Jones & Henry
ENGINEERS, LTD.

Village of Oak Harbor, Ohio
WWTP Improvements

ADDENDUM 2

May 18, 2026

Planholders on the Village of Oak Harbor, WWTP Improvements 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

All questions and answers can be found in the Pre-Bid Questions document.

SPECIFICATIONS

Replace the following specifications with the attached:

C-500 - Agreement
C-610 - Performance Bond
C-800 - Funding Requirements
01021 - Allowances
03300 - Cast in Place Concrete
07200 - Wall and Ceiling Insulation
11210 - Orbal Aeration System
11260 - Grit Removal
11332 - Mechanically-Cleaned Fine Bar Screens
15195 - Facility Natural-Gas Piping
16905 - Programmable Controller System

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:

G-0.4	4 of 309	A-0-3	47 o9f 309	S-3-1	107 of 309
G-0.6	6 of 309	A-10-5	64 of 309	S-3.4	110 of 309
R-12-1	13 of 309	A-10-7	66 of 309	S-4-1	111 of 309
C-102.2	24 of 309	A-10-12	71 of 309	S-4-2	112 of 309
C-103.2	27 of 309	A-10-13	72 of 309	S-4-3	113 of 309
C-104.2	30 0f 309	A-15-2	80 of 309	S-4-4	114 309
C-104.5	33 of 309	S-2-3	100 of 309	S-4-5	115 of 309
C-105.2 B	38 of 309	S-2-5	102 of 309	S-4-6	116 of 309
A-0-1	45 of 309	S-7-2	131 of 309	S-6-9	129 of 309

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S-8.3	135 of 309	P-10-4	204 of 309	E-2-1	248 of 309
S-10-1	138 of 309	P-11-1	208 of 309	E-3-0	255 of 309
S-10-2	139 of 309	M-0.6	216 of 309	E-3-1	256 of 309
S-10-2	140 of 309	M-0.7	217 of 309	E-3-2	257 of 309
S-12-1	151 of 309	M-0.8	218 of 309	E-10-3	270 of 309
PE-0-1	157 of 309	M-3-1	222 of 309	E-10-5	272 of 309
PE -3-0	165 of 309	M-10-0	224 of 309	E-10.8	275 of 309
PE -3-1	166 of 309	M-10-2	226 of 309	E-11-1	276 of 309
PE -4-1	171 of 309	M-10-4	228 of 309	E-11-2	277 of 309
PE -4-2	172 of 309	M-11-1	229 of 309	E-11.4	279 of 309
PE -4-3	173 of 309	E-100.2	239 of 309	E-11.5	280 of 309
PE -15-1	193 of 309	E-101.1	241 of 309	I-3	297 of 309
P-0.3	198 of 309	E-101.2	242 of 309	I-6	300 of 309
P-10-0	200 of 309	E-101.3	243 of 309		

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.

OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT
PRE-BID QUESTIONS

1. Can you please advise on desired top slab thickness for RAS Pump Station? TCD-16 and SCD-7.04 shows a minimum thickness of 10"; however, the deck scales to 12" thick on the various section cuts on drawing S-7.2.

   See Addendum 2, revised Sheet S-7.2

2. There are some question marks shown in the NW quadrant of drawing S-4.4 in Channel 1 of the Oxidation Ditch. Can you please advise what dimensions/elevations should be shown in place of these question marks?

   See Addendum 2, revised Sheet S-4.4

3. There is a mix of Type 3 and Type 4 CSJ shown in the interior wall sections of the Oxidation Ditch. The Type 3 CSJ calls for a Type C waterstop and the Type 4 CSJ calls for no waterstop. Can you please confirm that the wall CSJ's are labeled correctly?

   a. Based off the section cuts shown in the S-4 series of structural drawings, it appears as though the only slab and wall joints that are to have waterstop is the exterior 1'-4" thick wall and bottom slab. Can you please confirm that no additional waterstop is desired at the slab and wall joints of the interior Oxidation Ditch walls?

      Waterstop shall be as shown on the Drawings and as Specified

   b. If the Type 3 and Type 4 CSJs wall joints are labeled correctly, can you please confirm that Type C waterstop is only needed in the Type 3 CSJ in the vertical run? Is any type C waterstop needed at the wall/slab intersection?

      See Addendum 2, revised Sheet S-4.4

4. Specification Section 03300-4.01 describes the Crystalline Waterproofing Additive as either Xypex Admix C-500 NF or Penetron Admix, and states, "Contractor to provide crystalline waterproofing additive to cast-in-place concrete where indicated on drawings or as specified". After review of the bid drawings, the only location where the Xypex additive is specifically called out is on drawing S-3.1. Per Note #1 on drawing S-3.1 the Contractor is to, "provide Xypex Additive to Walls of Grit Pump Room and Stairwell".

   a. Can you please confirm that the Walls of the Grit Pump Room and Stairwell are the only cast-in-place concrete locations where the Xypex Additive is required?

      See Sheet S-3.1 Notes

5. Can you please confirm that the Clarifier #1 and #2 Effluent Trough Supported Slab at Elevation 581.74' is to be 8" thick?

   The Slab shall be as shown on Sheet S-6.4 thick.

6. There is a note on the plan view of the Outfall Structure shown on drawing S-9.1 that states, "Precast Concrete by Others". What does the "Precast Concrete By Others" note mean?

See Addendum 2, revised Sheet S-9.1

7. There is a Build America, Buy America (BABA) Acknowledgement form included in the contract specifications. Can you please confirm that BABA requirements apply to this project? If so, does all the specified/named equipment suppliers listed in the Division 11 specifications meet BABA requirements?

   See Addendum 2, revised C-800 Exhibit 2 Funding Requirements

8. Can you please provide a section cut at one of the footer/pier/curb/grade beam intersections of the Administration / Maintenance Building? Could a section cut be provided at the F-10-4 footer/pier at the intersection of CL C & 6?

   See Sheet S-10.7 Wall Section 3 for wall/pier relationship.

9. Per the "Footing & Pier Schedule" shown on drawing S-0.1, all the footers/piers in the Administration Building (Footer/Piers F-10-1 thru F-10-5) have a top of pier elevation of 581.67. However, per drawing S-10.3 there is a note at the intersection of CL C & 6 that states, "T/Pier El. 584.17 (Typ.)".

   a. Can you please advise what the desired T/Pier Elevation for the piers in the Administration Building? Should the "T/Pier Elevation" shown on the "Footing and Pier Schedule" on drawing S-0.1 be updated to reflect the plan note on drawing S-10.3?

      The elevation of the maintenance building piers shall be as shown on Sheet S-10.3

      See Addendum 2, revised Sheet S-0.1

10. Note #1 on drawings S-10.1, S-10.2, and S-10.3 states, "Paper Joint Maybe Paper, or any thin compressible material". Can you please provide a specification for the desired "paper" or "thin compressible material" desired at these locations?

    See Addendum 2, revised Specification Section 03300

11. There are sections of "Prefabricated Trench Drain" shown in the 8" Slab of the Maintenance Area in the Administration Building (see drawing S-10.3) and in the 12" Slab of the Sludge Handling Building (see drawing S-11.2). TCD-42 on drawing S-0.6 gives some general guidelines on the resteel/concrete requirements for the trench drain; however, there are no details shown in the bid drawings nor any info provided in the bid specifications on the desired prefabricated trench drain.

    a. Can you please provide a specification or a model number for the desired "Prefabricated Trench Drain"?

       See Specification Section 15150

    b. Does Trench Drain need to be rated for vehicle traffic in these areas?

       See Specification Section 15150

12. There are some additional sections of Trench Drain shown at Elevation 574.17 in the Grit Structure (see drawing S3.2). Can you please provide detail on the desired trench drain for this area? Is it the same style of "Prefabricated Trench Drain" that is to be used in the Maintenance Building and the Sludge Handling Building?

    See Sheet S3.2 Plan at El. 580.00

13. Digester Control Building – Concrete Patching & Floor Door Installation: Drawing S-12.1 indicates that the Contractor is to install a new 6'-0" x 4'-0" floor door hatch (FD-12-1) in the intermediate level (Elevation 582.34') of the Digester Control Building. There are also (2) different concrete patches shown on drawing S-12.1. Can you please advise on the following items?

    a. Can you please advise on the thickness of the existing concrete deck at Elevation 594.84?

        See Addendum 2, revised Sheet S-12.1

    b. Can you please advise on the thickness of the existing concrete deck at Elevation 582.34?

        See Addendum 2, revised Sheet S-12.1

    c. For the concrete patch at elevation 594.84, it appears as though the Contractor is to cover the opening with a 3/16" thick plate. Can you please advise on desired material for the 3/16" thick plate?

        See Addendum 2, revised Sheet S-12.1

    d. Can you please provide a detail for the desired concrete patch method for the "patch concrete" area shown at elevation 582.34? What size of hole needs to be patched? Is the hole that will remain from the removal of the 14" Vent Line shown on drawing R-12.1?

        See Addendum 2, revised Sheet S-8.3

14. On the "Plan at El. 582.00" of the UV Structure shown on drawing S-8.1, there is a call-out that states "SCD-8.08" for one of the middle wall intersections. "SCD-8.08" does NOT exist in the plan set and is NOT shown on drawing S-8.3. Can you please provide detail "SCD-8.08"?

    See Addendum 2, revised Sheet S-8.3

15. **Headworks Building**: There are some rather large sections of concrete whose minimum dimension's exceed 5'-0". Should these areas be considered "mass concrete"? Specifically the "concrete fill" area between the Bar Screens and the west wall of the Bar Screen Channel. If these are considered "mass concrete", are there any specific requirements related to pouring these areas? Do any considerations such as sensors, cooling tubes, etc., need to be included as part of the bid?

    See Addendum 2, revised Specification Section 03300

    a. The middle section of concrete between the (2) Bar Screens has rough dimensions of 5'-0" x 25'-0" x 26'-6" and is labeled as "concrete fill". Can you please advise which Class of concrete is to be used for this pour? Does this need to be poured in lifts due to mass concrete/heat concerns?

        See Addendum 2, revised Specification Section 03300

16. On Section 4, drawing S-2.5 there is question mark directly below the 4" mud mat under the S.O.G with T/Slab Elevation 571.00. It looks like this "?" may be depicting a thickened slab area.

    a. Can you please advise what the "?" is depicting? Are there any portions of the slab @ T/Slab Elevation 571.00 that need to be thickened?

        See Addendum 2, revised Sheet S-2.5

17. Please clarify if this project has any procurement requirements such as BABA that the equipment must comply with.

    See response 7 above.

18. Please confirm the validity timeline is 90 days as listed in the bid advertisement and bid form.

    Bid are subject to acceptance per Specification Section C-410-1

19. Section 11260 1.04.A: States the warranty shall be one (1) year from substantial completion while EJCDC 15.08 states the warranty shall be two (2) years from substantial completion. Please clarify which warranty should be included for the grit removal equipment.

    Specification Section 11260 1.04 A. The manufacturer of the equipment will provide the 12 month warranty

    Specified Section C-700 - 15.08 is The Correction Period for defective work

20. Section 11260 2.06.A. No OIU type/size was specified. Hydro's standard is a PanelView 800 with 4" OIU. Please confirm this will be acceptable or specify an alternative.

    See Addendum 2, revised Specification Section 11260.

21. Section 112603.01.B: States that spare parts shall be packed in containers. Please detail which spares are to be included as part of the grit removal equipment scope, if any.

    See Addendum 2, revised Specification Section 11260 has no spare parts specified.

22. Section 11260 does not refer to other sections for control panel requirements. Section 16905 1.01.D. states that Div 11 programmable controllers are to meet the requirements of this section. Section 16905 includes separate requirements for medium size PLC hardware (CompactLogix 5069) and very small PLC hardware (Micro series PLC). Please confirm Hydro is to supply one (1) Micro850 CP that complies with 16905 small PLC hardware.

    See Addendum 2, revised Specification Section 11260

23. Section 11260 does not refer to other sections for control panel requirements. Please confirm if section 16230 Variable Frequency Drive (VFD) which appears to address free standalone VFDs and not control panel mounted VFDs applies to the Grit Pump and Grit Dewatering Escalator VFDs.

    Specification Section C-16239

24. Section 11260 does not include mention of the Local Control Stations (LCS) but they are shown on the drawings. Please clarify if these are contractor supplied.

    See Addendum 2, revised Specification Section 11260

25. Section 11735 For controls scope clarification only, please clarify the following:

    Section 11735 Will the grit pump be located in a hazardous area requiring an explosion-proof motor or is the location considered non-classified?

    See Addendum 2, revised Sheet E-3.1

26. Section 11735 Are there seal water control/power requirements that need to be incorporated into the panel?

    See Addendum 2, revised Sheet I-6

27. Section 11735 Can you confirm that the grit pump motor horsepower is 15 hp as shown in 11735 4.05 and not 5 hp as shown in drawings #E-3.1 / E-101.3 / E-101.5?

    See Addendum 2, revised Sheet E-3.1

28. Section 16905 2.07. states that the programming software shall be provided if requested by client. Please confirm if this is to be included in Hydro's scope or will be provided by the systems integrator.

    See Addendum 2, revised Specification Section 16905

29. Please provide drawing that indicates the hazardous rating of the grit removal equipment including the grit pumps, or confirm area ratings via spec addendum.

    See Addendum 2, revised Sheet E-2.3

30. #E101.3 shows two (2) local control stations, one (1) for the Grit Pump and one (1) for the Grit Dewatering Escalator while #I-6 shows one (1) local control station for the Grit Pump. Please confirm the total number of LCS.

    See Addendum 2, revised Sheet I-6

31. Spec 04200 part 2.02 includes regular CMU to contain IWR, part 2.03, B, states mortar for exterior units shall contain IWR. My question, if the interior regular CMU requires IWR, should the mortar also include IWR?

    Provide integral water repellant as specified in Specification Section 04200.

32. Spec 04200, part 2.07, B, 2, describes seismic eye wire for cavity walls. Sheet S0.1 states the seismic design category for the building's to be B which coincides with the Ohio seismic map. Clarity if seismic ladder eye is required for this project

    Cavity wall joint reinforcing shall be as shown on the Drawings and as Specified.

33. Spec 04200, part 2.08, B "RS series" clarify if RS standard is acceptable for this project or shall it be as depicted on sheet S0.7 requiring the width in accordance to the CMU wall?

    Shear Keys shall be as specified and shown on the Drawings

34. Spec 072000, part 3.02, C, requires type B cavity insulation in CMU cavity walls. Sheet A2.8, A-10.11, and A-11.1 calls out XPS board insulation R 12.5, which is 2 1/2" scoreboard. Clarify this discrepancy.

    See Addendum 2, revised Specification Section 07200

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	
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**
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		Add/Deduct	
		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**
		Add/Deduct	
		Add/Deduct	

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	100	CY					
5	Additional Reinforcing Steel	1,000	Lbs					
6	Additional Sidewalks	2,500	SF					
	Alternates							
7	Demolition of the Existing Plant	1	LS					
Total Estimated Construction Cost:								

(Addendum 2, Issued 5/18/2026)

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_____

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between Village of Oak Harbor, Ohio ("Owner") and

_____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

A. In general, the work consists of construction of a head works treatment process including screening, raw sewage pumping plant electrical and controls; new Orbal oxidation ditch treatment process including grit removal, two new secondary clarifiers, new ultraviolet disinfection treatment and meter flume with outfall to the Portage River. The solids handling of the plant include modifications to the existing blower building, existing digester building, installation of a new sludge feed pump and a new sludge dewatering building with truck loading. The improvements will also include support services such as heating ventilation, plumbing, electrical, instrumentation and controls and SCADA. The existing plant is planned to be demolished as a part of the work.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Village of Oak Harbor, Ohio; WWTP Improvements

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by

Jones & Henry Engineers, Ltd.
3103 Executive Parkway Suite 300
Toledo Ohio 43606.

3.02 The Owner has retained Jones & Henry Engineers, Ltd. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

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ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially completed within 575 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 635 days after the date when the Contract Times commence to run.

B. Parts of the Work, listed below, shall be substantially completed on or before the following Milestone(s):

1. Milestone 1: Completion of the new treatment plant ready for operation shall be completed within 485 days after the date when the Contract Times commence.

2. Milestone 2: Completion of start-up, commissioning (including SCADA) and production of effluent quality meeting current permit limits shall be completed within 545 days after the date when the Contract Times commence.

3. Milestone 3: Completion of the wok required to demolition the existing plant shall be completed within 575 days after the date when the Contract Times commence.

4. Milestone 4: Completion of the site work and final paving work shall be completed within 605 days after the date when the Contract Times commence.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $3,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $3,000 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

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4. Milestones: Contractor shall pay Owner $3,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved.

4.04 *Special Damages*

A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

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a. 92 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 92 percent of cost of materials and equipment not incorporated in the Work.

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 2 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the prime rate per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

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

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

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

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Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor 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 Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (C-520, Pages 1 to 10, inclusive).
2. ~~Bid Guarantee & Contract Bond (C-430, Pages 1 to ___, inclusive).~~
3. Performance Bond (C-610, Pages 1 to 2, inclusive).
4. ~~Labor and Maintenance Bond (C-612, Pages ___ to ___, inclusive).~~
5. Maintenance and Guarantee Bond (C-614, Pages 1 to 2, inclusive).
6. General Conditions (C-700, Pages 1 to 73, inclusive).
7. Supplementary Conditions (C-800, Pages 1 to 18, inclusive).
8. Specifications as listed in the table of contents of the Project Manual.
9. Drawings (not attached but incorporated by reference) consisting of 309 sheets with each sheet bearing the following general title: Village of Oak Harbor, Ohio WWTP Improvements, 2026
10. Addenda (Numbers 1 to ___, inclusive).
11. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (C-410, Pages 1 to 10, inclusive). **(Addendum 2, Issued 5/18/2026)**
12. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.

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b. Work Change Directives.

c. Change Orders.

d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

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 or in the Contract execution;

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2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	*NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

CERTIFICATION OF FISCAL OFFICER

The undersigned, as _____ of _____ hereby certifies that funds sufficient to meet the requirement of this Contract have been lawfully appropriated for such purpose and are in the treasury, or in the process of collection.

By: _____

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Title: _____

APPROVAL BY OWNER'S LEGAL OFFICER

By: _____

Title:

Date: _____

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WPCLF and WSRLA PROJECTS

Regulations and Forms to be Included with Contract Documents

CONTRACT DOCUMENT PROVISIONS

- The following contract requirements and forms are to be included in the construction contract documents. Completed copies of the forms are to be submitted to Ohio EPA within one week after bids are received, or sooner, dependent on your individual project schedule. Bid packages for WPCLF projects should be submitted to DEFA in the central office while bid packages for WSRLA projects should be submitted to the appropriate DDAGW district office.

Equal Employment Opportunity (EEO) Requirements

The Contractor's EEO Certification Form must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

NOTE: If the loan applicant has its own EEO requirements, local procedures and forms may be substituted for the EPA form.

Debarment

The Certification Regarding Debarment, Suspension, and Other Responsibility Matters must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

Disadvantaged Business Enterprises (DBE) Utilization

The DBE Specification language and instructions to the bidders and Forms 6100-3, 6100-4 and 6100-2 must be (1) included in the contract documents and (2) referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid.

NOTE: If the loan applicant has its own DBE requirements or if other funding programs with potentially competing DBE requirements are participating in the project funding, please contact Ohio EPA – DEFA for specific instructions regarding the DBE requirements.

Davis-Bacon wage rate requirements

The contract documents must include language that requires contractors and subcontractors to pay wages at rates not less than those prevailing on similar projects within the area as determined by the US Secretary of Labor. In addition, the loan recipient will be required to conduct wage interviews and monitor payroll for compliance.

Build America, Buy America (Lead Service Line, Emerging Contaminant, Equivalency Projects)

Build America Buy America Act (BABA) requirements apply to Lead Service Line, Emerging Contaminants and equivalency projects funded by a WPCLF assistance agreement and/or a WSRLA assistance agreement. Equivalency projects are those receiving funding from federal

capitalization grants that support the WPCLF and WSRLA programs. The acknowledgement form must be included in the contract documents. The acknowledgement form should be signed by the contractor and submitted with the final bid package. It is recommended that the BABA guidance document and questions and answers document be included in the contract documents.

American Iron and Steel

All treatment works projects funded by a WPCLF assistance agreement and all public water system projects funded by a WSRLA assistance agreement are required to comply with American Iron and Steel (AIS) requirements. The acknowledgement form must be included in the contract documents. The acknowledgement form should be signed by the contractor and submitted with the final bid package. It is recommended that the AIS guidance document and questions and answers document be included in the contract documents.

- The following contract requirements are to be included in the construction contract documents but are not required to be submitted to Ohio EPA for contract endorsement.

Small Businesses in Rural Areas (SBRA)

Language encouraging the participation of small businesses in rural areas should be included in the contract documents.

Local Protest Procedure

Some statement as to when a valid protest must be filed, in what form it must be filed and who it must be filed with should be included. ORC 153.12 has some default procedures for handling disputes. If the owner wants more control than provided in ORC, a procedure needs to be spelled out in the Contract Documents.

Contractor Equal Employment Opportunity Certification

During the performance of this contract, the undersigned agrees as follows:

1. The undersigned will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The undersigned will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The undersigned agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this equal opportunity (federally assisted construction) clause.

