10**													
LOCATION:				**VOLTS:**	240/120V			**A.I.C. (Fully Rated):**	10kA					
FEEDER SIZE:	(SEE PLANT SINGLE-LINE)			**PHASES:**	1			**BREAKERS:**	BOLT-ON					
FED FROM:	15 KVA XFMR			**WIRES:**	3			**MAINS RATING:**	100 A					
MOUNTING:	SURFACE			**AVAILABLE CIRCUIT...**	24			**MCB RATING:**	80 A					
ENCLOSURE:	NEMA 12			**% NEUTRAL (SOLID):**	100%			**SPD:**	INTERNAL					
Notes:														

CKT	CIRCUIT DESCRIPTION	WIRE SIZE	AMP	POLES	A	B	A	B	POLES	AMP	WIRE SIZE	CIRCUIT DESCRIPTION	CKT
1	SMOKE DETECTOR, SD-10-1	#12	15 A	1	5 VA		500 VA		1	20 A	#12	NETWORK ENCLOSURE	2
3	LIGHTING - EXTERIOR	#12	20 A	1		44 VA		100 VA	1	20 A	#12	MOTORIZED LOUVER L-10-2	4
5	RECEPTACLES - EXTERIOR	#12	20 A	1	600 VA		1200 VA		1	20 A	#12	GENERATOR - BATTERY CHARGER	6
7	GENERATOR - ENCLOSURE HEATER	#12	20 A	1		150 VA		172 VA	1	20 A	#12	LIGHTING - INTERIOR	8
9	LIGHTING - FRONT GATE POLE LIGHT	#12	20 A	1	72 VA		1500 VA		2	20 A	#12	GENERATOR - JACKET WATER HEATER	10
11	RECEPTACLES - INTERIOR	#10	20 A	1		1600 VA		1500 VA					12
13	SPARE	--	20 A	2	0 VA		0 VA		2	20 A	--	SPARE	14
15						0 VA		0 VA					16
17	SPARE	--	20 A	1	0 VA		0 VA		1	20 A	--	SPARE	18
19	SPARE	--	20 A	1		0 VA		0 VA	1	20 A	--	SPARE	20
21	SPACE	--	--	1	--		--		1	--	--	SPACE	22
23	SPACE	--	--	1		--		--	1	--	--	SPACE	24
				Total Load:	3877 VA		3566 VA						
				Total Amps:	32 A		30 A						

PANELBOARD DESIGNATION/TAG	**PP-10**													
LOCATION:	ADMIN/MAINTENANCE BLDG. ELECTRICAL ROOM			**VOLTS:**	480V			**A.I.C. (Fully Rated):**	65kA					
FEEDER SIZE:	(SEE PLANT SINGLE LINE)			**PHASES:**	3			**BREAKERS:**	BOLT-ON					
FED FROM:	MDP-10			**WIRES:**	3			**MAINS RATING:**	250 A					
MOUNTING:	SURFACE			**AVAILABLE CKTS.:**	66			**M.C.B**	MAIN LUGS ONLY					
ENCLOSURE:	NEMA 12			**% SOLID NEUTRAL:**	100%			**SPD:**	INTERNAL					
Notes:														