2. The undersigned will, in all solicitations or advertisements for employees placed by or on behalf of the undersigned, state the all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

3. The undersigned will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the undersigned's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The undersigned will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The undersigned will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and relevant orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the undersigned's non-compliance with the equal opportunity (federally assisted construction) clause of this contract of with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part, and the undersigned may be declared ineligible for further Government contracts of federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No 11246 of September 24, 1965, or by rules, regulations, or order of the Secretary of Labor, or as provided by law.

7. The undersigned will include this equal opportunity (federally assisted construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No 11246 of September 24, 1965, so that such provision will be binding upon each subcontract or vender. The undersigned will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor, as a result of such direction by the administering agency the undersigned may request the United States to enter into such litigation to protect the interest of the United States.

_____

(Signature) (Date)

_____

(Name and Title of Signer, Please type)

_____

(Firm Name)

Certification Regarding Debarment, Suspension, and Other Responsibility Matters
INSTRUCTIONS

Under Executive Order 12549 an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program or a subagreement thereunder for $25,000 or more.

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or subagreement participant thereunder must complete the attached certification provide an explanation why they cannot. For further details, see the regulation 40 CFR 32.510, Participants' responsibilities.

Go to https://sam.gov/content/exclusions to search for excluded parties. The record includes information regarding entities debarred, suspended, proposed for debarment, excluded or disqualified under the nonprocurement common rule, or otherwise declared ineligible from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits. This information may include names, addresses, DUNS numbers, Social Security Numbers, Employer Identification Numbers or other Taxpayer Identification Numbers, if available and deemed appropriate and permissible to publish by the agency taking the action.

Where To Submit

The prospective EPA grant, loan, or cooperative agreement recipient must return the signed certification or explanation with its application to Ohio EPA.

A prospective prime contractor must submit a complete certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a complete certification or explanation to the prime contractor for the project.

Applicants may reproduce these materials as needed and provide them to their prospective prime contractor, who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies / assistance may be requested from:

Ohio EPA
Division of Environmental and Financial Assistance
P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-2798
www.epa.ohio.gov/defa/

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal of State antitrust statues or commission if embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification;

(d) Have not within a three year period preceding this application / proposal had one or more public transactions (Federal, State, or local) terminated for cause or default; and

(e) Will not utilize a subcontractor or supplier who is unable to certify (a) through (d) above.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____

Type Name & Title of Authorized Representative

_____

Signature of Authorized Representative

_____

Date

☐ I am unable to certify to the above statements. My explanation is attached.

Disadvantaged Business Enterprises (DBE) Utilization

(Required Contract Provision)

USEPA has a program to encourage the participation of disadvantaged businesses in the construction activities funded by the Clean Water and Drinking Water SRF's. "DBE" is an all-inclusive term that includes Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Areas (SBRA), HUBZone Small Business, Labor Surplus Area Firms (LSAF), and other entities defined as socially and/or economically disadvantaged. While the WPCLF and WSRLA strongly encourage participation by all disadvantaged groups, specific participation goals are negotiated with USEPA only for Minority Business Enterprises and Women's Business Enterprises.

Goals

As a condition of receiving capitalization grants from U.S. EPA for the Water Pollution Control Loan Fund (WPCLF) and the Water Supply Revolving Loan Account (WSRLA), the Ohio EPA negotiates "fair share" Disadvantaged Business Enterprises (DBE) objectives with U.S. EPA. **The current negotiated goal for construction related activities is 5.4% (the total goal is based on 3.1% of MBEs and 2.3% of WBEs participation).**

DBE Certification

Under the DBE program, qualified DBE's are those that have been certified as an MBE or WBE. Certifications can be obtained from a federal agency such as the Small Business Administration or the Department of Transportation or by an approved State agency. The Unified Certification Program (UCP) administered by the Ohio Department of Transportation (ODOT) can provide the necessary DBE certifications. Information on the UCP can be found at www.ohioucp.org as well as the ODOT website https://www.transportation.ohio.gov/programs/business-economic-opportunity/dbe. The Department of Development operates the Encouraging Diversity Growth and Equity Program (EDGE), the other state approved DBE certification program. Information on EDGE can be found at https://development.ohio.gov/business/minority-business/business-certifications/encouraging-diversity-growth-and-equity-program.

DBE Qualifications

To qualify for MBE certification, businesses must be 51 percent owned and controlled by a U.S. citizen and Ohio resident belonging to an African American, Native American, Hispanic, or Asian American ethnic group. In addition, the business must be in operation for at least one year prior to submitting an application. For DBE status, a business must be at least 51 percent owned by a socially and economically disadvantaged person who participates in the daily operations of the business. This person must be a woman or of African-American, Hispanic, Native American, Asian American ethnicity.

Program Requirements

To comply with DBE program requirements the WPCLF/WSRLA loan recipient must do the following:

1. Create and maintain a bidder's list (see description below)

2. Include contract conditions applicable to the DBE program in all procurement contracts entered into by the Borrower for all WPCLF and WSRLA projects. These conditions are listed below.
3. Follow, document, and maintain documentation of good faith efforts on the part of prime contractors to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project.
4. Review the Form 6100-3 and 6100-4 submittals provided by bidders on the project for completeness and obtain any additional information necessary to verify the certification status of all proposed subcontractors.
5. Obtain documentation of the good faith efforts of the prime contractor if the prime contractor does not meet the MBE or WBE goal.
6. Obtain a written confirmation from any prime contractor states that they will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual.
7. Submit the following to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined:
   - Form 6100-3 from each subcontractor
   - Form 6100-4 from each prime contractor
   - a copy of the Good Faith Efforts documentation from any prime contractors that will not meet the MBE and WBE goals,
   - if any of the prime contractors will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual, a copy of the written confirmation from that prime contractor
8. Report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1st).

NOTE: It is up to the WPCLF/WSRLA loan recipient whether or not to require completion and submission of Forms 6100-3 and 6100-4 from all bidders with the bid proposal or to accept completion and submission from the successful bidder(s) only at some time after bids are received. Regardless of whether the forms are completed and submitted with the bids or at some later time once the successful bidders are identified, completed forms are to be submitted to Ohio EPA with the bid package.

To comply with DBE program requirements all prime contractors must do the following:

1. Follow, document, and maintain documentation of their good faith efforts.
2. Complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the bid proposal package to the loan recipient.
3. Have its Disadvantaged Business Enterprise subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form** and submit those as part of the bid proposal package to the loan recipient.
4. Provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors for completion at the end of the work.
5. During construction, provide the data necessary so that the loan recipient can report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1st).

Bidders List

The Borrower must create, maintain, and use a bidders list for purposes of soliciting both MBE/WBEs and non-MBE/WBEs during procurement of construction, equipment, supplies, and services. This list shall include:

1. Entity's name with point of contact;
2. Entity's mailing address, telephone number, and e-mail address;
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE.

Borrowers that receive less than $250,000 or less in any one fiscal year can be exempt from maintaining a Bidders List.

The Bidders List shall be maintained until the project period has expired and the Borrower is no longer receiving EPA funding. The Bidders List must include all firms that bid on the prime contracts, or bid or gave a quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs.

Required Contract Conditions

The DBE Specification language and instructions to the bidders and Forms 6100-2, 6100-3 and 6100-4 must be included in the contract documents and referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid for all WPCLF and WSRLA projects:

1. The prime contractor must pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the owner.
2. The prime contractor must notify the owner in writing prior to the termination of any Disadvantage Business Enterprise subcontractor for convenience by the prime contractor.
3. If a Disadvantage Business Enterprise contractor fails to complete work under the subcontract for any reason, the prime contractor must employ the six Good Faith Efforts (listed below) if soliciting a replacement contractor.
4. The prime contractor must employ the six Good Faith Efforts even if the prime contractor has achieved its fair share objectives.
5. An owner must ensure that each procurement contract it awards contains the following terms and conditions:

   The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Good Faith Efforts

Borrowers and their prime contractors must follow, document, and maintain documentation of their good faith efforts as listed below to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project by increasing DBE awareness of procurement efforts and outreach.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could be subcontracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in numbers 1 through 5 above.

DBE Forms

Form 6100-3 – Each prime contractor must have its DBE subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form**. This form gives the DBE subcontractor the opportunity to report the scope and cost of the subcontract and it should be forwarded to the Prime Contractor along with the DBE's quote. Each subcontractor completes one Form 6100-3. The Borrower must submit all Form 6100-3 forms to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-4 – Each prime contractor must complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the prime contractor's bid proposal package to the Borrower. This form summarizes the Prime Contractor's intended use of identified DBE(s) and the estimated dollar amount of each subcontract. Only one Form 6100-4 form is required from each Prime Contractor. The Borrower must submit this form to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-2 - The prime contractor must provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors.

This form gives the DBE subcontractor the opportunity to describe the work the DBE received from the Prime Contractor, how much the DBE was paid and any other concerns the DBE might have. Disadvantaged Business Enterprise subcontractors must send completed Form 6100-2 directly to the Region 5 DBE Coordinator after the work by the subcontractor is done and is NOT submitted with the bid package to Ohio EPA.

Region 5 MBE/WBE Coordinator
USEPA, Acquisition and Assistance Branch
77 West Jackson Boulevard (MC-10J)
Chicago, IL 60604

Reporting During Construction – Form 5700-52A

The purpose of MBE/WBE reporting is to monitor the grant recipient's accomplishments in utilizing MBEs and WBEs; and adherence to the good faith efforts (i.e., outreach to MBEs, WBEs, and other DBEs); and progress in achieving MBE and WBE Goals. During the progress of the construction project, the loan recipient must complete & submit Form 5700-52A annually (**within 15 days after October 1st**). If there were no MBEs or WBEs utilized, or no procurement expenditures of any kind were made during the reporting period, a "negative report" is still required.

Reports are to be sent to:

Florel Fraser, Ohio EPA – DEFA
P.O. Box 1049
Columbus, OH 43216-1049
E-mail address: Florel.Fraser@epa.ohio.gov
Phone: (614) 644-3636

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	**Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies**	**Price of Work Submitted to the Prime Contractor**
DBE Certified By: ○ ODOT ○ DAS/EDGE ○ Other: _____	Meets/ exceeds EPA certification standards? ○ YES ○ NO ○ Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 I.

Prime Contractor Signature	**Print Name**
Title	**Date**

Subcontractor Signature	**Print Name**
Title	**Date**

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	___YES	___NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt.**	**Currently DBE Certified?**

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 I.

Prime Contractor Signature	Print Name
Title	**Date**

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	Print Name
Title	**Date**

ALERT

"Total Procurement" fields and "MBE/WBE Combined Procurement" fields located in section 4B of this form should include Federal funds provided under the assistance agreement, recipient matching funds, and funds from other sources that are included in the assistance agreement.

Due to process time of Paperwork Reduction Act procedures, EPA is not able to update the EPA Form 5700-52A immediately to reflect this clarification.

If EPA grant recipients have questions about EPA Form 5700-52A, please work with your respective Grants Specialist or DBE Coordinator.

OMB CONTROL NO. 2030-0020
APPROVAL EXPIRES 06/30/2024

U.S. ENVIRONMENTAL PROTECTION AGENCY MBE/WBE UTILIZATION UNDER FEDERAL GRANTS AND COOPERATIVE AGREEMENTS

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2030-0020). Responses to this collection of information are required to obtain an assistance agreement (40 CFR Part 30, 40 CFR Part 31, and 40 CFR Part 33 for awards made prior to December 26, 2014, and 2 CFR 200, 2 CFR 1500, and 40 CFR Part 33 for awards made after December 26, 2014). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 1 hour per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

1A. REPORTING PERIOD	1B. REPORT TYPE
October 1, – September 30,	☐ Annual ☐ Final Report (Project completed)

1C: Revision of a Prior Year Report? ◯ No ◯ Yes
If yes, what reporting period is being revised and briefly describe the changes made. **Note:** The revised report will replace the associated original report in its entirety.

2A. RECIPIENT UNIQUE ENTITY IDENTIFIER

2B. RECIPENT REPORTING CONTACT

Name:

Email:

Phone:

3. FEDERAL AWARD IDENTIFICATION NUMBER (FAIN)
(For SRF state recipients, please include all numbers for all open assistance agreements being reported on this form.

4A. If NO procurements were made this reporting period (by the recipient, sub-recipient(s), loan recipient(s), and prime contractor(s)), **CHECK and SKIP to Block No. 6**. (Procurements are all expenditures through contract, order, purchase, lease or barter of supplies, equipment, construction, or services needed to complete Federal assistance programs.)

☐

4B. Total Procurements & MBE/WBE Accomplishments This Reporting Period (in dollars)

	Construction	Non-Construction	Total
Total Procurement:	$ _____	$ _____	$ _____
MBE/WBE Combined Procurement:	$ _____	$ _____	$ _____

5A. Good Faith Efforts: If procurements were made, indicate whether your organization has followed the six Good Faith efforts found in 40 CFR Part 33, Subpart C, 40 CFR 33.501 and 2 CFR 200.321.

☐ Yes, my organization has implemented and documented each of the six Good Faith Efforts on the procurements made during this reporting period.

☐ No, my organization has not implemented and documented each of the six Good Faith Efforts on the procurements made during this reporting period.

5B. If procurements were made, but no MBE/WBE procurements are being reported, then check the applicable box(es) for the reason(s) why no MBE/WBE procurements were made.

☐ No MBE/WBE(s) applied ☐ No MBE/WBE(s) were qualified

☐ Other:

6. NAME OF RECIPIENT'S AUTHORIZED REPRESENTATIVE	TITLE
7. SIGNATURE OF RECIPIENT'S AUTHORIZED REPRESENTATIVE	DATE

EPA FORM 5700-52A available electronically at: https://www.epa.gov/grants/epa-form-5700-52a-united-states-environmental-protection-agency-minority-business

Instructions:

A. General Instructions:

MBE/WBE utilization is based on 40 CFR Part 33 and 2 CFR Parts 200 and 1500. The reporting requirement reflects the change in the reporting threshold described in Recipient/ Applicant Information Notice-2018-G04 issued by EPA's Office of Grants and Debarment on September 7, 2018 (https://www.epa.gov/grants/rain-2018-g04). EPA Form 5700-52A must be completed annually by recipients of financial assistance agreements where the combined total of funds budgeted for procuring supplies, equipment, construction and services exceeds the current Simplified Acquisition Threshold as set by the Federal Acquisition Regulation at 48 CFR Subpart 2.1. This reporting requirement applies to all new and existing awards and voids all previous reporting requirements.

In determining whether the threshold is exceeded for a particular assistance agreement, the analysis must focus on funds budgeted for procurement under the supplies, equipment, construction, services or "other" categories, and include funds budgeted for procurement under sub- awards or loans.

Reporting will also be required in cases where the details of the budgets of sub-awards/loans are not clear at the time of the grant awards and the combined total of the procurement and sub-awards and/or loans exceeds the Simplified Acquisition Threshold.

For example, if the Simplified Acquisition Threshold is $250,000, then if a recipient has $300,000 budgeted under procurement, then completion of this report is required.

When reporting is required, all procurement actions are reportable, not just the portion which exceeds the Simplified Acquisition Threshold.

If at the time of award the budgeted funds exceed the Simplified Acquisition Threshold but actual expenditures fall below, a report is still required.

If at the time of award, the combined total of funds budgeted for procurements in any category is less than or equal to the Simplified Acquisition Threshold and is maintained below the threshold, no DBE report is required to be submitted.

Recipients are required to report 30 days after the end of each federal fiscal year (i.e. October 30th), per the terms and conditions of the financial assistance agreement.

Final reports are due October 30th or 120 days after the end of the project period, whichever comes first.

MBE/WBE program requirements, including reporting, are material terms and conditions of the financial assistance agreement. Failure to comply may lead to termination of the financial assistance agreement which is then reported to the OMB-designated integrity and performance system accessible through SAM (currently FAPIIS) pursuant to 2 CFR 200.339(b).

B. Submission:

Recipients must submit completed forms to the point of contact associated with the awarding office for the applicable assistance agreement.
Information on specific points of contact for EPA's Headquarters and ten Regional Offices is located at:

https://www.epa.gov/grants/frequently-asked-questions-disadvantaged-business-enterprises

Questions regarding the completion of this form should be directed to the DBE Coordinator associated with the awarding office for the applicable assistance agreement. A list of the DBE Coordinators for each awarding office can be located here:

https://www.epa.gov/grants/epa-dbe-program-coordinators

C. Instructions:

1A. Specify Federal fiscal year this report covers. The Federal fiscal year runs from October 1st through September 30th (**e.g. November 29, 2020 falls within Federal fiscal year 2021**)

1B. Specify report type. Check the annual reporting box if this is an annual report. If it is a final report, check the final report box to indicate if the project is completed.

1C. Indicate if this is a revision to a previous year and provide a brief description of the revision you are making including what reporting period is being revised. The revised report will replace the associated original report in its entirety.

2A. Provide your organization's Unique Entity Identifier. More information about Unique Entity Identifier, including its meaning, can be found in 2 CFR Part 25.

2B. Identify the name and contact information for the person located within the recipient organization that can be contacted if questions arise from this report.

3. Provide the Federal Award Identification Number (FAIN) assigned by EPA. A separate report must be submitted for each Assistance Agreement.

*For SRF recipients: In box 3 list numbers for ALL OPEN Assistance Agreements being reported on this form.

4A. Self-explanatory. **Note:** Procurement means expenditures under the supplies, equipment, construction, services or "other" categories, and include funds expended for procurement under sub-awards or loans.

4B. Provide the total dollar amount (in dollars) of **ALL** procurements awarded this reporting period by construction, non-construction, and grand total by the recipient, sub-recipients, and SRF loan recipients, **including** MBE/WBE expenditures, not just the portion which exceeds the threshold. For example: Actual dollars for procurement from the procuring office; actual contracts let from the contracts office; actual goods, services, supplies, etc., from other sources including the central purchasing/ procurement centers).

Provide the total dollar amount (in dollars) of MBE/ WBE procurements **ONLY** awarded this reporting period by construction, non-construction, and grand total by the recipient, sub-recipients, SRF loan recipients, and prime contractors not just the portion which exceeds the threshold.

***For SRF recipients only**: In 4B, please enter the total annual procurement amount under all of your SRF Assistance Agreements. The figure reported in this section is **not** directly tied to an individual Assistance Agreement identification number. **(SRF state recipients report state procurements in this section)**

5A. Self-explanatory.

5B. If procurements were made during this reporting period, but no procurements with MBE(s) or WBE(s) are being reported, then select the reason why. If "Other" is chosen, please fill in with the reason.

6. Self-explanatory.

7. Self-explanatory.

**This data is requested to comply with provisions mandated by: statute or regulations (40 CFR Part 33 and/or 2 CFR Parts 200 and 1500); OMB Circulars; or added by EPA to ensure sound and effective assistance management. Accurate, complete data are required to obtain funding, while no pledge of confidentiality is provided.

Davis-Bacon Wage Rate Requirements

(required contract provision)

Background and Applicability

On October 30, 2009, P.L. 111-88, "Making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010, and for other purposes," was enacted. This law provides appropriations for both the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF) for Fiscal Year 2010, while adding new requirements to these already existing programs. One new requirement requires the application of Davis-Bacon Act requirements.

Application of the Davis-Bacon Act requirements extend not only to assistance agreements funded with Fiscal Year 2010 appropriations, but to all assistance agreements executed on or after October 30, 2009, whether the source of the funding is prior year's appropriations, state match, bond proceeds, interest earnings, principal repayments, or any other source of funding so long as the project is financed by an SRF assistance agreement. If a project began construction prior to October 30, 2009 but is financed or refinanced through an assistance agreement executed on or after October 30, 2009, Davis-Bacon Act requirements will apply to all construction that occurs on or after October 30, 2009, through completion of construction.

Ohio EPA Responsibilities

With respect to the Water Pollution Control Loan Fund (WPCLF) and Water Supply Revolving Loan Account (WSRLA) revolving funds, EPA provides capitalization grants to each State which in turn provides funding assistance to eligible recipients within the State. Typically, the assistance recipients are municipal or other local governmental entities that manage the funds. Occasionally, the assistance recipients may be a private for profit or not for profit entity. Although EPA and the State are responsible for ensuring assistance recipients incorporate the wage rate requirements set forth herein as part of contracts for WPCLF and WSRLA funding, the assistance recipient has the primary responsibility to maintain payroll records and for compliance with Davis-Bacon Act requirements as described below.

Municipal Or Other Local Governmental Entities Recipient's Responsibilities

The following is intended to help assistance recipients understand and meet their obligations related to Davis-Bacon (DB). Each assistance recipients should, however, review the contract/subcontract requirements that are set forth later in this document for a more full understanding of DB obligations.

Prior to advertising for bids:

> Obtain the wage determination for the locality in which a covered activity subject to DB will take place from the Department of Labor (DOL) at www.wdol.gov.

> Incorporate these wage determinations into the request for bids.

> Include the required contract provisions (see below) into the contract documents.

> Require prime contracts to include provisions that subcontractors follow the wage determination incorporated into the prime contract.

During the advertisement period:

> Monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the request for bids remains current.

> If DOL modifies the DB wage determination more than 10 days prior to the bid opening, issue an addendum reflecting the modification.

> If DOL modifies or supersedes the DB wage determination less than 10 days prior to bid opening and you cannot issue an addendum for the change, you must request a finding from Ohio EPA that there is not reasonable time to notify interested contractors of the modification of the wage determination. The Ohio EPA will give you a report of its findings.

After opening bids:

> If the contract(s) aren't awarded within 90 days of the bid opening you must monitor www.wdol.gov on a weekly basis to ensure that wage determinations used in the bids remain current.