CKT	CIRCUIT DESCRIPTION	WIRE SIZE	AMP	POLES	A	B	C	A	B	C	POLES	AMP	WIRE SIZE	CIRCUIT DESCRIPTION	CKT
1	SPACE	--	--	1	--			2500 VA			2	20 A	#10	MINI POWER ZONE, MPZ-7 (RAS/WAS PUMP STATION)	2
3	MINI POWER ZONE, MPZ-4 (OX. DITCH)	#12	20 A	2		2500 VA			2500 VA						4
5							2500 VA			5000 VA	2	30 A	#6	LIGHTING PANEL LP-12 XFMR (10 KVA) (DIGESTER CONTROL BUILDING)	6
7	LIGHTING PANEL LP-15 XFMR (25 KVA) (CHEMICAL BUILDING)	#2	70 A	2	12500 VA			5000 VA							8
9						12500 VA			5000 VA		2	30 A	#10	MINI POWER ZONE, MPZ-2 (HEADWORKS)	10
11	LIGHTING PANEL LP-10 XFMR (15 KVA) (ELECTRICAL BUILDING)	#8	40 A	2			7500 VA			5000 VA					12
13					7500 VA			1164 VA							14
15	SPARE	--	20 A	2		0 VA			1164 VA		3	20 A	#12	FABRICATED SLIDE GATES, FSG-8-1 ~ FSG-8-2 (UV STRUCTURE)	16
17							0 VA			1164 VA					18
19	FRONT GATE OPERATOR	#12	20 A	3	1386 VA			1746 VA							20
21						1386 VA			1746 VA		3	20 A	#12	TELESCOPING VALVES TV-13-1 ~ TV-13-3 (DIGESTER CONTROL BUILDING)	22
23							1386 VA			1746 VA					24
25	FABRICATED SLIDE GATES, FSG-1-1 (100-MH SA-1)	#12	20 A	3	582 VA			942 VA							26
27						582 VA			942 VA		3	20 A	#12	EXHAUST FAN, EF-2-1 (HEADWORKS)	28
29							582 VA			942 VA					30
31	FABRICATED SLIDE GATES, FSG-4-4 ~ FSG-4-5 (OXIDATION DITCH)	#12	20 A	3	1164 VA			942 VA							32
33						1164 VA			942 VA		3	20 A	#12	MAKE-UP AIR UNIT, MAU-2-1 (HEADWORKS)	34
35							1164 VA			942 VA					36
37	FABRICATED SLIDE GATES, FSG-2-1 ~ FSG-2-5 (HEADWORKS)	#10	20 A	3	2909 VA			1164 VA							38
39						2909 VA			1164 VA		3	20 A	#12	FABRICATED SLIDE GATES, FSG-3-1 ~ FSG-3-2 (GRIT PUMP ROOM)	40
41							2909 VA			1164 VA					42
43	PLUG VALVES PV-3-3 ~ PV-3-6 (GRIT PUMP ROOM)	#12	20 A	3	2327 VA			1746 VA							44
45						2327 VA			1746 VA		3	20 A	#12	FABRICATED SLIDE GATES, FSG-4-1 ~ FSG-4-3 (OXIDATION DITCH)	46
47							2327 VA			1746 VA					48
49	SPARE	--	20 A	3	0 VA			305 VA							50
51						0 VA			305 VA		3	20 A	#12	OVERHEAD DOOR (HEADWORKS)	52
53							0 VA			305 VA					54
55	SPARE	--	20 A	3	0 VA			0 VA							56
57						0 VA			0 VA		3	20 A	--	SPARE	58
59							0 VA			0 VA					60
61	SPARE	--	20 A	3	0 VA			0 VA							62
63						0 VA			0 VA		3	20 A	--	SPARE	64
65							0 VA			0 VA					66
				Total Load:	43877 VA		38877 VA		36377 VA						
				Total Amps:	160 A		142 A		131 A						

ELECTRICAL BUILDING LIGHTING FIXTURE SCHEDULE

TAG/ID	DESCRIPTION
E4	LITHONIA CAT. NO. LHQM-LED-R-HO / ELA-T-SD-Q-L0309. COMBO EXIT/EMERGENCY LED, WHITE HOUSING W/ RED LETTERS, 50°F-104°F OPERATION, 90 MINUTE NI-CAD BATTERY, SELF-DIAGNOSTICS, TWIN LED HEADS. 120VAC, 4 WATTS. WIRE AHEAD OF SWITCH SERVING AREA. MOUNTED AT 8'-6" AFF.
E5	LITHONIA CAT. NO. EU2L. EMERGENCY LED, WHITE HOUSING, 50°F-104°F OPERATION, 90 MINUTE NI-CAD BATTERY, SELF-DIAGNOSTICS. 120VAC, 4 WATTS. WIRE AHEAD OF SWITCH SERVING AREA. MOUNTED AT 8'-6" AFF.
F1	LITHONIA CAT. NO. TWX1-LED-P2-40K-MVOLT-PE-DBLXD. LED WALL LUMINAIRE, PERFORMANCE PACKAGE 2, 4000K COLOR TEMPERATURE, MULTIVOLT, BUTTON-STYLE PHOTOCELL, BLACK FINISH. 22 WATTS. MOUNTED AT 9'-0" ABOVE GRADE.
L11	LITHONIA CAT. NO. FEM-L48-4000LM-IMACD-MD-MVOLT-40K-80CRI. LINEAR LED, 4000 LUMENS, ACRYLIC CLEAR DEEP LENS, MEDIUM DISTRIBUTION, MULTIVOLT, 4000K COLOR TEMPERATURE, 80 COLOR RENDERING INDEX. 120V / 26 WATTS. SUSPENDED 10'-0" AFF.

1

ELECTRICAL BUILDING
ELECTRICAL
SCHEDULES AND DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
3			
2	10/1/26	ADDENDUM 2	JAH
1			

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JOB NO. 904-8119.002
SCALE AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE
DESIGNED | DRAWN | CHECKED EBK
STATUS: ISSUED FOR RE-BID
DATE: AUGUST 2026
SHEET NO.
E-10.3
218 OF 247

TOL-8119002_E104-E-10.3
10/9/2026 11:02 AM KRILL
10/9/2026 2:02 PM