> If the contract(s) aren't awarded within 90 days of the bid opening, any modifications or supersedes that DOL makes to the wage determination must be incorporated into the contract unless (1) you request an extension from Ohio EPA AND (2) Ohio EPA obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv).

After contracts are signed and during construction:

> Review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

> DOL may issue a revised wage determination applicable to one or all of your contracts after the award of the contract or execution of the change order which incorporated DB requirements into the contract if DOL determines that you have failed to incorporate a wage determination or have used a wage determination that clearly does not apply to the contract. If this occurs, you shall either terminate the contract or change order and rebid the contract OR incorporate DOL's wage determination retroactive to the beginning of the contract by change order. The contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

> Periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. You must use Standard Form 1445 or equivalent documentation to memorialize the interviews.

> Establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, you must:

- conduct all interviews in confidence.
- conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract.
- conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB.
- immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements.

> Periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. You must:

- establish and follow a spot check schedule based on your assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract.
- spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract at a minimum.
- conduct more frequent spot checks if the initial spot check or other information indicates that there

is a risk that the contractor or subcontractor is not complying with DB.

• during the examinations, verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

> Periodically review contractors' and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the DOL or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews.

> Immediately report potential violations of the DB prevailing wage requirements to Andrew Lausted at EPA Region V at 312-886-0189 and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/esa/contacts/whd/america2.htm.

If contracts have already been signed and DB requirements need to be incorporated:

> If contracts have already been signed prior to WPCLF/WSRLA funding being provided, you must issue a change order, task order, work assignment or similar legally binding instrument and incorporate the appropriate DOL wage determination from www.wdol.gov as well as the required contract provisions into the contract(s).

> Initiate the contractor and subcontractor review and wage interview requirements as described above and provided in the **Contract And Subcontract Provisions**.

Private For Profit Or Not For Profit (Non-Governmental) Entities Recipient's Responsibilities

The requirements, responsibilities and contract provisions for Private For Profit or Not For Profit Entities (Non-Governmental Entities) is exactly the same as for Municipal Or Other Local Governmental Entities EXCEPT for the following:

Prior to advertising for bids:

> Obtain the proposed wage determinations for specific localities from www.wdol.gov.

> Submit the wage determination to Ohio EPA for approval prior to inserting the wage determination into the solicitation unless subsequently directed otherwise by Ohio EPA.

Contract And Subcontract Provisions For Contracts In Excess Of $2,000

The following language must be included in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part with WPCLF or WSRLA funds and which is subject to the labor standards provisions of any of the acts listed in §5.1:

NOTE: Modify the first sentence to include the name of the WPCLF/WSRLA funding recipient prior to including these provisions in the contract documents.

Wage Rate Requirements

As used in these provisions "subrecipient" means_____(fill in WPCLF/WSRLA funding recipient name here).

(a) The following applies to any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public

work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.wdol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department

of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account asset for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the

plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the subgrant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees --

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe

benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Contract Provision For Contracts In Excess Of $100,000 And Subject To The Overtime Provisions Of The Contract Work Hours And Safety Standards Act

The following language must be included in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These provisions are to be included in addition to the provisions for contracts in excess of $2,000. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(b) Contract Work Hours and Safety Standards Act. The following applies to any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

Contract Provision For Contracts In Excess Of $100,000 Subject ONLY To The Contract Work Hours And Safety Standards Act

In addition to the provisions for contracts in excess of $2,000, for any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, you must insert clauses requiring:

(c) The following applies to any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1.

The contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

The records shall be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Ohio EPA, EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

BUILD AMERICA, BUY AMERICA (BABA) ACKNOWLEDGEMENT

The Contractor acknowledges to and for the benefit of the _____ ("Owner") and the State of Ohio (State) that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as "Build America, Buy America;" that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

_____ _____

Signature Date

_____

Name and Title of Authorized Signatory, Please Print or Type

_____

Bidder's Firm

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

November 3, 2022

MEMORANDUM

SUBJECT: Build America, Buy America Act Implementation Procedures for EPA Office of Water Federal Financial Assistance Programs

FROM: Radhika Fox
Assistant Administrator

TO: EPA Regional Water Division Directors, Regions I – X
EPA Office of Water Office Directors

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OVERVIEW

The Biden-Harris Administration recognized the Nation's critical need for infrastructure investment, championing the Bipartisan Infrastructure Law (BIL), which Congress passed on November 15, 2021 (also known as the Infrastructure Investment and Jobs Act (IIJA)). The BIL will provide an unprecedented level of federal investment in water and wastewater infrastructure in communities across America.

In Title IX of the IIJA, Congress passed the Build America, Buy America (BABA) Act, which establishes strong and permanent domestic sourcing requirements across all Federal financial assistance programs for infrastructure. The U.S. Environmental Protection Agency (EPA) Office of Water is honored to help lead the implementation of these provisions and is proud of its near decade of successful implementation of the American Iron and Steel (AIS) provisions for its flagship water infrastructure programs.

This is a transformational opportunity to build a resilient supply chain and manufacturing base for critical products here in the United States that will spur investment in good-paying American manufacturing jobs and businesses. EPA's efforts to implement BABA will help cultivate the domestic manufacturing base for a wide range of products commonly used across the water sector but not currently made domestically. This will take time, and flexibility will be important to ensure that EPA can leverage critical water investments on time and on budget to protect public health and improve water quality.

IMPLEMENTATION

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Recognizing the opportunity and need for BABA implementation guidance, the Made in America Office (MIAO) of the Office of Management and Budget (OMB) published Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure (OMB Guidance M-22-11) on April 18, 2022. The guidance provides government-wide implementation direction for all Federal financial assistance programs for infrastructure. Despite the extensive guidance developed by MIAO, EPA's Office of Water infrastructure investment programs have received many questions that were not addressed in OMB Guidance M-22-11 or that require further clarification for EPA water infrastructure programs. The following questions and answers serve to supplement OMB Guidance M-22-11 with implementation procedures specific to EPA's relevant water infrastructure programs.

Section 70914(a) of the IIJA states when a Buy America preference under BABA applies: "Not later than… [May 14, 2022], the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, Federal financial infrastructure investments obligated on or after May 14, 2022, must comply with the BABA requirements. Absent a waiver, all iron, steel, manufactured products, and construction materials permanently incorporated into an infrastructure project subject to the BABA requirements must be produced in the United States. For many of EPA's Office of Water infrastructure investment programs, the vast majority of products permanently incorporated into construction, maintenance, or repair projects must comply with the BABA requirements, with the exception of select construction materials (cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives), which are specifically excepted by the BABA statute.

EPA's Office of Water implements many infrastructure investment programs subject to BABA requirements, including the following:

- Alaska Native Villages and Rural Communities Water Grant Program (ANV) (and any associated Interagency Agreements with the Indian Health Service)
- Clean Water and Drinking Water State Revolving Fund Programs (CW and DWSRF)
- Clean Water and Drinking Water Grants to U.S. Territories and the District of Columbia
- Clean Water Indian and Drinking Water Tribal Infrastructure Grant Set-aside (and any associated Interagency Agreements with the Indian Health Service)
- Coastal Wetlands Planning, Protection and Restoration Act, (CWPPRA) Programs
- Congressionally Directed Spending/Community Project Funding (also known as Community Grants)
- Geographic Programs[1]
- Gulf Hypoxia Program
- National Estuaries Program (CWA Section 320)

[1] Geographic Programs include: Great Lakes Restoration Initiative, Chesapeake Bay, San Francisco Bay, Puget Sound, Long Island Sound, Gulf of Mexico, South Florida, Lake Champlain, Lake Pontchartrain, Southern New England Estuaries, Columbia River Basin, Pacific Northwest

- 319 Nonpoint Source Management Program Implementation
- Reducing Lead in Drinking Water Grant Program (SDWA §1459B)
- Assistance for Small and Disadvantaged Communities Grants: Small, Underserved, and Disadvantaged Community Grant Program (SUDC), Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) and Drinking Water Infrastructure Resilience & Sustainability (SDWA §1459A)
- Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)
- USMCA Implementing Legislation (Section 821 and Title IX, USMCA Supplemental Appropriations, 2020)
- U.S.-Mexico Border Water Infrastructure Program
- Voluntary School and Child Care Program Lead Testing and Remediation Grant Program (SDWA 1464(d))
- Water Infrastructure Finance and Innovation Act (WIFIA)

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The questions and answers in this document apply to the implementation of BABA requirements for the Office of Water infrastructure programs listed above unless superseded by regulation, statute, or other applicable guidance. For many of the programs listed above which did not have domestic preference requirements prior to BABA, additional implementation details are pending or may be developed after the issuance of these procedures. In addition, EPA notes that more direction will be helpful to inform the determination and definition of domestic content in manufactured goods. Supplemental guidance on these and other issues, from either OMB or EPA, may be forthcoming. These implementation procedures may also apply to additional, unlisted EPA programs which may be required to apply BABA subsequent to publication of this memorandum (e.g., future funding programs which have been authorized, but not yet appropriated).

For more information on the BABA requirements, visit the EPA Office of Water's dedicated website – https://www.epa.gov/cwsrf/build-america-buy-america-baba – or contact your funding authority (such as your grants officer, portfolio manager, or state contact). For information on approved waivers, visit https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers. You may also email questions to BABA-OW@epa.gov.

This Implementation Procedures document is organized to provide responses to questions in the following topic areas:

- Section 1: General 4
- Section 2: Product Coverage 5
- Section 3: Co-funding 9
- Section 4: Waivers 10
- Section 5: Documenting Compliance 12
- Section 6: Programs with American Iron and Steel Requirements 16
- Section 7: Program-Specific Issues 17
- Appendix 1: Example Build America, Buy America (BABA) Act Construction Contract Language 22
- Appendix 2: Example Build America, Buy America (BABA) Act Assistance Agreement Language 23

QUESTIONS AND ANSWERS

SECTION 1: GENERAL

- Q1.1: Will EPA provide documentation for BABA for bid solicitations and suggested contract language? Will EPA provide suggested language for Assistance Agreements?

    - A1.1: See Appendix 1, which includes suggested language for construction contracts which addresses the BABA requirements. In addition to the language suggested in Appendix 1, EPA also recommends that assistance recipients prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the certifications are sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

      All Federal Financial infrastructure assistance agreements subject to BABA must have a clause requiring compliance with the requirements. See Appendix 2 for example assistance agreement language.

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- Q1.2: Would federally-financed infrastructure projects outside of the United States need to comply with the BABA requirements?

    - A1.2: No. According to the OMB Guidance (M-22-11), a "project" is defined as "…any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States." Therefore, the BABA requirements are not implicated for infrastructure projects occurring outside of the United States, such as projects funded through the United States-Mexico-Canada Agreement with infrastructure activities occurring in Mexico or Canada (that is, outside the United States).
    -

- Q1.3: If most of the project is BABA compliant, and a small portion is not, can an assistance recipient self-fund (i.e., paying with non-federal dollars) the non-compliant products?

    - A1.3: Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. All iron, steel, manufactured products, and construction materials used in a project must meet the BABA requirements unless waived. Absent a waiver, there is no "small portion" or product that does not need to satisfy the BABA requirements unless the requirements are waived (or specifically excluded as is the case for cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products). An assistance recipient may request a waiver or inquire as to whether a broad waiver, such as a *de minimis* waiver, might apply.

- Q1.4: How do international trade agreements affect the implementation of the BABA requirements?

    - A1.4: The BABA requirements apply in a manner consistent with United States obligations under international trade agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to these trade agreements. In general, assistance recipients are not signatories to such agreements, so these trade agreements have no impact on BABA implementation. In the few instances where such an agreement applies to a municipality, that municipality is responsible for determining its applicability and requirements and communicating with the funding authority (such as EPA and/or a state) on the actions taken to comply with BABA.

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SECTION 2: PRODUCT COVERAGE

- Q2.1: For products made of iron and steel, what is the difference between predominantly and primarily iron and steel?

    - A2.1: EPA considers the terms "predominantly" and "primarily" to be interchangeable, such that a product is considered predominantly (or primarily) iron and steel if it contains greater than 50 percent iron and steel by material cost.

- Q2.2: What is the definition of construction materials (with examples)?

    - A2.2: From OMB Guidance M-22-11: "construction materials" include an article, material, or supply (other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products) that is or consists primarily of:
        - non-ferrous metals,
        - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), (including optic glass),
        - lumber, and
        - drywall.

      For example, a plate of glass would be a construction material under BABA, but a framed window that incorporates the glass into a frame would be a manufactured product. Another common construction material for water infrastructure projects would be polyvinyl chloride (PVC) pipe and fittings. However, if PVC components are incorporated into a more complex product such as instrumentation and control equipment or a water treatment unit, those items would be manufactured products.

- Q2.3: What are manufactured products (with examples)?

    - A2.3: From OMB Guidance M-22-11: "…all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of

the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation…"

The manufactured products category would cover the majority of potential water infrastructure products, including complex products made up of a variety of material types and components. For water infrastructure projects, common manufactured products would include, but not be limited to, pumps, motors, blowers, aerators, generators, instrumentation and control systems, gauges, meters, measurement equipment, treatment equipment, dewatering equipment, actuators, and many other mechanical and electrical items.

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- Q2.4: Which category will valves fall under for BABA? Will it differ from the American Iron and Steel (AIS) requirements?

    - A2.4: For programs that are subject to BABA and AIS (SRF, WIFIA, and Community Project Funding), projects using valves should classify them as iron and steel products under BABA as long as their material cost is made up of more than 50 percent iron and/or steel. Valves with 50 percent or less iron and/or steel by material cost would be considered manufactured products under the BABA requirements.

      In accordance with OMB Guidance M-22-11, an article, material, or supply should be classified into only one of the three categories: iron and steel, manufactured products, or construction materials. Under the AIS requirements, all valves made primarily of iron and steel (that is, those with iron and/or steel material cost greater than 50 percent) must comply with the AIS requirements. For BABA, EPA interprets Section IV of OMB Guidance M-22-11 to mean that iron and steel products are those items that are primarily iron and steel, the same as for the AIS requirements.

- Q2.5: Does EPA have a list of products to be classified as "Iron and Steel" under BABA?

    - A2.5: Although this list is not comprehensive, the following products were classified as AIS products if made primarily (more than 50 percent) of iron and/or steel by materials cost (for programs subject to both AIS and BABA, this list would be equivalent for "iron and steel" items or products under either requirement):

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Lined and Unlined Pipe	Lined and Unlined Fittings	Tanks
Flanges	Pipe Clamps and Restraints	Structural Steel
Valves	Hydrants	Pre-Cast, Iron/Steel Reinforced Concrete (of all types, regardless of iron/steel content percentage)
Manhole Covers and other Municipal Castings	Access Hatches	Ballast Screens
Iron or Steel Benches	Bollards	Cast Bases
Cast Iron Hinged Hatches	Cast Iron Riser Rings	Catch Basin Inlets

Cleanout/Monument Boxes	Construction Covers and Frames	Curb and Corner Guards

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Curb Boxes	Curb Openings	Curb Stops
Detectable Warning Plates	Downspout Shoes	Drainage Grates
Drainage Grate Frames and Curb Inlets	Inlets	Junction Boxes
Manhole Rings and Frames	Manhole Risers	Meter Boxes
Service Boxes	Steel Hinged Hatches	Steel Riser Rings
Trash Receptacles	Tree Grates	Tree Guards
Trench Grates	Valve Boxes	Valve Box Covers and Risers
Access Ramps	Aeration Pipes and Fittings (separate from aeration/blowers)	Angles
Backflow Preventers/Double Check Valves	Baffle Curtains	Iron or Steel Bar
Bathroom Stalls	Beam Clamps	Cable Hanging Systems
Clarifier Tanks	Coiled Steel	Column Piping
Concrete Reinforcing Bar, Wire, and Fibers	Condensate Sediment Traps	Corrugated Pipe
Couplings	Decking	Digestor Covers
Dome Structures	Door Hardware	Doors
Ductwork	Expansion Joints	Expansion Tanks (diaphragm, surge, and hydropneumatics)
Fasteners	Fencing and Fence Tubing	Fire Escapes
Flanged Pipe	Flap Gates	Framing
Gate Valves	Generic Hanging Brackets	Grating
Ground Testing Boxes	Ground Test Wells	Guardrails
HVAC Registers, Diffusers, and Grilles	Joists	Knife Gates
Ladders	Lifting Hooks, J-bar, Connectors within, and Anchors for Concrete	Lockers
Man Baskets and Material Platforms	Manhole Steps	Mud Valves
Municipal Casting Junctions	Non-mechanical (aka stationary) Louvers and Dampers	Overhead Rolling Doors/ Uplifting Doors (manual open, no motor)
Pipe Connectors	Pipe Hangers	Pipe Pilings (any type of steel piling)
Pipe Spool (pipe, flanges, connectors, etc.)	Pipe Supports	Pitless Adaptors
Pre-fab Steel Buildings/Sheds (simple structure, unfurnished)	Pre-stressed Concrete Cylinder Pipe (PCCP)	Railings
Reduced Pressure Zone (RPZ) Valves	Roofing	Service Saddles
Sheet Piling	Sinks (not part of eyewash systems)	Solenoid Valves
Stairs	Static Mixers	Stationary Screens
Surface Drains	Tapping Sleeves	Telescoping Valves
Tipping Buckets	Trusses	Tubing
Valve Stem Extensions	Valve Stems (excluding handwheels and actuators)	

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Wall Panels	Wall Sleeves/Floor Sleeves	Welding Rods
Well Casing	Well Screens	Wire
Wire Cloth	Wire Rod	Wire Rope and Cables

Q2.6: Does EPA have a list of products that could be made "primarily" of iron and steel but would be classified as "manufactured products" under BABA?

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A2.6: Although this list is not comprehensive, the following products would be considered "manufactured products" under the BABA requirements, even if the item might be composed primarily of iron and steel by materials cost (Note: These items are not subject to the AIS requirements.):

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Actuator Superstructures/ Support Structures	Aeration Nozzles and Injectors	Aerators
Analytical Instrumentation	Analyzers (e.g., ozone, oxygen)	Automated Water Fill Stations
Blowers/Aeration Equipment	Boilers, Boiler Systems	Chemical Feed Systems (e.g., polymer, coagulant, treatment chemicals)
Chemical Injection Quills	Chemical Injectors	Clarifier Mechanisms/Arms
Compressors	Controls and Switches	Conveyors
Cranes	Desiccant Air Dryer Tanks	Dewatering Equipment
Dewatering Roll-offs	Disinfection Systems	Drives (e.g., variable frequency drives)
Electric/Pneumatic/Manual Accessories Used to Operate Valves (such as electric valve actuators)	Electrical Cabinetry and Housings (such as electrical boxes/enclosures)	Electrical Conduit
Electrical Junction Boxes	Electronic Door Locks	Elevator Systems (hydraulic, etc.,)
Emergency Life Systems (including eyewash stations, emergency safety showers, fire extinguishers, fire suppression systems including sprinklers /piping/valves, first aid, etc.)	Exhaust Fans	Fall Protection Anchor Points
Fiberglass Tank w/Appurtenances	Filters (and appurtenances, including underdrains, backwash systems)	Flocculators
Fluidized Bed Incinerators	Galvanized Anodes/Cathodic Protection	Gear Reducers
Generators	Geothermal Systems	Grinders
Heat Exchangers	HVAC (excluding ductwork)	HVAC Dampers (if appurtenances to aerators/blowers)
HVAC Louvers (mechanical)	Intake and Exhaust Grates (if appurtenances to aerators/blowers)	Instrumentation
Laboratory Equipment	Ladder Fall Prevention Systems	Ladder Safety Posts
Lighting Fixtures	Lightning and Grounding Rods	Mechanical or Actuated Louvers/Dampers
Membrane Bioreactor Systems	Membrane Filtration Systems	Metal Office Furniture (fixed)

Meters (including flow, wholesale, water, and service connection)	Motorized Doors (unit)	Motorized Mixers
Motorized Screens (such as traveling screens)	Motors	Pelton Wheels
Pipeline Flash Reactors (similar to injectors)	Plate Settlers	Precast Concrete without Iron/Steel Reinforcement

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Furnished Pre-fab Buildings (such as furnished with pumps, mechanics inside)	Presses (including belt presses)	Pressure Gauges
Pump Cans/Barrels and Strainers	Pumps	Mechanical Rakes
Safety Climb Cable	Sampling Stations (unless also act as hydrant)	Scrubbers
Sensors	Sequencing Batch Reactors (SBR)	Steel Shelving (fixed)
Slide and Sluice Gates	Spray Header Units	Steel Cabinets (fixed interior/furniture)
Supervisory Control and Data Acquisition (SCADA) Systems	Tracer Wire	Valve Manual Gears, Actuators, Handles
Voltage Transformer	Water Electrostatic Precipitators (WESP)	Water Heaters
Weir Gates		

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- Q2.7: Is asphalt paving a covered product under BABA?

    - A2.7: No. EPA interprets Section 70917(c) of the IIJA to exclude asphalt from BABA requirements. Asphalt paving is a type of concrete composed of an aggregate material mixed with a binder (bitumen). EPA considers asphalt concrete to be excluded by section 70917(c) due to its similarities with cement and cementitious materials.

SECTION 3: CO-FUNDING

- Q3.1: If projects are co-funded with funding mechanisms that don't require BABA, must the entire project comply with BABA?

    - A3.1: Yes. Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all the contracts and assistance agreements awarded are closely related in purpose, time, and place. This precludes the intentional splitting of projects into separate and smaller contracts or assistance agreements to avoid BABA's applicability on some portions of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreements would carry separate requirements.

- Q3.2: How will project requirements be determined for co-funded projects subject to potentially different general applicability/programmatic waiver conditions (such as different adjustment period waivers)?

    - A3.2: OMB Guidance M-22-11 addresses cases with project co-funding from separate programs. EPA would apply the guidance's "cognizant" program determination to projects that are co-funded with different general applicability/programmatic waivers. For instance, if a project were co-funded between WIFIA and SRF and the majority of the Federal funding for the project is from WIFIA, then WIFIA would be the "cognizant" program for application and determination of waivers. In that case, any conditions from an applicable WIFIA waiver would apply.

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SECTION 4: WAIVERS

- Q4.1: Who may apply for a waiver and how do you apply?

    - A4.1: Assistance recipients and their authorized representatives may apply for a project-specific waiver. EPA does not accept waiver requests from suppliers, distributors, or manufacturers unless the assistance recipient endorses and submits the request on its own behalf to the funding authority. In the case where multiple programs are providing federal funds to the project, the assistance recipient should submit the waiver request to the cognizant program, the one providing the greatest amount of federal funds for the project. For information on applying for cost waivers, see questions 4.4 and 4.5. For information on the SRF program roles and responsibilities, see question 7.6.

      Project-specific waiver requests should generally include: (1) a brief summary of the project, (2) a description and explanation of the need for the waiver for the product(s) in question, (3) a brief summary of the due diligence conducted in search of domestic alternatives (which could include correspondence between assistance recipient and supplier/distributors), (4) the quantity and materials of the product(s) in question, (5) all engineering specifications and project design considerations relevant to the product(s) in question, (6) the approximate unit cost of items (both foreign and domestic) in addition to an estimated cost of the materials and overall project, (7) the date any products will be needed on site in order to avoid significant project schedule disruptions, and (8) any other pertinent information relevant to EPA's consideration of the waiver (e.g., if relevant for SRF projects: whether the project is designated as an equivalency project, the date the plans and specifications were submitted to the state, the date of construction initiation, expected date of project completion, any special considerations such as local zoning and building ordinances, seismic requirements, or noise or odor control requirements).

      In the case of indirect federal assistance, such as the SRF programs, the state authority reviews and conveys the waiver request to EPA. States should submit waiver requests to the appropriate program waiver request inbox. For SRF projects, please use CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

- Q4.2: Can an assistance recipient request a waiver based on a specification written for a specific brand or model of product (that is, a specification that names a branded item or model)?

    - A4.2: In most cases, performance-based specifications are expected and required for the majority of infrastructure projects funded by EPA's financial assistance programs. In rare cases where "branded" or product-specific sourcing may be included in project specifications, it is suggested that the specifications include the item in question (that is, not simply a catalog page, but also materials of construction, sizing, quantities, and applicable engineering performance design characteristics for the project, etc.) in addition to the standard phrase "or equal." For the purposes of product alternative market research, EPA will evaluate the BABA requirements based on performance-based engineering specifications for the product(s) in question. If the project specifications do not include performance-based specifications, or at least an "or equal" designation, EPA will base its research on an "or equal" designation using best professional judgment to the extent practicable.

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- Q4.3: If a manufactured product is not readily available domestically, will EPA provide short-term "limited availability" product waivers?

    - A4.3: EPA will address the unavailability of domestic products through the waiver process, including potential national short-term waivers for specific products, if appropriate. To the extent practicable and with the intent to maximize domestic market and supply chain development, EPA intends to address issues of broad product unavailability with targeted, time-limited, and conditional waivers, as prescribed in OMB Guidance M-22-11. EPA will follow its robust and thorough product research processes (those put into place for the AIS requirements for the SRF and WIFIA programs and expanded for the new BABA requirements) to identify and determine those products for which proposed national/general applicability waivers may be appropriate.

- Q4.4: What information is needed when applying for a cost waiver under BABA?

    - A4.4: As part of the cost waiver request, the assistance recipient must demonstrate that implementation of the BABA requirements will increase the overall project cost more than 25 percent. Depending on the circumstances of the overall project cost increases, documentation to justify the cost waiver can vary but may include itemized cost estimates or bid tabulations comparing project costs with and without BABA implementation. Assistance recipients should begin assessing the potential cost impacts of the BABA requirements during the design phase of a project.

- Q4.5: Can administrative costs associated with tracking and verification of certifications be considered when determining if the cost of a project increases by 25 percent or more?

    - A4.5: Yes. Section 70914(b)(3) of the IIJA states that a waiver may be provided if the overall

cost of the project increases by more than 25 percent due to the "inclusion of iron, steel, manufactured products, or construction materials produced in the United States." EPA interprets this to mean that the "inclusion" of the BABA-covered products could encompass reasonable administrative costs associated with complying with the BABA requirements, such as staff, contractor, and technological resources to collect and track BABA compliance documentation.

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- Q4.6: How can assistance recipients and construction contractors address product delivery delays?
    - A4.6: Assistance recipients should reasonably plan for material procurement to account for known potential supply chain issues or extended lead times and shall notify the funding authority well in advance of the issues so that prompt attention can be given to explore options. Where extended lead times for compliant products are impacting project schedules and may significantly impact construction progress, timely communication with the funding agency is important. For products that are unavailable within a reasonable timeframe to meet the objectives and schedule of a project, EPA may consider a non-availability waiver with adequate justification. An assistance recipient would need to apply for the waiver and contact its funding authority (such as EPA and/or a state) to initiate the waiver process.

SECTION 5: DOCUMENTING COMPLIANCE

- Q5.1: Who will be responsible for BABA enforcement?
    - A5.1: Responsibility for BABA implementation applies at all levels, from manufacturers to suppliers and distributors, construction contractors, assistance recipients, and funding authorities.

      The manufacturers have responsibility to provide adequate and accurate documentation of the products manufactured. If suppliers and distributors are involved, they are responsible for passing along compliance documentation for products supplied to projects that are subject to the BABA requirements.

      The assistance recipient and their representatives are primarily responsible for ensuring the documentation collected for products used on the project is sufficient to document compliance with the BABA requirements.

      The funding authority is responsible for providing oversight and guidance as needed to ensure the proper implementation of the requirements. The Uniform Grants Guidance (UGG) (Title 2 of the Code of Federal Regulations (CFR) Part 200) applies to many Federal financial assistance agreements that will include BABA requirements. The general provisions of 2 CFR Part 200 determine the responsible party for the grant funding authority.

      For information on SRF program roles and responsibilities, see question 7.6.At all levels, where fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888- 546-8740

or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

- Q5.2: When will the BABA requirements be assessed for compliance? Do assistance recipients need to have waivers for potential non-domestic products before assistance agreements are in place, at the time products are procured or products are incorporated into the project (i.e., used)?
    - A5.2: Compliance is assessed where the domestic product is used (or installed) at the project site. Proper compliance documentation, whether it is a BABA certification letter or a waiver, should accompany a product prior to its "use", in accordance with Section 70914(a) of IIJA. This may occur prior to assistance agreements being in place but is not necessary. Additionally, communication of BABA requirements through appropriate Terms and Conditions in financial assistance agreements and in project solicitation and contract documents is key in ensuring all parties involved are informed of the requirements for the project before construction is underway.

- Q5.3: How can product compliance with the BABA requirements be demonstrated?
    - A5.3: Assistance recipients and their representatives should ensure that the products delivered to the construction site are accompanied by proper documentation that demonstrate compliance with the law and be made available to the funding authority upon request. The documentation may be received and maintained in hard copy, electronically, or could be embedded in construction management software. The use of a signed certification letter for the project is the most direct and effective form of compliance documentation for ensuring products used on site are BABA-compliant prior to their installation; however, other forms of documentation are also acceptable as long as collectively, the following can be demonstrated:

        (1) Documentation linked to the project. For example, this can be in the form of the project name, project location, contract number, or project number.
        (2) Documentation linked to the product used on the project. For example, description of product(s) (simple explanation sufficient to identify the product(s)), or an attached (or electronic link to) purchase order, invoice, or bill of lading.
        (3) Documentation includes statement attesting that the products supplied to the assistance recipient are compliant with BABA requirement. Reference to the Infrastructure Investment and Jobs Act ("IIJA") or the Bipartisan Infrastructure Law (BIL) are also acceptable. For iron and steel items under BABA, references to the American Iron and Steel (AIS) requirements are also acceptable and reciprocal with BABA for such items.
        (4) Documentation that manufacturing occurred in the United States, which could include, for example, the location(s) of manufacturing for each manufacturing step that is being certified. It is acceptable for manufactured products to note a single point of manufacturing, documenting that the final point of manufacturing is in the United States. Note that each BABA category may require different determinations for

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compliance.

(5) Signature of company representative (on company letterhead and signature can be electronic). The signatory of the certifying statement affirms their knowledge of the manufacturing processes for the referenced product(s) and attests that the product meets the BABA requirements.

In addition to compliance documentation, assistance recipients or their representatives should also conduct a visual inspection of the product when it arrives to the project site, especially for iron and steel products which are often stamped with the country of origin. (Note: A country of origin stamp alone is not sufficient verification of compliance with BABA and assistance receipts should not rely on it to ensure compliance.)

EPA may develop alternative procedures for demonstrating compliance. Additional project- or program-specific instructions may be developed on a case-by-case basis in order to meet individual circumstances.

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- Q5.4: Will EPA provide a form or template for tracking and documenting compliance?

- A5.4: EPA does not require a specified format for tracking or documenting compliance. Assistance recipients are free to develop any system (from simple to complex software) for tracking items used on the project and the accompanying compliance documentation (e.g., certification letters, applicable waivers, if it helps with implementation and compliance. Elements that may help with keeping track of compliance may include: product description, quantity required/used, product category (i.e., iron and steel, manufactured product, or construction material), status of obtaining certification letter, product cost, and whether the item might qualify as *de minimis*, or qualify under another applicable waiver.

- Q5.5: If a manufacturer claims to comply with the Buy American Act, does it also comply with BABA?

    - A5.5: No. With the exception of the AIS requirements – which EPA interprets to be equivalent to the "iron and steel" requirements under BABA – EPA does not have an interpretation about the comparability of other domestic preference requirements relative to BABA. Any products that are to be certified as compliant with BABA should include a specific reference to the BABA requirements and appropriate attestation from a responsible manufacturing company official. See Question 5.3 for EPA's recommendations for BABA certification letters.

- Q5.6: How will assistance recipients manage certification letters for hundreds, possibly thousands of products?

    A5.6: EPA recognizes that the new BABA requirements will cover most products used in typical water and wastewater infrastructure projects, and that the number of items which may require certification at large and/or complex projects may reach several hundred. EPA is concerned about the potential administrative burden that this would place on assistance recipients. EPA recommends that projects with a high number of potentially covered

products meet with their funding authority about potential compliance strategies to minimize burden and streamline compliance activity. Assistance recipients should prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the documentation is sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives may assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

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- Q5.7: Who is responsible for documenting the 55 percent content requirement for manufactured products under BABA? What if the final manufacturer cannot trace or verify domestic origin for all components?

    - A5.7: The manufacturer who signs a certification letter is responsible for documenting compliance with any of the three categories of products (iron and steel, manufactured products, or construction materials). For manufactured products, BABA requires that greater than 55 percent of the total cost of all components of the manufactured product be from domestic sources. EPA recommends that the certification letter for manufactured products document whether the item passes the content test in the final product along with a statement attesting to compliance with the BABA requirements for manufactured products.

- Q5.8: How do final product fabricators document compliance when the final step of manufacturing may be simply assembling components?

    - A5.8: It is acceptable, in many cases, especially for highly complex manufactured products that utilize many sub-components, for the final point of assembly to certify without using a "step certification" process. Multiple certifications (i.e., step certifications) or a singular certification can be used for a product, as long as the certifying official is willing to attest to the product's compliance with BABA requirements at all stages of manufacturing.

- Q5.9: Will Material Test Reports be acceptable in lieu of a BABA certification for iron and steel?

    - A5.9: Material Test Reports (MTRs, commonly referred to as "Mill Certifications" or "Mill Certs") provide the chemical composition of steel and iron from a mill or foundry. If an MTR accompanies the delivery of steel or iron to a project site with an invoice or bill of lading, EPA will consider it sufficient to demonstrate compliance (equivalent to a certification letter) as long as the MTR includes a manufacturer representative's signature in addition to the location (city and state) of the mill/foundry. It is common for MTRs to be the first letter in a "step certification" if the product is further fabricated or painted, etc., by another manufacturer.

- Q5.10: Can a manufacturer use a fillable certification letter for products?

- A5.10: EPA recommends that certifications be signed by representatives of the manufacturing entity. EPA does not oppose manufacturers using forms to internally develop letters within their company, thereby providing signed, non-manipulable certification letters to suppliers, distributors, and/or assistance recipients. A fillable form that can be changed by someone outside of the manufacturer after signature does not demonstrate compliance and may create compliance concerns for the manufacturer or assistance recipient.

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- Q5.11: Are product certifications from suppliers and distributors allowed?
    - A5.11: EPA recommends that representatives of product manufacturers certify compliance and discourages suppliers and distributors from creating certification letters. EPA does not rule out the possibility that a third-party certification process, such as a certification by a distributor, may be viable. However, EPA is currently not aware of a system or proposed system that meets the EPA's recommendations for documentation of product certification.

- Q5.12: How long should assistance recipients keep compliance documentation?
    - A5.12: Assistance recipients should apply recordkeeping requirements for the project according to the procedures dictated by the funding authority. For most EPA grant programs, this is prescribed in the UGG at 2 CFR 200.334-200.338; e.g., the SRF programs require a minimum of three years. Other funding programs may require longer documentation retention periods.

SECTION 6: PROGRAMS WITH AMERICAN IRON AND STEEL REQUIREMENTS

- Q6.1: Does BABA supersede the American Iron and Steel (AIS) Requirements?
    - A6.1: The BABA requirements for items considered "iron and steel" are equivalent to those for covered iron and steel products under the AIS requirements in the Clean Water Act and the Safe Drinking Water Act. These requirements apply to the CWSRF, DWSRF, WIFIA, and Water infrastructure Community Grants. BABA includes a "Savings Provision" (Section 70917(b)) that states that BABA does not affect existing domestic content procurement preferences for infrastructure projects funded by Federal financial assistance programs that meet the requirements of section 70914. EPA views the AIS requirements as meeting the "iron and steel" product requirements of BABA Section 70914, as they both include the key requirement that items made of iron and steel be wholly manufactured in the United States from the point of melting and/or pouring the iron or steel components through final manufacturing step. Because of the "Savings Provision" of Section 70917, the AIS requirements satisfy the "iron and steel" requirements of BABA. For the programs that have AIS requirements, EPA intends to implement BABA requirements the same way for iron and steel items as it has done for AIS products.

- Q6.2: For iron and steel products, does a manufacturer need to demonstrate compliance from initial melting through the finished product?

    - A6.2: For iron and steel products, the BABA requirements are the same as the existing AIS requirements, in that all of the iron and steel in a covered product (that is, the product is comprised of more than 50 percent iron and steel by material cost) must be melted and poured in the United States and all subsequent manufacturing processes (such as grinding, rolling, bending, reheating, and casting) must occur in the United States.

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Q6.3: Will EPA apply the same manufacturing standards for BABA iron and steel products as for the American Iron and Steel (AIS) requirements?

    - A6.3: Yes. For AIS, EPA did not require raw materials used in the production of steel or iron to be domestically sourced. For BABA, EPA interprets the requirements to be the same. Hence, like AIS, raw materials in the production of iron and steel subject to BABA requirements would not need to be domestically sourced. The key step for both AIS and BABA domestic iron and/or steel production is the melting/pouring (that is, the location of the furnace), which must be in the United States.

- Q6.4: Will the certification process be similar to the process established for the American Iron and Steel requirements?

    - A6.4: EPA expects the certification process for the BABA requirements to be very similar to that established for the AIS requirements. For iron and steel products, the process should remain the same for AIS and BABA. EPA recommends for manufactured products and for construction materials that certification letters include direct reference to the product/material content requirements under BABA, in addition to an affirmative statement verifying that the product meets the BABA requirements.

- Q6.5: Will duplicate certification letters be required for AIS and BABA for iron/steel products?

    - A6.5: No. Compliance with BABA requirements will be sufficient to demonstrate compliance with AIS requirements for iron and steel products. If a project is subject to BABA, the only demonstration of compliance necessary is with the BABA requirements, of which the iron and steel requirements are equivalent to those of the AIS statutory requirements: the iron or steel in a product made primarily or predominantly of iron and steel (comprising more than 50 percent iron and steel by material cost) must be melted and/or poured in the United States and all subsequent manufacturing processes must occur in the United States.

SECTION 7: PROGRAM-SPECIFIC ISSUES

- Q7.1.: How do the BABA requirements apply to Community Grants?

    - A7.1: The Community Project Funding/Congressionally Directed Spending grants for the construction of drinking water, wastewater, and stormwater infrastructure and for water

quality protection are subject to the requirements specified in the explanatory statement accompanying the Consolidated Appropriations Act (Explanatory Statement for Division G of P.L. 117-13, the Consolidated Appropriations Act of 2022). The explanatory statement asserts: "Applicable Federal requirements that would apply to a Clean Water State Revolving Fund or Drinking Water State Revolving Fund project grant recipient shall apply to a grantee receiving a CPF grant under this section." Therefore, the federally funded Community Project Funding/Congressionally Directed Spending grants are subject to the same requirements that apply to CWSRF or DWSRF projects, including BABA and AIS requirements. See also A1.2.

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- Q7.2: Should SRF projects covered by the BABA SRF Projects Design Planning Adjustment Period Waiver follow the same procedures for demonstrating compliance as outlined for American Iron and Steel requirements?

    - A7.2: Yes. The SRF Design Planning Adjustment Period waiver does not waive the iron and steel requirements under BABA. The SRF programs have existing domestic preference requirements for SRF projects under CWA Section 608 and SDWA Section 1452(a)(4) (AIS requirements) to use iron and steel products that are produced in the United States. Sections 70917(a) and (b) of BIL explain the application of BABA to existing domestic preference requirements. Specifically, the savings provision in Section 70917 (b) states that existing domestic preference requirements that meet BABA requirements are not affected by BABA. The statutory AIS requirements were existing at the time BABA became law and satisfy the BABA iron and steel requirements. Therefore, the statutory AIS requirements that have previously applied to SRF-funded projects will continue to do so, and compliance with AIS requirements will satisfy the BABA iron and steel requirements. Demonstration of compliance for iron and steel products will follow the AIS implementation policies for projects subject to the waiver.

- Q7.3: For SRF programs, is BABA considered a federal cross-cutting authority? (i.e., do "equivalency" rules apply?)

    - A7.3: Yes, BABA is considered a federal cross-cutting requirement that applies to SRF assistance equivalent to the federal capitalization grant (i.e., "equivalency" projects). EPA's SRF regulations at 40 CFR 35.3145 and 35.3575 require states and recipients of SRF funds equivalent to the amount of the federal capitalization grant to comply with federal cross-cutting requirements. Section 70914 of the IIJA, which states when a Buy America preference applies, explains that "none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, BABA only applies to projects funded in an amount equivalent to the federal capitalization grant and not to those projects receiving funds in excess of the capitalization grant (i.e., "non-equivalency" projects). (Note: The AIS requirements continue to apply for all SRF projects, including non-equivalency projects, and all WIFIA and Community Grant projects, because equivalency does not apply.)

- Q7.4: Do the BABA requirements apply to Drinking Water State Revolving Fund set-asides?

    - A7.4: Due to requirements related to the deposit of funds in the DWSRF program, almost all of the funds used to conduct set-aside activities are Federal dollars. Therefore, Federal cross- cutting requirements must be applied to all set-aside activities. However, in the case of most set-aside activities, the cross-cutting requirements will not be implicated because of the nature of the activities conducted under the set-asides. Because the BABA requirements only apply to infrastructure, and infrastructure typically is not an eligible set-aside expenditure (with one potential exception being loans for incentive-based source water protection measures under the Local Assistance and Other State Programs Set-Aside), the BABA requirements will not apply to most set-aside activities.

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- Q7.5: What if an SRF project is refinanced using Federal financial assistance on or after May 14, 2022?

    - A7.5: If an SRF project began construction, financed from another funding source, prior to May 14, 2022, but is refinanced through an assistance agreement executed on or after that date, BABA requirements will apply to all construction that occurs on or after May 14, 2022, through completion of construction, unless a waiver applies. There is no retroactive application of the BABA requirements where a refinancing occurs for an SRF project that has completed construction prior to May 14, 2022. (Note: If SRF funding is used for the refinancing, the AIS requirements may still apply depending on the timing of construction.)

- Q7.6: What are the roles and responsibilities for SRF programs for BABA implementation?

    - A7.6: Implementation of the BABA requirements for the State Revolving Fund programs will continue the roles and responsibilities from the successful AIS implementation process.

      As with AIS, it is both the assistance recipient's and the state's responsibility to ensure compliance with the BABA requirements. The state is the recipient of a federal capitalization grant and must comply with all grant conditions, including a condition requiring adherence to BABA requirements.

      Consequently, states are strongly advised to conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance. In EPA's experience, most states conduct periodic site visits and arrange timely meetings with funded projects. Observed best practices typically include a meeting early in the process (sometimes before bid and usually prior to commencing construction) and at least one project site visit during the construction process. Assistance recipients must maintain documentation of compliance with the BABA requirements, as explained in question 5.3. The documents must be kept by the assistance recipient and should be reviewed by the state during project reviews.

      The state's role in the waiver process is to review any waiver requests submitted to the state to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with

the assistance recipient to help obtain complete information. Question 4.1 explains the information needed by EPA to expediently review a waiver request.

In order to implement the BABA requirements, EPA has developed an approach for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow states, on behalf of the assistance recipients, to apply for waivers of the BABA requirements directly to EPA Headquarters. Only waiver requests received and/or endorsed from states will be considered. Pursuant to BABA, EPA has the responsibility to make findings as to the issuance of waivers to the BABA requirements.

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Step-by-step SRF Waiver Process

The waiver process begins with the assistance recipient. To fulfill the BABA requirements, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American-made iron and steel, manufactured goods, and construction materials. It is essential that the assistance recipient include the BABA terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 2 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three statutory conditions is demonstrated to EPA and approved.

To apply for a project-specific waiver, the assistance recipient should email the request in the form of a Word document (.doc) or editable PDF (.pdf) to the funding program. It is strongly recommended that each state identify a person or persons for BABA communications. The state designee(s) will review the application for the waiver and determine whether the necessary information has been included (Note: More information may be provided in the future regarding what information is required to be included in waiver requests). Once the waiver application is complete, the designee (State) will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the BABA requirements and ensuring sufficient information was provided, EPA will publish the request on its website for 15 days and receive public comment. EPA will then determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the state designee whether a waiver request has been approved or not approved as soon as such a decision has been made. Granting such a waiver is a four-step process:

1. Research – After receiving an application for a waiver, EPA will perform market research to determine whether the iron, steel, manufactured goods, or construction materials are available domestically.

2. Posting – After research, if no domestic product has been identified, EPA is required to

publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: https://www.epa.gov/cwsrf/build-america-buy-america-baba-waivers-open-public-comment.

3. Evaluation – After receiving an application for waiver of the BABA requirements, EPA will determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver to determine whether or not to grant the waiver.

4. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program and post the signed waiver on the Agency's website. The assistance recipient should keep a copy of the signed waiver in its project files.

(Note: Additional steps may be required in the future regarding the waiver process depending on additional guidance from OBM) APPENDIX 1

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AMERICAN IRON AND STEEL ACKNOWLEDGEMENT

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the State of Ohio (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

_____ _____

Signature Date

_____

Name and Title of Authorized Signatory, Please Print or Type

_____

Bidder's Firm

☐ Check here if the WPCLF or WSRLA applicant will be requesting an individual waiver for non-American made iron and steel products. Please note that the waiver box does not need to be marked for nationwide waivers.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which

case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components

do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters,

heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to

determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

American Iron & Steel (AIS) Requirement of the Consolidated Appropriations Act of 2014
(Public Law 113-76)

Q&A Part 2

PRODUCT QUESTIONS

1. **Q: Do all fasteners qualify for de minimis exemption?**

   A: No. There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads).

   EPA also clarifies that minor components of two listed products – valves and hydrants -- may not need to meet the AIS requirements if the minor components compromise a very small quantity of minor, low-cost fasteners that are of unknown origin.

2. **Q: Does PCCP pipe have to be domestically produced?**

   A: Yes. Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement.

3. **Q: If the iron or steel is made from recycled metals will the vendor/supplier have to provide a certification document certifying that the recycled metals are domestically produced?**

   A: No. Recycled source materials used in the production of iron and steel products do not have to come from the U.S. Iron or steel scrap, for instance, are considered raw materials that may come from anywhere. While certification is not required for the raw material, EPA does recommend that additional final processing of iron and steel be certified to have occurred in the U.S.

4. **Q: Do tanks used for filtration systems, if delivered to the construction site separately and then filled with filtration media onsite, have to be domestically produced?**

A: No. Tanks that are specifically designed to be filters, or as parts of a filtration system, do not have to be domestically produced because these parts are no longer simply tanks, even if the filter media has not been installed and will be installed at the project site, as is customary to do for shipping purposes. These parts have only one purpose which is to be housing for filters and cannot be used in another fashion.

5. **Q: Can a recipient use non-domestic flanged pipe?**

   A: No. While the Consolidated Appropriations Act of 2014 does not specifically mention flanged pipe, since it does mention both pipe and flanges, both products would need to be domestically produced. Therefore, flanged pipe would also need to be domestically produced.

6. **Q: Can a recipient use non-domestic couplings, expansion joints, and other similar pipe connectors?**

   A: No. These products would be considered specialty fittings, due to their additional functionality, but still categorized under the larger "fitting" categorization. Fittings are defined as a material that joins pipes together or connects to a pipe (AWWA, The Drinking Water Dictionary, 2000). Therefore, these products must comply with the AIS requirements and be produced domestically.

7. **Q: Can a recipient use non-domestic service saddles and tapping sleeves?**

   A: No. These products are necessary for pipe repair, to tap a water main, or to install a service or house connection. Therefore, they are included under the larger "pipe restraint" category which is a specifically identified product subject to the domestic preference in the Consolidated Appropriations Act of 2014.

8. **Q: The AIS guidance does not appear to cover reused items (i.e., existing pipe fittings, used storage tanks, reusing existing valves). How should reused items be addressed?**

   A: The AIS guidance does not address reuse of items. Reuse of items that would otherwise be covered by AIS is acceptable provided that the item(s) was originally purchased prior to January 17, 2014, the reused item(s) is not substantially altered from original form/function, and any restoration work that may be required does not include the replacement or addition of foreign iron or steel replacement parts. EPA recommends keeping a log of these reused items by including them on the assistance recipient's de minimis list, and stating therein that these items are reused products. The donation of new items (such as a manufacturer waiving cost for certain delivered items because of concerns regarding the origin of a new product) is not, however, considered reuse.

9. **Q: What does "time needed" mean in the AIS guidance, in reference to the definition of "Reasonably Available Quantity"?**

A: For considering whether a product would meet reasonably available quantity, "time needed" is based on the construction schedule. If the item is delayed and there is substantial impact on the overall construction schedule, this would not be according to the "time needed."

10. **Q: If a product is not specifically included on the list of AIS covered products, must it comply with AIS?**

    A: Possibly. The AIS requirements include a list of specifically covered products, one of which is construction materials, a broad category of potential products. For construction materials, EPA's AIS guidance includes a set of example items that it considers construction materials composed primarily of iron and steel and covered by the Act. This example list in the guidance is not an all-inclusive list of potential construction materials. However, the guidance also includes a list of items that EPA specifically does not consider construction materials, generally those of electrical or complex-mechanical nature. If a product is similar to the ones in the non-construction material list (and it is also not specifically listed by the Act), it is not a construction material. For all other items specifically included in the Act, coverage is generally self-evident.

11. **Q: If a listed iron and steel product is used as a part for an assembled product that is non-domestic, do the AIS requirements apply?**

    A: AIS requirements only apply to the final product as delivered to the work site and incorporated into the project. Other assemblies, such as a pumping assembly or a reverse osmosis package plant, are distinct products not listed and do not need to be made in the U.S. or composed of all U.S. parts. Therefore, for the case of a non-covered product used in a larger non-domestic assembly, the components, even if specifically listed in the Consolidated Appropriations Act, do not have to be domestically produced.

12. **Q: Is cast iron excluded from the AIS requirements?**

    A: No. Cast iron products that fall under the definition of iron and steel products must comply with the AIS requirements.

13. **Q: The guidance states that "construction materials" do not include mechanical equipment, but then identifies ductwork as a construction material. Please clarify.**

    A: Ductwork is not mechanical equipment, therefore it is considered a "construction material" and must comply with the AIS requirements.

14. **Q: Do "meters" mentioned in EPA's guidance as non-construction materials include both flow meters and water meters?**

    A: Yes. "Meters" includes any type of meter, including: flow meters, wholesale meters, and water meters/service connections.

15. **Q: Must coiled steel be domestic?**

    A: Yes. Coiled steel is an intermediate product used in the production of steel pipe and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

16. **Q: Are pig iron, direct reduced iron (DRI), and ingot considered raw materials?**

    A: No. These are considered intermediate products used in the production of iron or steel and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

17. **Q: Can assistance recipients rely on a marking that reads, "Made in the USA," as evidence that all processes took place in the U.S.?**

    A: No. This designation is not consistent with our requirements that all manufacturing processes of iron and steel products must take place in the U.S.

18. **Q: When determining what constitutes a product made "primarily" of iron or steel, who makes this determination?**

    A: The manufacturer will show if its product qualifies as primarily made of iron or steel. The recipient should expect the manufacturer to provide documentation/ certification that its product is AIS compliant.

19. **Q: Do aerators need to be produced domestically in order to comply with AIS?**

    A: No. Aerators, similar to pumps, are mechanical equipment that do not need to meet the AIS requirements. "Blowers/aeration equipment, compressors" are listed in EPA's guidance as non-construction materials.

20. **Q: Are Sluice and Slide Gates considered valves?**

    A: No. Valves are products that are generally encased / enclosed with a body, bonnet, and stem. Examples include enclosed butterfly, ball, globe, piston, check, wedge, and gate valves. Furthermore, "gates" (meaning sluice, slide or weir gates) are listed in EPA's guidance as non-construction materials.

AIS PROCESS QUESTIONS

21. **Q: Will notices of waiver applications be published in the federal register?**

    A: No. Applications for waivers will be published on EPA's website (http://water.epa.gov/grants_funding/aisrequirement.cfm**).** EPA will provide 15 days for open public comment, as noted on the website.

22. **Q: Will states be collecting the step certification paper trail, as presented in the AIS guidance?**

    A. No. Assistance recipients must maintain documentation of compliance with AIS. EPA recommends use of the step certification process. This process is a best practice and traces all manufacturing of iron and steel products to the U.S. If the process is used, the state does not have to collect the documentation. The documents must be kept by the assistance recipient and reviewed by the state during project reviews.

23. **Q: Why is it considered a best practice for states to conduct site visits, when it is the assistance recipient's responsibility to meet the AIS requirements?**

    A: It is both the assistance recipient's and the state's responsibility to ensure compliance with the AIS requirements. The state is the recipient of a federal grant and must comply with all grant conditions, including a condition requiring that the AIS requirements be adhered to. Therefore, it is recommended that states conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance.

24. **Q: Please further define the state's role in the waiver process.**

    A: The state's role in the waiver process is to review any waiver requests submitted to the state in order to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with the assistance recipient to help obtain complete information.

25. **Q: How much time does EPA have to evaluate the waiver during the evaluation step?**

    A: At a minimum, EPA is required to provide 15 days for open public comment. There is no specific deadline or time limit for EPA to review waiver requests. Each waiver request will come with its own specific details and circumstances and may require a different amount of time for review and analysis. For example, public interest waivers in general may take longer to review than availability waivers which are typically more straightforward. However, EPA understands that construction may be delayed while waiting for a waiver and will make every effort to review and issue decisions on waiver requests in a timely manner.

<u>PROJECT QUESTIONS</u>

26. **Q: What if a project is funded by another funding entity (i.e., United States Department of Agriculture – Rural Development) where AIS is not required and begins construction after January 17, 2014 but then applies to the SRF to refinance the project? Are they ineligible?**

A: The project is not ineligible. AIS requirements will apply to any construction that occurs after the assistance agreement is signed, through the end of construction. If construction is complete, there is no retroactive application of the AIS requirements.

27. **Q: If the assistance recipient can demonstrate through market research that the AIS requirement will exceed the 25 percent cost threshold, is the entire project exempt from the AIS requirement?**

    A: If the waiver application shows that the inclusion of American iron and steel products causes the entire cost of the project to increase by more the 25 percent, a waiver may be granted for the entirety of the project.

28. **Q: Can the recipient use non-SRF funds to pay for the non-compliant item.**

    A: No. It is not an acceptable to use non-SRF funds to pay for a non-compliant item. The Consolidated Appropriations Act of 2014 requires that all iron and steel products, no matter the source of funding, must be made in the U.S. if SRF funds are used in the project.

29. **Q: What constitutes "satisfactory quality" as defined in the AIS guidance, in reference to the availability waiver process.**

    A: "Satisfactory quality" means the product meets the project design specifications. A waiver may be granted if a recipient determines that the project plans and design would be compromised because there are no American made products available that meet the project design specifications.

30. **Q: The guidance states that the AIS requirement applies to any project "funded in whole or in part" by an SRF. Where is this in the Act?**

    A: The Act states that, "None of the funds made available by a … [State SRF program] … shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States." This sentence clearly states that no SRF program may use its funds for a project unless all of the iron and steel products used in the project are made in the U.S. This is true even if only $1 of SRF funding is used in the project.

31. **Q: There is always an expectation on the part of an assistance recipient that the construction phase of a planning and/or design only loan will be funded through the SRF. If the original planning and/or design only loan was executed prior to a January 17, 2014, does this mean the entire project will be exempt from the AIS requirement?**

    A: If the original loan includes construction, and was executed prior to January 17, 2014, then the AIS provision does not apply to the project. If the original loan was only for planning and/or design, then a written commitment or documented "expectation" is needed to show exemption from the

requirements. Appearance on a priority list in an Intended Use Plan along with written reasonable assurance from the state that the recipient will receive SRF funding for project construction could provide sufficient evidence of "expectation of funding".

32. **Q: What if there has been a change order or redesign requiring new plans and specifications to be approved and they were approved after January 17, 2014: does the project now have to comply with AIS?**

    A: In most cases, no. Change orders are typically small enough changes that the original plan and specification date will still hold true. For example, if a pipe alignment has to be changed for a block or two due to unforeseen conditions, but new plans and specifications had to be submitted for this section of the project, then that could be considered a minor change. However, if there has been a major redesign, perhaps the whole project had to be redesigned starting from scratch, then the new plans and specification approval date would apply.

33. **Q: What if the bids on a project with plans and specifications approved before January 17, 2014 but the loan is signed after January 17, 2014 come in low, and there is significant funding remaining in the loan agreement, so the community designs a second project with the remaining funds: does that project have to comply with the AIS requirements?**

    A: If the second project is closely related in purpose, place and time to the first project, then the second project would be exempt from the AIS requirements. It is the assistance recipient's responsibility (with state oversight) to show that a project is closely related, or not, in purpose, place and time.

34. **Q: What if the assistance agreement was signed after January 17, 2014, state approval of plans for the first phase of the project was in place prior to January 17, 2014, but state approval of the plans for the second phase of the project was received after January 17, 2014?**

    A: In such a case, the AIS provision would not apply to the first phase of the project. If the second phase of the project is considered the same project as the first phase, due to its close relation in purpose, place and time, the entire project may be exempt. It is the assistance recipient's responsibility (with state oversight) to show that phases of a project is closely related, or not, in purpose, place and time.

35. **Q: Do products purchased through procurement-only contracts have to be comply with AIS?**

    A: Yes. For projects funded by SRF, the products procured under any form of contract must comply with AIS. A procurement-only contract generally involves the bulk purchase of common items (such as pipe, concrete, and/or pumps) of independent timing from a set of planned projects. If products which are purchased through a procurement-only contract are being installed under another contract, the procurement-only contract would probably not be considered a separate project in purpose, place and time; and therefore, would have to comply with the AIS requirements.

March 2015

American Iron & Steel Requirement for the Clean Water and Drinking Water State Revolving Funds

Q&A Part 3

*For CWSRF and DWSRF: On **January 17, 2014**, Public Law 113-76, the "Consolidated Appropriations Act, 2014," was enacted and included an American Iron and Steel requirement for the Clean Water and Drinking Water State Revolving Fund programs through the end of fiscal year 2014. Since then, the AIS requirement has continued for both programs, but through different statutes, with a few changes as described in the questions and answers provided below.*

*For CWSRF: On **June 10, 2014**, the Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS products in CWSRF assistance agreements. Section 608 of the CWA now contains requirements for AIS that repeat those of the Consolidated Appropriations Act, 2014. All CWSRF assistance agreements must comply with Section 608 of the CWA for implementation of the permanent AIS requirement.*

*For DWSRF: On **December 16, 2014**, the President signed Public Law 113- 235, the "Consolidated and Further Continuing Appropriations Act, 2015," which provides fiscal year 2015 full-year appropriations through September 30, 2015. This law continues the requirement for the use of AIS products in DWSRF assistance agreements through September 30, 2015.*

CWSRF PROGRAM

1. **Q: The Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS for CWSRF funded assistance agreements. Does the CWA include an exemption for plans and specifications approved prior to the enactment of the legislation similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?**

   A: Yes. The WRRDA amendment to the CWA, which included AIS requirements, included a similar exemption as the CAA 2014. For any CWSRF assistance agreement signed on or after October 1, 2014, if the plans and specifications were approved prior to June 10, 2014 (the enactment of WRRDA), then the project is exempt from AIS requirements. For assistance agreements signed prior to October 1, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014, AIS guidance document).

   If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of this exemption in Section 608 (f).

   The following table summarizes AIS exemptions based on the plans and specifications approval date for CWSRF funded projects.

CWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
On or after 10/1/2014	6/10/2014	• Clean Water Act Section 608

** To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014*

2. **Q: Does the AIS requirement apply to refinanced CWSRF projects?**

   A: Yes, in some cases. If a project began construction, financed from a non-CWSRF source prior to June 10, 2014, but is refinanced through a CWSRF assistance agreement executed on or after October 1, 2014, AIS requirements will apply to all construction that occurs on or after June 10, 2014, through completion of construction, unless engineering plans and specifications were approved by the responsible state agency prior to June 10, 2014. For CWSRF projects funded on or after October 1, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to June 10, 2014.

DWSRF PROGRAM

3. **Q: The Consolidated and Further Continuing Appropriations Act 2015 continues the AIS requirements for DWSRF funded assistance agreements. Does the Act include an exemption for plans and specifications approved prior to the enactment of the legislation, similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?**

   A: Yes. The Consolidated and Further Continuing Appropriations Act 2015 includes a similar exemption as the CAA 2014. For any assistance agreement signed on or after December 16, 2014 (the enactment of the Act), if the plans and specifications were approved prior to December 16, 2014, then the project is exempt from the AIS requirements. For assistance agreements signed prior to December 16, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014 AIS guidance document).

   If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of the exemption in Section 424(f).

4. **Q: Do DWSRF assistance agreements signed during the time period between September 30, 2014, and December 16, 2014, still have to comply with the AIS requirements?**

A: Yes. The Continuing Appropriations Resolution 2015 was signed on September 19, 2014, which extended funding for the DWSRF with the same conditions that were made applicable by the language in the Fiscal Year 2014 appropriations, including the requirement for the use of American Iron and Steel products in projects receiving financial assistance from the DWSRF. Therefore, all assistance agreements starting October 1, 2014, through the enactment of the Consolidated and Further Continuing Appropriations Act 2015 (signed December 16, 2014), must include the AIS requirements. However, if the plans and specifications for any of these projects were approved prior to April 15, 2014 (the date the national waiver was signed), then the project is exempt from the AIS requirements.

The following table summarizes AIS exemptions based on the plans and specifications approval date for DWSRF funded projects.

DWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
10/1/2014 through 12/15/2014	4/15/2014	• Continuing Appropriations Resolution 2015 (continued CAA 2014 requirements)** • National waiver signed 4/15/2014*
12/16/2014 through 9/30/2015	12/16/2014	• Consolidated and Further Continuing Appropriations Act 2015

** To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014*

*** Following the first continuing resolution, there were two additional CRs to fill the gap between 12/11/2014 and 12/16/2014*

5. **Q: Does the AIS requirement apply to refinanced DWSRF projects?**

A: Yes, in some cases. If a project began construction, financed from a non-DWSRF source prior to December 16, 2014, but is refinanced through a DWSRF assistance agreement executed on or after December 16, 2014, AIS requirements will apply to all construction that occurs on or after December 16, 2014, through completion of construction, unless engineering plans and

specifications were approved by the responsible state agency prior to December 16, 2014. For DWSRF projects funded on or after December 16, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to December 16, 2014.

BOTH CWSRF AND DWSRF PROGRAMS

6. **Q: If a coating is applied to the external surface of a domestic iron or steel component, and the application takes place outside of the United States, would the product be compliant under the AIS requirements?**

   A: Yes. The product would still be considered a compliant product under AIS requirements. Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the United States.

   The exemption above only applies to coatings on the *external surface* of iron and steel components. It does not apply to coatings or linings on internal surfaces of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(**1**) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed **1** percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency...finds that- (1) applying subsection (a) would be inconsistent with the public interest" 436(b)**(1)**.

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, comer bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?

- What percentage of materials costs were consumables or incidental costs?

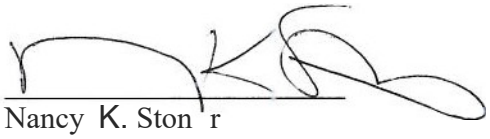
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Issued on: A?R t5 2014

Approved by: 

Nancy K. Ston r
Acting Assistan t Administrator

Ohio Water Pollution Control Loan Fund
Use of American Iron and Steel - De Minimis Final Utilization and Certification Form

The Consolidated Appropriations Act of 2014 (P.L. 113-76) Section 436 requires the use of American & Steel in SRF-funded projects. Under the authority of Section 436(b)(1), the EPA has issued a public interest waiver for De Minimis incidental components. The assistance recipient wishing to use this waiver should consult with their contractor(s) to maintain an itemized list of components covered under De Minimis. At the conclusion of the project, this form must be completed and retained in the assistance recipient's project files and a copy provided to DEFA. Please print clearly or type.

Project Name:_____ Loan Agrmt #: _____

NOTE: The De Minimis waiver is only applicable to the cost of materials for the entire project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials". The cost of a material must include delivery to the site and any applicable tax. Must have sufficient documentation to support all costs included in this calculation.

Funds used for de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

Total Cost of Materials: | 5% Limit: | 1% limit:

Manufacturer & Component Description	Part/Model #	Quantity (if applicable)	Cost per Unit (if applicable)	Component's Total Cost	How is Cost Documented?*

Use additional sheets as necessary

Total De Minimis Cost of Components:

If approaching the 5% or 1% limits, contact DEFA immediately

* Documentation must demonstrate confirmation of the components' actual costs (invoice, etc.).

Completed by:

Name: _____ Title: _____

Signature: _____ Date: _____

Violating Facilities Clause

(Required Contract Provision)

Language prohibiting this use of equipment or services from anyone on the EPA List of Violating Facilities must be included in the contract documents.

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Violating Facilities:

The Contractor agrees to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Requirement For Utilization Of Small Businesses In Rural Areas (SBRA)

(Required Contract Provision)

The following policy should be added to the "Instructions to Bidders" section and referenced in the Table of Contents for the contract documents:

> This procurement is subject to the EPA policy of encouraging the participation of small businesses in rural areas. It is EPA policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practicable. The objective is to assure that such small business entities are afforded the maximum practicable opportunity to participate as subcontractors, suppliers and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

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If possible, also add the following language to the "Advertisement for Bids":

> This procurement is subject to the EPA policy of encouraging the participation of small business in rural areas (SBRAs).

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Insurance Provisions
(Required Contract Provision)

Section 3.5 of the WPCLF/WSRLA Loan Agreement contains specific requirements regarding insurance for all contractors and all subcontractors for the life of the contract. These insurance requirements must be reflected in the contract documents. Adjust the following language as needed to meet the specifics of the construction project and local requirements while still meeting the provisions of the Loan Agreement.

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The Contractor shall, at his expense, furnish and maintain insurance in the form and amounts specified in subparagraphs 1 through 7 inclusive, of this section. Policies shall be with acceptable insurance companies authorized to do business in the State of Ohio.

The Contractor shall not commence Work nor shall he permit any of his Sub-contractors to commence Work until the insurance policies specified hereinafter, if otherwise required, have been submitted to, and approved by the Owner. Such insurance policies shall be kept in force until the Contractor receives final payment.

Insurance shall be endorsed so that it cannot be changed or canceled in less than ten (10) days after receipt by the Contractor and the Owner of written notice of such proposed action from the Insurer.

The insurance specified in Subparagraphs 1, 2, 3 and 4 shall be written under the comprehensive general form of liability insurance contracts.

The Contractor shall furnish three (3) certificates or, whenever specifically requested by the Owner, three (3) certified copies of the insurance policies themselves and a receipt evidencing full payment of the premiums.

In addition to the insurance described hereinafter, the Contractor shall secure and maintain such other insurance as may be designated elsewhere in the Contract document.

If the Contractor is required to repair or perform Work after the completion of the Work involved under this Contract or obtain new policies in accordance with the requirements in this section.

1. *Builders Risk*: In addition to such fire and other physical damage insurance as the Contractor elects to carry for his own protection, he shall also secure and maintain in the name of the Owner, the government agency sponsoring the Project, Subcontractors, the Consulting Engineer and any other parties having an interest in the Project, as named insured as their interest may appear; a builders' risk policy for fire, extended coverage, vandalism and malicious mischief in the amount of one hundred (100) percent of the value of the complete parts of the Project and Materials in storage, except that such coverage shall not be required in connection with sewer, water main or paving construction. Pump or lift station construction shall not be considered sewer or water main construction for purposes of this paragraph.

2. *Workers Compensation*: The Contractor shall provide Workers Compensation Insurance for all employees engaged in Work who may come within the protection of the workers compensation law, and, where applicable, employer's General Liability Insurances for employees not so protected and shall require all Subcontractors to provide corresponding insurance.

The Contractor shall indemnify the Owner and the Consulting Engineer against any and all liabilities, cost and expenses due to accidents or other occurrences covered by the workers compensation law.

3. *Contractor's Motor Vehicle Bodily Injury and Property Damage Liability Insurance*: Insurance to cover liability arising from the use and operation of motor vehicles in connection with the performance of the Contract (as customarily defined in liability insurance policies), whether they be owned, hired or non-owned by the Contractor, as follows:
a. Bodily Injury Liability: $500,000 for each person; limit of $1,000,000 for each occurrence.
b. Property Damage Liability: $500,000 for each occurrence.

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4. *Contractor's Public Liability and Property Damage Liability Insurance*: Contractor's Public Liability Insurance providing a limit of not less than $500,000 for all damages arising out of bodily injuries, including accidental death to one person, and a total limit of $1,000,000 for all damages arising out of bodily injuries, including accidental death, to two or more persons in any one occurrence. Contractor's Property Damage Liability Insurance providing for a limit of not less than $500,000 for all damages to or destruction of property.

Coverage under this policy shall include, to the limits indicated above, the collapse or damage to any structure, building or its contents, public or private utility, or pavement during construction and for two (2) years thereafter.

Whenever Work under the Contract is to be done in the vicinity of existing underground utilities or structures, coverage under the policy shall also include, to the limits indicated, all damages to said underground utilities or structures during construction and for a period of two (2) years thereafter. Whenever Work under the Contract is to be done by blasting, coverage under the policy shall also include, to the limits indicated above, all damages of any kind whatsoever caused by blasting.

5. *Contractor's Protective Public Liability and Property Damage Liability Insurance*: Contractor's Protective Public Liability and Property Damage Liability Insurance for operations performed by Subcontractors providing for coverage and limits corresponding to those described in subparagraph 4.

6. *Owner's Protective Public Liability and Property Damage Liability Insurance*: Regular Owner's Protective Public Liability and Property Damage Liability Insurance for operations performed by the Contractor or any Sub-contractor providing for coverage and limits corresponding to those described in subparagraph 4.

This policy shall be written in the name of the Owner as a separate policy from those specified elsewhere herein.

7. *Railroad Protective Liability Insurance*: In any of the Work under this Contract is on railroad R/W, the Contractor shall at its sole cost and expense, procure and provide, for and in behalf of each railroad company. Protective Liability Insurance (AARAASHO form) with minimum limits per occurrence of not less than $2,000,000 for bodily injury, death and/or property damage, subject to an aggregate limit of $6,000,000 per annum. The policy shall name each railroad company as the insured and be issued to the Contractor. Each railroad company shall be provided with a copy of each policy of insurance prior to commencement of any work.

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Materials Testing

(Required Contract Provision)

In addition to the details included with specific equipment testing in the specifications, include an overall statement regarding testing for the project. Adjust the following language as needed to meet the specifics of the construction project

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Testing Services

1. Contractor shall appoint, employ, and pay for specified services of an independent firm to perform testing.

2. The independent firm will perform tests and other services specified in individual specification sections and as required by the Architect/Engineer.

3. Testing and source quality control may occur on or off the project site. Perform offsite testing as required by the Architect/Engineer or the Owner.

4. Reports will be submitted by the independent firm to the Architect/Engineer and Contractor, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

5. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

   a. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.

   b. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

6. Testing does not relieve Contractor to perform Work to contract requirements.

7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

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Continuous Treatment Provisions

(Required Contract Provision)

This page is deleted Addendum 2, issued 5/18/2026

It is important that construction activities not result in any temporary violations of NPDES permit requirements (for permitted facilities) and construction activities should interrupt wastewater service to the individual residents as little as possible. For drinking water projects, it is important that construction activities not result in any disruption of service. Any disruption of service must be immediately reported to the Ohio EPA, Drinking Water Section or the appropriate district office.

The following example language is a sample of what might be appropriate for construction work occurring at an existing wastewater treatment plant. The language actually incorporated into the contract documents must be adjusted to meet the specifics of the construction project.

Continuous Treatment (wastewater projects)

Federal regulations prohibit by-passing of any sewage during construction operations. The Contractor will be responsible for providing any required temporary pumping facilities, piping, etc., necessary to complete the project without any plant by-passing and continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

The following example language is a sample of what might be appropriate for construction work occurring at an existing drinking water treatment plant. The language actually incorporated into the contract documents must be adjusted to meet the specifics of the construction project.

Continuous Treatment (drinking water projects)

The Contractor will be responsible for obtaining approval from Ohio EPA for use of temporary pumping facilities, piping and other items in order to complete the project without any plant by-passing. Continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

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State of Ohio

WATER POLLUTION CONTROL LOAN FUND (WPCLF) /
WATER SUPPLY REVOLVING LOAN ACCOUNT (WSRLA)

CONTRACT CHANGE ORDER

RECIPIENT_____ CHANGE ORDER NBR _____

LOAN NUMBER_____ CONTRACT _____

OWDA PROJECT No. _____ DATE _____

Description of Change:

The time provided for completion in the contract for the above items is (increased/decreased) by ____ calendar days.

RECOMMENDED BY: _____ DATE: _____
(Engineer)

APPROVED BY: _____ DATE: _____
(Recipient)

ACCEPTED BY: _____ DATE: _____
(Contractor)

_____
(Company)

Original Contract Amt		
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		

OWDA APPROVAL

The above proposal is hereby accepted and I recommend that it be approved and made a part of the contract noted above. The approval does not constitute an increase in the total loan amount, but represents approval for the work.

Ohio EPA Acceptance

Date

Chief Engineer

Date

CHANGE ORDER INSTRUCTIONS:

All Change Orders for this work, regardless of costs and whether Water Pollution Control Loan Fund (WPCLF) or Water Supply Revolving Loan Account (WSRLA) funding will be used to finance the changes, must be submitted to Ohio EPA for review.

Changes Requiring Prior Approval

Any change which substantially modifies the Project Facilities as specified in the Ohio EPA approved Facilities Plan and Final Permit to Install or Final Plan Approval (when applicable) or alters the direct or indirect impact of the Project Facilities upon the environment must be incorporated into a Change Order. One copy of the Change Order prior to execution is to be submitted to Ohio EPA for review and prior approval of the acceptability of the change. "Prior to execution" means before the Change Order is signed by the Owner.

Ohio EPA will review the Change Order and inform the Owner of the technical, environmental and operational acceptability of the change, and give the Owner permission to proceed with the proposed work.

All Other Changes

Change Orders not requiring prior approval as described above must be submitted to Ohio EPA within one (1) month of the time at which they are approved by the Owner. All change orders must be submitted electronically to dedicated change order email addresses for WPCLF and WSRLA projects.

Change Order Approval Process

After the Change Order is executed, one (1) copy of the Change Order, including the supporting documentation, is to be sent electronically to Ohio EPA for final review.

> The dedicated e-mail address for the electronic submittal of WPCLF Change Orders is EPAWPCLFCO@epa.ohio.gov.
>
> The dedicated e-mail address for the electronic submittal of WSRLA Change Orders is EPAWSRLACO@epa.ohio.gov.

After the Change Order is accepted and eligible costs determined, Ohio EPA will issue a letter informing the Owner and authorizing OWDA to disburse funds from Project Contingency for the work. The OEPA letter will be sent electronically along with a PDF of the WPCLF/WSRLA Change Order form which will be signed by all parties including Ohio EPA and OWDA.

Payments for Change Order Work

The Owner is precluded from submitting to the OWDA payment requests for Eligible Project Costs associated with the Change Orders until such time as the Ohio EPA's approval of the Change Orders has been obtained.

Local Protest Procedure

(suggested contract provision)

Some statement as to when a valid protest must be filed, in what form it must be filed and who it must be filed with should be included. ORC 153.12 has some default procedures for handling WPCLF and disputes. If the owner wants more control than provided in ORC, a procedure needs to be spelled out in the Contract Documents.

This page is deleted Addendum 2, Issued 5/18/2026

The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

Protests

A protest based upon an alleged violation of the procurement requirement may be filed against the OWNER's procurement action by a party with an adversely affected direct financial interest. The protest shall be filed with the Mayor. The OWNER shall determine the protest. The OWNER may request additional information or a hearing in order to resolve the protest.

A protest shall be filed as early as possible during the procurement process, but must be received by the OWNER no later than one week after the basis of the protest is known or should have been known, whichever is earlier. If the protest is mailed, the protester bears the risk of nondelivery with in the required time period.

A protest must clearly present the procurement requirement being protested, the facts which support the protest, and any other information necessary to support the protest.

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Basis And Method For Award

(suggested contract provision)

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The contract documents should include some language that clearly states what the Owner will consider when determining the successful bidder and to provide a clear basis for the Owner when they have a need to reject the low bidder and go with a different bidder.

The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

Basis for Award

1. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

2. In evaluating Bids, Owners shall consider the qualifications of the Bidder, whether or not the Bids comply with the prescribed requirements and alternates and unit prices if requested in the Bid forms. The Owner intends to accept alternates (if any are accepted) in the order in which they are listed in the Bid Form but Owner may accept them in any order or combination.

3. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principle items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must submitted as provided in the Supplementary Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.

4. Owner may conduct investigations he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

5. Owner reserves the right to reject the Bid of any Bidder who does not pass investigation of evaluation to Owner's satisfaction. Owner may reject any Proposal where the unit price or individual lump sum prices are unbalanced and/or unfavorable to the Owner's interest.

6. Owner will not make any award or permit any award at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549 "Debarment and Suspension." Each Contractor and supplier (over $25,000) shall complete the Certification Regarding Debarment, Suspension, and Other Responsibility Matters.

7. If Contract is awarded, it will be awarded to the lowest responsive responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interest of the Project.

8. If the contract is awarded, Owner will give the Successful Bidder a Notice of Award within the time stated in the Advertisement after the day of the Bid opening.

9. When owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least three unsigned counterparts of the Agreement and three copies of all other Contract Documents. Within ten days thereafter, Contractor shall sign and deliver at least three counterparts of the Agreement to Owner with three copies of all other Contract Documents attached. Within fifteen days thereafter, Owner will deliver one copy of all fully signed counterparts to Contractor.

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Payment Methods

(suggested contract provision)

To minimize uncertainty and arguments that can slow down the progress of construction it is useful to provide language stating how and when the Contractor will get paid. In addition to ORC and other local requirements, the involvement of public funding Agencies such as the WPCLF, Ohio Public Works Commission and Community Development Block Grant impact the process and timing for payments.

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The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

1. At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a partial payment estimated filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitable stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner as will establish the Owner's title to the material and equipment and protect his interest therein, including applicable insurance. The Engineer will, with ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reason for refusing to approve payment.

   In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within 30 days of presentation to him of an approved partial payment estimate, pay Contractor for labor performed and material incorporated in the Work, at the rate of 92 percent of the amount of the estimate as approved by the Engineer until 50 percent of the Work is completed. All labor performed and material incorporated in the Work after the job is 50 percent of completed shall be paid for at the rate of 100 percent of the amount of additional labor and material furnished and approved and the amount labor and material furnished and approved the amount previously retained shall be deposited in an escrow account. The funds in the escrow account with accumulated interest are to be paid the Contractor at the same time and in the same manner as specified for payment of the of the retained amount in Section 5.

   Payment for material and equipment delivered and not incorporated shall be based on the scheduled of quantities and cost submitted. Any money due from Owner shall, on the day that it is due, be paid to Contractor, or deposited in an escrow account, whichever is applicable, with one or mare banks or building and loan associations in the state selected by mutual agreement between the Contractor and the Owner. The agreement shall contain the following provisions:

   A. The money shall be deposited in a savings account or the escrow agent shall property invest the entire escrow principal in obligations selected by the escrow agent, as stipulated in the agreement.

   B. The escrow agent shall hold the escrow principal and income until receipt of notice from the Owner and the Contractor, of until receipt of an arbitration order specifying the amount of escrow principal to be released and the person to whom it is to be released. Upon receipt of the notice or order, the agent shall properly pay such amount of principal and the portion of amount of the escrow income to the person indicated.

C. The escrow agent shall be compensated for its services as agreed to by the Owner and the Contractor from the income from the escrow account.

2. The request for payment may also include an allowance for the cost of such major material and equipment which are suitably stored either at the site or the near the site.

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NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Prohibition on Telecommunications and Video Surveillance

§ 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.

(a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

(b) In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

(c) See Public Law 115–232, section 889 for additional information.

(d) See also § 200.471.

Resources:

2 CRF 200.216

FAQ's: Sec. 889 of 2019 NDAA_FAQ_20201124.pdf (performance.gov)

Public Law 115-232, Section 889

§ 200.471

WPCLF/WSRLA CONTRACT DOCUMENTS REVIEW

Funding Applicant:	
Project Name:	**Project Number:**
Date Bid Advertisement will start:	**Date Bids will be opened:**
Engineer's estimate of construction cost:	
Time of completion for work (e.g., 9 months):	

Please provide the Section/PDF Page number from the contract documents that corresponds with each item below.

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Program Requirements -Any item checked as "No" must be explained on a separate sheet

☐ Yes ☐ No EEO Certification *Section/Page #*_____
☐ Yes ☐ No Certification Regarding Debarment & Suspension *Section/Page #*_____
☐ Yes ☐ No Prohibition on telecommunications and video surveillance equipment *Section/Page #*_____
☐ Yes ☐ No Contract provisions describing DBE requirements *Section/Page #*_____
☐ Yes ☐ No DBE Forms 6100-3, 6100-4 and 6100- 2 *Section/Page #*_____
☐ Yes ☐ No Davis-Bacon wage rate requirements *Section/Page #*_____
☐ Yes ☐ No Build America, Buy America Acknowledgement Form *Section/Page #*_____
☐ Yes ☐ No American Iron and Steel Acknowledgement Form *Section/Page #*_____
☐ Yes ☐ No Violating Facilities clause *Section/Page #*_____
☐ Yes ☐ No Small Businesses in Rural Areas (SBRA) *Section/Page #*_____
☐ Yes ☐ No Insurance for both the contractor and all subcontractors: *Section/Page #*_____

- ☐ Yes ☐ No Workers' Compensation
- ☐ Yes ☐ No Public Liability
- ☐ Yes ☐ No Property Damage
- ☐ Yes ☐ No Vehicle Liability
- ☐ Yes ☐ No Flood (if appropriate)
- ☐ Yes ☐ No Builders Risk (can be held by owner instead)

☐ Yes ☐ No Material Testing (statement regarding testing for specifications) *Section/Page #*_____
☐ Yes ☐ No Project-specific continuous service/treatment provisions *Section/Page #*_____
☐ Yes ☐ No WPCLF/WSRLA Change Order form & instructions *Section/Page #*_____
☐ Yes ☐ No Bid proposal forms (necessary for determining loan eligibility) *Section/Page #*_____

Other Contract Requirements

☐ N/A - superseded by local requirements
☐ Yes ☐ No Text of the bid advertisement *Section/Page #*_____
☐ Yes ☐ No Engineer's estimate of cost for construction *Section/Page #*_____
☐ Yes ☐ No Description of how the bid price, including any alternates, is determined *Section/Page #*_____
☐ Yes ☐ No Notice to Proceed form *Section/Page #*_____
☐ Yes ☐ No Any material or equipment designated from a "sole source?" *Section/Page #*_____
If yes, attach a description and justification for each item.
☐ Yes ☐ No Bid includes a dedicated contract contingency/allowance amount *Section/Page #*_____
Contract contingency is ☐ a fixed dollar amount ☐ a fixed percentage of the contract total

Ohio Revised Code Requirements - The following are required for municipalities (cities, villages, counties, sewer districts) but may be superseded by local charter or other local requirements.

☐ N/A - superseded by local requirements ☐ N/A - not a municipality
☐ Yes ☐ No Bid Guarantee in the form required by ORC *Section/Page #*
☐ Yes ☐ No Payment and Performance Bonds in the form required by ORC *Section/Page #*
☐ Yes ☐ No Provisions for payment retention in conformance with ORC *Section/Page #*
☐ Yes ☐ No A specific time for completion of the work *Section/Page #*

Checklist Prepared by:_____ Phone or E-mail _____

Bid Package Submittals

The following documents must be submitted to Ohio EPA – DEFA within one week after bids are received, or sooner dependent on your individual project schedule.

1. One copy of all addenda when they are issued.
2. A complete copy of the successful bidder's proposal(s).
3. A bid tabulation (a list of all bidders and their line item amounts) in the same format as the proposal.
4. The engineer's bid evaluation and recommendation.
5. A signed copy of the Contractor's EEO Certification Form.
6. A signed copy of the Certification Regarding Debarment, Suspension, and Other Responsibility Matters.
7. Completed copies of Form 6100-3 Individual DBE Subcontractor Proposed Performance Form and Form 6100-4 DBE Subcontractor Utilization Summary that were provided by the successful bidder(s), as well as any alternate "good faith efforts" documentation.
8. A resolution from the loan recipient's governing body tentatively awarding the contract to the successful bidder.
9. A copy of the site title opinion stating that all sites, easements and / or right-of-way necessary to construct the project have been acquired.
10. Signed Build America, Buy America Acknowledgement Form, if applicable.
11. Signed American Iron and Steel Acknowledgement Form.
12. Useful Life Worksheet (must be completed for loan requests greater than 20 years)
    - WPCLF Useful Life Worksheet: https://epa.ohio.gov/static/Portals/29/documents/ofa/CW-Useful-Life-Worksheet.xlsx?ver=2019-10-31-153519-907
    - WSRLA Useful Life Worksheet: https://epa.ohio.gov/static/Portals/29/documents/ofa/DW-Useful-Life-Worksheet.xlsx?ver=2019-10-31-153519-907

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SECTION 01021
ALLOWANCES

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the allowances which are to be furnished by the Contractor per Paragraph GC-13.02 of the General Conditions.

B. The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the Site, and all applicable taxes.

C. The Contractor's handling costs on the Site, labor installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Price and not in the allowance.

D. The Contractor shall cause the Work covered by these allowances to be performed for such amounts and by such persons as the Engineer may direct, but he will not be required to employ persons against whom he makes a reasonable objection.

E. If the cost, when determined, is more than or less than the allowance, the Contract Price shall be adjusted accordingly by Change Order.

1.02 SUBMITTALS

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

1. Shop Drawings for Review:

    a. Contractor shall prepare and submit proposals for the Owner to select the items included in allowance.

2. Information for the Record:

    a. Operation and maintenance manuals as may be required for items included in allowance.

    b. Invoices and delivery slips, for items provided under the allowance, shall be submitted to the resident project representative or Engineer.

1.03 PRODUCT HANDLING

A. The Contractor shall provide all labor, material and equipment to insure the safe delivery, handling and storage of goods until acceptance by Owner and Engineer.

1.04 GUARANTEE

A. Contractor shall provide manufacturer's warranties to the Owner for all goods provided.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 COORDINATION

A. Contractor shall advise Owner and Engineer of, and include in the schedule, the timing of the selection, Shop Drawing review and procurement of the goods or services required in the allowance.

B. Contractor shall be responsible for the coordination, of all allowance item(s) provided, with the remainder of the contract work.

3.02 ERECTION, INSTALLATION AND APPLICATION

A. Contractor shall assemble, install or apply all goods as may be required to complete the requirements of the allowance.

3.03 PROTECTION

A. Contractor shall examine all goods on delivery. All damaged or defective goods shall be returned to the manufacturer for replacement.

PART 4 SPECIAL PROVISIONS

4.01 LIST OF ALLOWANCES

		Allowance
A.	General Contingency Allowance	$250,000
B.	SCADA Main Control Panel (hardware/Software)	100,000
C.	SCADA/PLC Programming, O&M Manuals, Training and Project Management	63,000
D.	SCADA/PLC Start-upf and Commissioning	$20,000
E.	Laboratory and Misc. Equipment	~~$90,000~~ $10,000

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4.02 DEFINITION OF ALLOWANCE

A. The General Contingency Allowance is for the Owner directed changes, as approved by the Owner and Engineer.

B. The Owner will select a firm to provide the SCADA Main Control Panel including but not limited to;

1. Control System Hardware/Software
    a. SCADA Main Control Panel Fabrication, and Delivery
    b. Network Control Panel Fabrication & Delivery
    c. EQ Pump Station Control Panel Fabrication and Delivery
2. SCADA/Control System Hardware/Software
    a. Two Desktop PCs w/32” Monitors
    b. Dual Redundant SCADA Servers with
    c. Remote Alarm Annunciation, Historian, and Unlimited Thin Clients
3. Main Control Panel layout, development, BOM, I/O, Software, PLC configuration, Sequence of operation, Historian Configuration, Computer, and training.

C. The Owner will select a firm to provide SCADA/PLC Programming, O&M Manuals, Training, Engineering

D. The Owner will select the same firm as noted in 4.02 B and C above to provide Start up and Commissioning of the SCADA/PLC.

E. The Laboratory and Misc. Equipment shall be selected by the Owner and a list provided to the Contractor.

END OF SECTION

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SECTION 02202
EMBANKMENT

PART 1 GENERAL

1.01 SCOPE

A. This Section includes preparation of the area upon which embankments are to be placed, construction of the embankment with excavated material and other necessary materials, the compacting of the materials, disposal of unsuitable material, and the adjustment to grade of existing castings, valve covers, monuments, etc.

1.02 SUBMITTALS

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

1. Information for the Record:

a. Fill Material Tests.

b. Compaction Test Results.

PART 2 PRODUCTS

2.01 MATERIALS

A. Material for embankments shall consist of suitable material and shall be readily incorporated into an 8-inch layer. Muck, frozen material, roots, sod, stumps, stones, rocks or masonry, or other deleterious materials shall not be placed in embankments nor shall embankments be placed on frozen material. Borrow areas on the Site shall be as shown on plans or as directed by the Engineer.

B. For highway or public street embankments not used for flood control or impoundment of liquids only, the placing of individual rock and boulders greater than 8 inches in diameter will be permitted below the top 2 feet provided that when placed they do not exceed 48 inches in height and provided they are carefully distributed and the surrounding embankment is placed and compacted in 8-inch layers. No part of the rock or boulder shall extend into the top 2 feet of the embankment. Individual rock and boulders 8 inches and greater in diameter will not be permitted in embankments used for flood control or impoundment of liquids.

PART 3 EXECUTION

3.01 CLEARING AND CONDITIONING EMBANKMENT AREAS

A. Ground areas which will receive embankments shall be cleared, grubbed, scalped, and the topsoil shall be stripped to a depth of 6 inches and stockpiled in accordance with the Specifications.

B. After stripping and prior to placing the first layer of embankment, embankment areas shall be compacted to a depth of 12 inches to the same density requirement as the material which is to be placed thereon. The Contractor may elect to remove sufficient native material, or undercut and replace with material suitable to Engineer, to achieve the above compaction requirements at no additional increase in contract price.

3.02 EMBANKMENT CONSTRUCTION

A. Embankments shall be constructed in 8-inch horizontal layers and each layer shall be thoroughly compacted by approved methods to the proper density before a succeeding layer is placed.

B. When embankment is to be placed on hillsides or against existing embankments, each layer of embankment shall be continuously benched. Benches shall be excavated inward a minimum of 3 feet and shall be of sufficient width to permit operations of placing and compacting equipment. The benches and material cut out of the benches shall be recompacted along with the new embankment material.

C. When delivery of material is stopped, the leveling and compaction equipment shall continue operating until all delivered material has been acceptably leveled and compacted to provide drainage.

D. After the embankment has reached final elevation, all embankment slopes shall be graded parallel to the design contours. Topsoil shall be placed on the slopes and the area outside of the pavement and curb and gutter area. Slopes shall be blended smoothly with the existing topography.

E. For cut slopes and fill slopes, deviation of more than 1/2 foot measured in a horizontal plane and vertical deviations of more than 1/2 inch at the pavement edge and 2 inches elsewhere from the proposed grades will not be permitted.

3.03 COMPACTION REQUIREMENT

A. All embankment and backfill material shall be compacted to at least 98% of the maximum dry density as determined by ASTM D698.

B. All soil subgrade which will provide bearing support for pavements, curbs, new structures, and curb and gutters shall be compacted to a depth of 12 inches below the subgrade surface to a density of not less than 100% of the maximum dry density determined by ASTM D698.

C. All backfill, embankment, and subgrade material which does not contain sufficient moisture to be compacted shall be sprinkled with water by means of tank trucks equipped with sprinkling devices. The water shall be thoroughly incorporated into the material by means of discs or other approved equipment. Material containing excess moisture shall be required to dry prior to or during compaction to a moisture content of not greater than three percentage points above optimum. Material which displays pronounced elasticity or deformation under the action of construction equipment shall have its moisture content reduced to optimum. Drying of wet soil shall be expedited by plows, disk, or other approved equipment.

D. If the density of the compacted material is less than required, the Contractor shall immediately cease embankment and backfill operations until the problem has been corrected to the satisfaction of the Engineer.

3.04 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. All surplus or unsuitable excavated material not required on the project shall be disposed of as specified under Section 02200.

3.05 ADJUSTMENT TO GRADE

A. All existing castings, valve covers, inspection wells, or monuments encountered during construction shall be adjusted to the finished grade to the satisfaction of the Engineer.

PART 4 SPECIAL PROVISIONS

4.01 EXCLUSION AND CLARIFICATION

A. The fill required for final grading of the existing plant site after removal of indicated structures removal is complete will not be considered embankment.

B. Material used for this fill will be compacted to a density of 80% or greater prior to placement of topsoil.

C. Modification of the existing dike areas shall comply with embankment provisions of Part 3-Execution herein.

D. Fill material is available from Jim Philips Excavating, Jake Phillips 419-351-0872

END OF SECTION

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SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing, placing, finishing, and curing cast-in-place concrete. Miscellaneous materials required for concrete construction are included.

B. Anchor bolts and other cast-in items are furnished under other Sections.

C. The Contractor, before commencing Work, shall examine all adjoining Work on which this Work is dependent for proper installation and workmanship according to the intent of this specification, and shall report to the Engineer any condition which prevents this Contractor from performing first class work.

D. Laboratory services for quality control shall be furnished in accordance with requirements of Section 01410.

E. Additional product requirements are specified in Section 01350.

1.02 SUBMITTALS

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

1. Shop Drawings for Review:

   a. Concrete mix designs including substantiating data and test records. Concrete Mix Design, Proportioning.

   b. Product literature for admixtures, curing compounds, and miscellaneous materials.

   c. Locations of construction and control joints not shown on Drawings, and proposed changes in locations.

   d. Material certifications.

   e. Aggregate gradation and percentages of deleterious substances.

   f. Batch plant certification.

2. Information for the Record:

   a. Manufacturer’s application instructions for miscellaneous materials.

   b. Quality control test reports.

B. Copy of concrete delivery ticket shall be presented to Resident Project Representative for each batch. Delivery ticket shall indicate:

1. Name of ready-mixed company and plant designation.
2. Truck number.
3. Concrete class.
4. Quantity of concrete.
5. Date.
6. Time when batch was loaded.
7. Type and name of admixtures.
8. Actual batch weights of cement, fly ash, aggregates, and water.
9. Location of pour and time of unloading shall be added to the ticket at Site.

1.03 QUALITY ASSURANCE

A. Batch Plant:

1. Batch plant shall be central batch plant with automatic or semi-automatic control. Concrete may be mixed using either central-mixed, shrink-mixed, or truck-mixed methods. If concrete is shrink-mixed or truck-mixed, the truck and concrete shall conform to ASTM C94.
2. Batch plant shall be certified by the Department of Transportation, National Ready Mixed Concrete Association (NRMCA) or an independent certification using NRMCA “Check list for Certification of Ready Mixed Concrete Production Facilities” executed and certified by independent Professional Engineer registered in state of Site. Evidence of current certification shall be submitted.

B. Pre-installation Conferences:

1. Before beginning concrete work, Contractor shall hold a meeting to review detailed requirements for preparing concrete mix designs and to determine proper procedures for concrete construction. A representative of Contractor, testing laboratory, concrete producer, concrete pumping contractor, and Engineer shall be in attendance.
2. Contractor shall submit for Engineer review a plan showing the locations of all proposed construction and control joints, which are not shown on the construction Drawings, and a schedule that incorporates the alternating pour sequences required to allow for strength gain and control of volumetric shrinkage changes.
3. When dry-shake floor hardener or metallic topping is specified, manufacturer’s representative shall instruct Contractor on proper equipment and application procedures.

C. Concrete work shall be in accordance with the current edition of the following codes, standards and specifications:

1. American Concrete Institute (ACI).

2. “Manual of Standard Practice”, Concrete Reinforcing Steel Institute (CRSI).

1.04 DELIVERY AND HANDLING

A. Concrete shall be delivered in accordance with ASTM C94 except the time limit for discharging of concrete during hot weather shall be reduced as specified.

B. Concrete shall be delivered in agitating trucks or in mixing trucks operating at agitating speed.

1.05 ENVIRONMENTAL CONDITIONS

A. Unless adequate protection is provided, concrete shall not be placed during rain, sleet, or snow, or when inclement weather is imminent.

B. Cold Weather:

1. Cold weather concreting procedures per “Cold Weather Concreting,” ACI 306R, shall be followed whenever any one of the following conditions occur or are expected to occur:

a. The air temperature is below 40 degrees F at the time of concrete placement.

b. The average daily air temperature is below 40 degrees F for three consecutive days immediately prior to the day of concrete placement.

c. An average daily air temperature below 40 degrees F is foreseen or occurs during any day of the specified concrete curing period.

2. For purposes of the paragraphs above, the average daily temperature is defined as the arithmetic mean of the highest and lowest temperature during the period from midnight to midnight. All air temperatures are to be measured at the Site.

C. Hot Weather:

1. Hot weather concreting procedures per “Hot Weather Concreting,” ACI 305R, shall be followed whenever any one of the following conditions occur or are expected to occur:

a. The air temperature is above 90 degrees F at the time of concrete placement.

b. Whenever conditions of concrete temperature, air temperature, wind velocity, and relative humidity combine to cause flash set, excessively low slump, cold joints, plastic shrinkage cracking, or otherwise impair the quality of concrete.

2. When the evaporation rate of bleed water exceeds 0.1 pounds per square foot per hour, steps shall be taken to prevent plastic shrinkage cracking. Evaporation rate shall be determined by the method presented in "Hot Weather Concreting," ACI 305R.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cement - ASTM C150 Type I or II, unless indicated otherwise. All cement shall be from the same mill. Cement for Class A-2 concrete shall contain less than 8% tricalcium-aluminate (C3A).

B. Coarse Aggregate - Aggregates for normal weight concrete shall be crushed limestone conforming to ASTM C33, Class 4S. Aggregates for lightweight concrete shall meet the requirements of ASTM C330. Aggregates shall satisfy all quality requirements specified therein (i.e. grading, limits on deleterious substances, etc.).

C. Fine Aggregate - ASTM C33.

D. Fly Ash - ASTM C618, Class C or Class F, including supplementary chemical requirements and supplementary physical requirements, except loss-on-ignition shall be less than 5%. The use of fly ash shall be in accordance with "Use of Fly Ash in Cement (ACI-232.2R").

E. Silica Fume - ASTM C1240.

F. Ground Granulated Blast Furnace (GGBF) slag shall be in accordance with ASTM C989 Grade 100 or 120. Slag for Class A-1 concrete shall contain less than 12% tricalcium-aluminate (C3A) and slag for Class A-2 concrete shall contain less than 8% tricalcium-aluminate (C3A).

G. Admixtures - The use of all admixtures shall be in accordance with "Chemical Admixtures for Concrete (ACI 212.3R"), and "Guide for the Use of High Range Water Reducing Admixtures in Concrete (ACI 212.4R)."

1. Air entraining - ASTM C260.

2. Water-reducing - ASTM C494.

3. Accelerator - ASTM C494, Type C or E, admixture shall be non-corrosive as verified by long-term accelerated corrosion testing by an independent laboratory.

4. Anti-washout admixture - Master Builders "Rheomac UW450", or equal.

5. Only those admixtures expressly stated by the manufacturer as being chloride-free shall be used.

6. The maximum water-soluble chloride ion content, expressed as a percentage by weight of the cement, contributed from all concrete ingredients shall not exceed 0.10% for non-prestressed concrete structures. Written certification of

chloride ion content shall be submitted. Testing for Chloride Ion content shall conform to ASTM C1218.

7. If more than one admixture is used, the admixtures shall be compatible with each other and shall be incorporated into the concrete mix in correct sequence and timing so that desired effects of all admixtures are realized and harmful effects are avoided.

8. Air-entraining and chemical admixtures shall be incorporated into the concrete mix in a water solution. The water so included shall be considered to be a portion of the allowed mixing water.

H. Water shall conform to ASTM C94. Mixing water, including that contributed by aggregates and admixtures, shall be clean, and free from injurious amounts of oils, acids, alkalis, organic materials, chloride ions, or other substances that are deleterious to concrete or reinforcement. Non-potable water shall not be used.

I. Reserved

2.02 ACCESSORIES

A. Curing Compound - Compound shall be membrane-forming, liquid applied, non-yellowing, VOC-compliant, water-based acrylic polymer resin conforming to ASTM C309, Type 1 and ASTM C1315, Type 1, Class A. The compound shall include sealing and dustproofing properties. Minimum solids content shall be 25%. Compound shall not permit a moisture loss in excess of 0.40 kilograms per square meter (0.082 pounds per square feet) in 72 hours. Sodium silicate based products are not acceptable. Compound shall be Dayton Superior “Cure & Seal 1315 J22WB”, SpecChem, LLC. “Cure & Seal WB 25”, L&M Construction Chemicals, Inc. “Lumiseal WB Plus” or equal. Curing compound in potable water treatment plant construction shall be non-toxic and free of taste and odor.

B. Bonding Adhesive for Cracks, etc. - ASTM C881 100% solids, 100% reactive two component epoxy bonding adhesives. Sika Corporation, “Sikadur 32, Hi-Mod”, Dayton Superior “Sure Bond (J-58)”, The Euclid Co. “Dural 452 Gel”, Master Builders “MasterEmaco ADH326”, or equal.

C. Bonding Adhesive for Vertical Joints - Non-vapor barrier forming, solvent-free, moisture insensitive, epoxy modified cementitious product Sika Corporation “Sika Armatec 110 Epocem”, Euclid Co. “Duralprep A.C.” or equal.

D. Bonding Grout - Identical concrete mix as approved for each concrete Class, except that an identical quantity of the fine aggregate shall be substituted for all coarse aggregate.

E. Liquid Floor Hardener – A VOC compliant, Non-yellowing, dust proofing, liquid applied hardener with non-slip properties that dies to a clear finish. L&M Construction Chemicals “Seal Hard”, W.R. Meadows “Liqui-Hard”, ChemMasters “Chemisil Plus”, or equal. Apply after concrete has cured as recommended by the manufacturer.

F. Bond Breaker - Bond breaker shall be non-staining type which will provide a positive bond prevention, such as SpecChem “SpecTilt 100”, Nox-crete “Silcoseal Classic”; or equal.

G. Premolded Expansion Joint Fillers:

1. Exterior Walks and Pavements - Asphalt impregnated cellular fibers securely bonded together, in conformance with ASTM D1751. W. R. Meadows “Fibre Expansion Joint”, J D Russell Company “Fiberflex”, or equal.

2. Other Locations - Self expanding cork type in conformance with ASTM D1752, Type III. W.R. Meadows, Inc. “Sealtight - Self-Expanding Cork Joint Filler”, Masco “Self Expanding Cork”, or equal.

H. Isolation Joints - Flexible foam expansion joint filler, W.R. Meadows “Sealtight - Ceramar”, or equal.

I. Compressible Material - Rigid extruded polystyrene from Board Foamular 150 (15psi) by Owens Corning Company or compressible fill material by Plasti-Fab or equal. Provide foam board, unless noted otherwise.

J. Epoxy Joint Filler - Two component, 100% solids, flexible epoxy filler with minimum Shore D hardness of 50. The Euclid Chemical Company “Euco 700”, Sika Corporation “Sikadur 51 SL”,W.R. Meadows, Inc “Rezi-Weld Flex”, or equal. Only to be used to fill interior non-moving saw cut or tooled construction or control joints and shrinkage cracks. Not suitable for constant immersion.

K. Vapor Barrier - 6 mil polyethylene, ASTM D2103.

L. Paper Joint Material – Thin Asphalt-impregnated Kraft paper, i.e. “building paper”; thin polypropylene foam sheeting; Compressible Material listed in this specification section; or equal.

2.03 RESERVED

2.04 RESERVED

2.05 CONCRETE MIXES

A. Contractor shall design and be responsible for the performance of all concrete mixes. Mixes shall have the required quality, consistency, and workability to permit concrete to be readily worked into forms and around reinforcement without segregation or excessive bleeding. Hardened concrete shall develop all characteristics required by Contract Documents

B. Proportioning:

1. Concrete mixes shall be proportioned to maximize durability and water tightness. To this end the total water content shall be reduced to the lowest

practical amount that is consistent with placing and consolidation methods. Water reducing and high range water reducing admixtures shall be used as required to maintain workability. Specified water/cementitious ratio shall not be exceeded.

2. Concrete proportions shall comply with ACI 211.1, ACI 301, ACI 318 and for the environmental components of the Work ACI 350.

   a. Proposed mix designs proportioned by field test data or trail mixes shall be accompanied by a complete standard deviation analysis and calculations for the required average compression strength F`cr. Test records used for determining standard deviation and average strength shall have been made within the past 12 months. These test records must represent materials, quality control procedures and conditions similar to those expected, and changes in materials and proportions within the test records shall not have been more restricted than those for the proposed Work. A minimum of ten concrete compressive test records are required if field test data is selected as the method to determine the validity of the proposed mix design.

   b. Proportioning by empirical methods on basis of water/cement ratio is not permitted.

   c. Concrete mix proportions are subject to Engineer's approval.

C. Design mixes shall have following requirements:

1. Three normal weight concrete mixes are generally required; Class A-1, A-2 and Class B. Concrete mixes shall be as follows:

	Class A-1	**Class A-2 (Wastewater)**	**Class B**
28-Day Compressive Strength f'c (psi)	4500	4500	3000
Maximum Water/Cementitious Ratio:	0.44	0.42	0.66
Minimum Cementitious Content (Lbs/CY)	600	650	480
Maximum Cementitious Content (Lbs/CY)	800	800	650
Slump (Inches)	See below	See below	See below

For calculating water/cementitious ratio of the mix, the weight of the water shall be that of the total free water in the mix, which includes the mixing water, the water in any admixture solutions, and any water in the aggregates in excess of that needed to reach a saturated surface dry condition.

2. Concrete placed under water shall contain an approved anti-washout admixture and shall contain a minimum of 600 pounds of cement per cubic yard. Fly ash or GGBF slag shall not be used in the concrete mix.

D. Slump:

1. When superplasticizer is not included in the mix, slump shall be 2-4 inches.

2. When superplasticizer is included in the mix, the maximum slump measured upon delivery to the construction site shall be 3 inches. Superplasticizer shall be added at the Site after verification of slump to increase slump to the desired amount.

3. Tolerance of 1 inch above the maximum specified slump will be permitted for one batch in any five consecutive batches.

4. Concrete of lower slump than specified may be used provided it is properly placed and consolidated. Field adjustment of slump by addition of water is not permitted.

E. Air Content:

1. All concrete shall be air entrained unless specified or noted otherwise on the Drawings.

2. Concrete to be air-entrained shall have an air content as schedule below, unless specified otherwise:

Nominal maximum size of coarse aggregate (inch)	ASTM C33 Aggregate Size number	Total air content percent by volume
3/8	8	7.5
1/2	7	7.0
3/4	67	6.0
1	57	6.0
1-1/2	467	5.5

3. Allowable deviation from specified air content is plus or minus 1%.

4. Interior floor slab specified to receive a trowel finish shall not be air entrained. Maximum air content shall be 3%.

5. Floors receiving dry-shake hardeners or heavy-duty topping shall not be air-entrained. Maximum air content shall be 3%.

6. Air entrainment is not required for Class B concrete.

F. Coarse Aggregate Size:

1. Nominal maximum size of aggregate shall not be more than one-fifth of narrowest dimension between side forms, one-third of depth of slabs, nor three-fourths of minimum clear spacing between reinforcing bars.

2. Coarse aggregate shall be largest size consistent with placing methods and specified constraints. Minimum coarse aggregate shall be Size Number 57, unless smaller size is required by dimensional or reinforcement spacing constraints.

G. Cementitious Material:

1. The cementitious mixture shall contain cement and either fly ash or GGBF slag, but not both.
2. When fly ash is used in the concrete mixture, it shall comprise between 15% to 25% of the total cementitious mixture. When slag is used in the concrete mixture, it shall comprise between 25% to 50% of the total cementitious mixture. The percentages are based on weight of the total cementitious mixture.
3. For concrete in contact with wastewater, Class A-2, the cementitious design mixture shall consist of ASTM C150 Type II cement and slag or ASTM C150 Type II cement and Class F fly ash. Alternately, ASTM C150 Type I cement and Class C fly ash may be used provided the design cementitious mixture is tested per ASTM C1012 to have 0.10% or less expansion in 6 months. The test results shall be submitted with the proposed concrete mix design.
4. Air content for concrete containing fly ash shall be closely monitored and the dosage of air-entraining admixture shall be modified as required.

2.06 CONCRETE PRODUCTION

A. Ready-mixed concrete is to be used unless otherwise specified. It shall be batched, mixed, and transported in accordance with ASTM C94.

B. Admixtures other than air-entraining admixture shall not be added without Engineer's written approval.

C. Admixtures shall be charged into mixer as solutions and shall be measured by means of acceptable dispensing device. If two or more admixtures are used, they shall be added separately. Admixtures shall be used in accordance with manufacturer's instructions.

D. During cold or hot weather conditions, special precautions, as specified in ACI 306R or ACI 305R, respectively, shall be taken during batching, mixing, and curing.

2.07 STORAGE OF MATERIALS

A. Cement shall be stored in weathertight containers.

B. Aggregate stockpiles shall be arranged to avoid excessive segregation and to prevent contamination with other materials or with other sizes of like aggregates. Frozen or partially frozen aggregates shall not be used.

C. Sand stockpiles shall be allowed to drain to ensure a relatively uniform moisture content throughout the stockpile.

D. Admixtures shall be stored in a manner to prevent contamination, evaporation, freezing, or damage. Admixtures in the form of suspensions or nonstable solutions shall be agitated to assure thorough distribution of ingredients. Liquid admixtures shall be protected from freezing and from temperature changes which would adversely affect their characteristics.

PART 3 EXECUTION

3.01 COORDINATION

A. Reinforcement, sleeves, inserts, anchors, and embedded items shall be accurately placed, supported, and tied prior to concrete placement. Other trades and contractors required to furnish embedded items shall be given ample notice of concrete placement. Reinforcement and embedded items shall be subject to review of Resident Project Representative prior to placing concrete.

B. Contractor shall notify Resident Project Representative a minimum of 24 hours before placing concrete, excluding non-working days.

C. Concrete shall be placed only between hours of 8:00 a.m. and 6:00 p.m. unless otherwise permitted. Concrete shall not be placed after 12:00 noon on last working day of week.

3.02 PREPARATION

A. Hardened concrete and foreign materials shall be removed from inner surfaces of conveying equipment.

B. Waterstop shall be secured in place to ensure that it cannot bend to form cavities during concreting.

C. Formwork shall be completed and snow, ice, and water shall be removed from forms. Before placing reinforcing steel or concrete, the surfaces of the forms shall be covered with an acceptable coating material, or form liner may be used.

D. The space to receive concrete shall be free of laitance, dirt, and other debris. Laitance shall be removed by wire brushing.

E. Reinforcement and embedded items shall be checked for proper placement and adequate support. All reinforcement at the time concrete is placed, shall be free of mud, oil, or other materials that may adversely affect or reduce the bond. Aluminum conduits or pipes shall not be embedded in concrete unless approved by the Engineer and effectively coated to prevent aluminum-concrete reaction.

F. Preparation of grade shall be as specified for slabs. Concrete shall not be placed on frozen ground. There shall be no standing water on the subgrade, nor any muddy or soft spots when the concrete is placed.

G. A final detailed inspection of the foundation, construction joints, forms, waterstops, embedments, reinforcements, and other items of the placement shall be made immediately before the concrete is placed.

3.03 PLACING CONCRETE

A. Conveying:

1. Concrete shall be handled from mixer to place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients and in a manner which will ensure that required quality of concrete is maintained. Conveying systems shall not impair the strength, slump, or air content of the concrete. Concrete shall be placed and consolidated prior to initial set, and in no case more than 1-1/2 hours after the cement is added to the mix.

2. Chutes shall be metal (except aluminum), or wood with metal lining and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20-feet long and chutes not meeting slope requirements may be used provided they discharge into a hopper before distribution.

3. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled to prevent segregation. Loss of slump in pumping or pneumatic conveying equipment shall not exceed 1-1/2 inch.

4. Concrete shall not be permitted to drop more than 4 feet freely, or through a cage of reinforcing steel, from conveying device. Concrete shall be deposited through drop chutes, elephant-trunks, or tremies as required. Temporary openings in wall or column forms may be used to limit the free fall of concrete to less than four feet. The openings should be spaced no more than six to eight feet apart.

5. Concrete shall not be conveyed through pipes made of aluminum or aluminum alloy.

B. Depositing:

1. Concrete shall be deposited continuously or in layers of such thickness that no concrete will be deposited which has hardened sufficiently to cause planes of weakness within the sections. No interruption in concrete placement shall exceed 30 minutes to avoid cold joints in the structural elements being placed. Alternate placing equipment shall be immediately available for use in the event that the primary placing equipment or system breaks down.

2. Placing shall proceed at such a rate that concrete which is being integrated with fresh concrete is still plastic.

3. Concrete which has partially hardened or has been contaminated shall not be deposited.

4. Placing of concrete for supported elements, such as beams and elevated slabs, shall not begin until supporting elements, such as columns and walls, have cured for a minimum of 7 days, unless the concrete has attained 80% of the specified

design compression strength or the shoring for the supporting elements has been designed to carry the weight of the supported elements and their construction load.

5. Concrete shall be placed continuously between construction, isolation, and expansion joints. Where joints are spaced greater than 25 feet apart the placing of concrete adjacent to previously placed concrete shall not begin until 48 hours after completion of previous placement, unless otherwise noted. Concrete shall be deposited as nearly as practical in its final position and shall be carried up evenly in forms to avoid segregation due to rehandling or flowing. Layers shall not exceed 24 inches. Concrete shall not be permitted to flow laterally in forms.

6. The temperature of the concrete mixture immediately before placement shall be between 50 degrees F and 90 degrees F, except as provided under cold weather and hot weather concreting.

C. Consolidating:

1. Concrete shall be consolidated by vibrating, so that concrete is thoroughly worked around reinforcement and embedded items, and into corners and angles of forms, eliminating air and stone pockets. Vibrators shall extend into underlying layers to bond two layers together. To avoid excessive pressure on the forms, the vibrator should penetrate no more than two feet into the underlying layer.

2. Vibrators shall be the largest size and most powerful that can be used properly in the Work, as described in “Recommended Practice for Consolidation of Concrete” (ACI 309R). A minimum of one spare operable vibrator shall be available on site. Mechanical high frequency vibrators with a minimum frequency of 8,000 revolutions per minute are preferred for consolidation of concrete within the forms.

3. Vibrators shall not be used to transport or drag concrete within forms. Vibrators shall be inserted and withdrawn from the concrete slowly.

4. Vibrators shall be inserted in the fresh concrete at points approximately 18 inches apart or as recommended by the vibrator manufacturer. The vibration shall be of sufficient duration and intensity to thoroughly consolidate the concrete, but shall not be continued so as to cause segregation. Vibration shall not be continued at any one point to the extent that localized areas of grout are formed.

D. Under Water Concreting:

1. Concrete shall not be placed under water unless otherwise indicated or permitted. The recommendations given for concrete placed under water in Chapter 8 of ACI 304 shall be followed subject to the requirements specified herein.

2. Concrete shall be deposited by tremie or other acceptable method such that fresh concrete enters mass of previously placed concrete from within, causing water to be displaced with minimum disturbance at the surface of the concrete.

3. Concrete shall not be disturbed after placement.

E. Defective Concrete:

1. Defective concrete is defined as concrete in place which does not conform to specified design strength, required percent air, shapes, alignments and elevations, as shown on the Drawings and/or which presents faulty surface areas. Evaluation and acceptance of concrete shall conform to ACI 318 and as determined by Engineer.

2. All defective concrete shall be removed and replaced in a manner meeting with the Engineer's approval. Should surface imperfections occur, they may be patched at the discretion of, and in a manner satisfactory to the Engineer. The Engineer reserves the right to require complete removal and replacement of such defective Work should the patching fail to satisfactorily restore the required quality and appearance of the Work. All such Work shall be performed at the Contractor's expense, without extension of time.

3. If for any reason, in the opinion of the Engineer, the testing of any section of the completed structure is necessary, a superimposed load shall be applied by the Contractor and the test conducted in accordance with the current Building Code at the Contractor's expense irrespective of the results of such tests. In cases where failure is declared, the Engineer shall have the authority to order the defective construction removed. All expense of removing such defective construction and substituting new construction, including expense of removing and replacing the Work of others, or protecting and repairing the Work of others, shall be borne by this Contractor.

3.04 JOINT INSTALLATION

A. Construction Joints:

1. Construction joints shall not be spaced further apart than 60 feet, unless noted otherwise. Where construction joint spacing exceeds 25 feet concrete placement shall be alternated so that adjacent sections are placed a minimum of 48 hours apart to allow for volumetric change of adjacent pours due to shrinkage and to help minimize cracks. Joints shall be located where they will least impair the strength, watertightness, and architectural design of the finished structure. Joint types and locations shall be subject to Engineer's approval. Construction joints shall not be located less than 5 feet from any other joint to which they are parallel.

2. Joints in walls and columns shall be placed at the tops of footings and mat foundations, unless shown otherwise. Joints should be made perpendicular to the main reinforcement where practical.

3. Joints shall be constructed straight by means of a temporary straight edge or rustication strip placed in forms. Joints shall be perpendicular to reinforcement.

4. Reinforcement shall be continuous across construction joints unless otherwise indicated. Unless otherwise specified or shown on Drawings, longitudinal keys at least 1-1/2 inches deep by 3-1/2 inches wide shall be provided in all joints in walls, and between walls and slabs or footings.

5. Surface of concrete shall be thoroughly cleaned and laitance shall be removed by wire brushing prior to placing adjoining concrete.

6. At all vertical joints in new concrete and in new against previously existing concrete, and wherever else called for on the Drawings, bonding adhesive paste shall be applied per the manufacturer's directions.

7. At all horizontal joints in new concrete and in new against previously existing concrete, and wherever else called for on the Drawings, bonding grout shall be applied in a 2-inch-thick layer.

B. Expansion and Isolation Joints:

1. Expansion and isolation joints shall be located and constructed as shown. Generally, joints shall be located at the perimeter of slabs-on-grades and other locations shown. These joints shall have filler material and have exposed faces sealed.

2. Reinforcement and other embedded metal items shall not extend continuously through expansion or isolation joints unless shown otherwise.

3. Unless polystyrene foam boards are called for on Drawings, premolded type joint fillers shall be installed for expansion joints in accordance with manufacturer's instructions. Joint filler shall be accurately placed and secured. Fillers for each joint shall consist of as few pieces of material as possible. Pourable or non-sag joint sealants per Section 07900 shall be placed in top or face of joints, as applicable, per manufacturer's instructions. All joints in tanks and within buildings shall be sealed unless otherwise shown. Where called for on the Drawings, exterior joints in or around walks and pavement shall be sealed.

C. Control Joints:

1. Unless indicated otherwise on the Drawings, control joints in slabs shall be located at a maximum spacing of 30 times the slab thickness in both directions with a maximum aspect ratio not to exceed 2 to 1. These joints shall preferably be located on column lines with joints also located between column lines if required to satisfy maximum spacing. Driveways and sidewalks shall have

control joints spaced at intervals approximately equal to the slab width. Drives and walks wider than 12-feet shall have longitudinal and transverse joints at 12-feet maximum spacing. All control joints shall be continuous, not staggered or offset. Control joints shall not be located in liquid containing or conveying structures, such as tank, channels and etc.

3.05 FINISHING OF FORMED SURFACES

A. Surface defects shall be patched. Patching procedures shall be as follows:

1. Honeycombed and other defective concrete shall be removed to sound concrete. Cut or chip edges perpendicular to surface or slightly undercut; featheredging is not permitted. Area to be patched and surrounding area within at least 6 inches shall be dampened to prevent absorption of water from patching mortar.

2. Bonding grout consisting of 1-part cement and 1-part fine sand passing a No. 30 mesh sieve mixed to the consistency of a thick cream, shall be thoroughly brushed into surface immediately prior to applying patching mixture.

3. Patching mixture shall be composed of same proportions as used for concrete except that coarse aggregate shall be omitted and mixture shall not consist of more than 1-part cement to 2-1/2 parts sand by damp loose volume. Mixing water shall be no more than necessary for handling and placing. Patching mixture shall be prepared in advance and allowed to prehydrate with frequent manipulation with trowel, until stiffest consistency that will permit placement is obtained.

4. Where concrete is exposed to view, color of patching mixture shall be adjusted to match surrounding concrete by substituting appropriate amount of white cement for gray cement. Proper color shall be determined by trial patches.

5. Patching mixture shall be applied before bond coat begins to lose water sheen. Patching mixture shall be thoroughly consolidated and struck off so as to leave patch slightly higher than surrounding surface. Patch shall be left undisturbed for one hour after which time it shall be finished with metal tools. Patched area shall be moist cured for not less than 7 days.

B. Tie holes shall be patched as follows:

1. The holes shall be plugged, unless stainless steel noncorrosive or acceptably coated ties are used, as approved by Engineer.

2. Tie holes shall be cleaned and dampened prior to patching with a non-metallic, non-shrink grout. Patching material shall be packed solid into hole.

3. Contractor may substitute alternate materials and procedures subject to the approval of Engineer. These materials shall be applied in accordance with manufacturer’s written recommendations wherever applicable.

C. Stains, rust, efflorescence, and surface deposits on exposed concrete shall be removed by methods acceptable to Engineer.

D. After removal of forms, the surface of concrete shall be given one or more of the finishes specified below as scheduled in the Finishing Schedule of this specification.

1. Rough Form Finish - Fins exceeding 1/8 inch in height shall be removed. Otherwise surfaces shall be left with texture imparted by forms.

2. Smooth Form Finish - The form facing material with or without form-liner shall produce a smooth, hard, uniform texture in the concrete. The type of facing material or form-liner selected is dependent upon the type of smooth finish desired and shall be approved by the Engineer. Tie holes and defects shall be patched. All fins shall be completely removed.

3. Special Architectural Finishes - This shall be produced in accordance with Section 6 of ACI 301R.

4. Smooth Rubbed Finish - The smooth rubbed finish shall be produced on a concrete with smooth form finish as specified above.

   a. Forms shall have been removed and patching completed as soon after placement as possible without damaging or jeopardizing structure.

   b. Finishing shall be performed no later than the day following form removal.

   c. Surfaces shall be thoroughly wetted and rubbed with abrasive until form marks, fins, and irregularities are removed and uniform color and texture are produced. Cement grout shall not be used.

5. Grout Cleaned Finish - The grout cleaned finish shall be produced on a concrete with smooth form finish as specified above.

   a. Cleaning shall not begin until all contiguous surfaces to be finished are completed and accessible. Finishing as the Work progresses is not permitted. Finishing of an area shall be completed on day it is started.

   b. Finishing grout shall consist of 1-part cement and 1-1/2 parts fine sand with sufficient water to produce consistency of thick paint. Where concrete is exposed to view, color of grout shall be adjusted to match surrounding concrete by substituting appropriate amount of white cement for gray cement. Proper color shall be determined by trial patches.

   c. Wet surface sufficiently to prevent absorption of water from grout and apply grout uniformly with brushes or spray gun. Scrub surface vigorously with cork float to coat surface and fill air bubbles and holes. While grout is still plastic, remove excess grout with rubber float or burlap. After surface whitens from drying, rub vigorously with clean

burlap. Finish shall be kept damp for minimum of 36 hours after final rubbing.

E. Finishing of Related Unformed Surfaces:

1. Tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces shall be struck smooth after placement and shall be floated to texture consistent with that of adjacent formed surface. Where smooth rubbed finish or grout cleaned finish is specified, finish shall continue uniformly across unformed surfaces.

3.06 SLAB INSTALLATION

A. Floor construction shall comply with ACI 302R. Floors shall be Class 5 except floors with heavy-duty topping shall be Class 7.

B. Preparation - Subgrade supporting slabs shall be well drained and of adequate and uniform load bearing capacity. Subgrade shall be free of frost before concrete is placed. Subgrade shall be moist at time of placement. Ground may be dampened with water, but there shall be no standing water on subgrade, nor muddy spots.

C. Vapor barriers shall be installed in all occupied spaces or where shown on Drawings. A minimum 4-inch layer of granular, self-draining compactable fill, shall be placed under the vapor barrier. Joints shall be lapped 6 inch minimum. Caution shall be taken during construction not to tear or otherwise damage the vapor barrier. Damaged vapor barriers shall be patched or replaced.

D. Floors and slabs shall be sloped to drains as shown maintaining thickness shown on Drawings as a minimum. When formwork is cambered, screeds shall be set to like camber to maintain proper concrete thickness.

E. A minimum of 1/4 inch per foot slope shall be provided for exterior slabs, driveways, and walks. Driveways and walks can be pitched to one side or crowned along the longitudinal centerline with drainage to both sides as most suitable to surrounding drainage pattern.

F. Concrete shall not be deposited more rapidly than it can be spread, straight-edged, and darby or bull-floated. These later operations shall be completed before bleed water collects on surface. Rakes shall not be used for spreading concrete to avoid segregation. Slabs shall be consolidated by internal vibrators of high frequency and low amplitude, or vibrating screeds.

G. Placement of large slab areas shall be sequenced to reduce initial shrinkage cracks. Such slabs can be poured in a series of long strips separated by similar long strips poured at another time. The adjacent pours shall be at least 48 hours apart. Placing sequence and number of pours are subject to the approval of Engineer.

H. Construction joints shall not be spaced further apart than 60 feet in both directions. Where construction joint spacing exceeds 25 feet concrete placement shall be alternated, in a strip or checkered fashion, so that adjacent sections can be placed a

minimum of 48 hours apart to allow for volumetric change of adjacent pours due to shrinkage and to help minimize cracks.

I. Control joints in slabs shall be located at a maximum spacing of 30 times the slab thickness, in both directions, with a maximum aspect ratio not to exceed 2 to 1, unless noted otherwise. These joints shall be located on column lines where practical. Driveways and sidewalks shall have control joints spaced at intervals approximately equal to the slab width. Drives and walks wider than 12-feet shall have longitudinal and transverse joints at 12-feet maximum spacing. All control joints shall be continuous, not staggered or offset, where practical. Saw-cutting of control joints shall be performed with “Soff-Cut” saw after final finishing as soon as the concrete surface is firm enough not be torn or damaged by the blades and prior to the application of curing compound. In any case, saw-cutting of joints shall be done within two hours after final finishing. Control joint shall be 1/8-inch-wide by one inch deep. Control joints shall not be located in liquid containing or conveying structures, such as tank, channels and etc.

J. Finishes:

1. Scratched Finish - After concrete has been placed, consolidated, struck off, and leveled, but prior to final set, surface shall be roughened with rakes.

2. Floated Finish - After concrete has been placed, consolidated, struck off, and leveled, surface shall not be worked further until ready for floating. Floating shall begin when bleed water sheen disappears and surface has stiffened sufficiently. Floating shall be performed with wood hand float or power float. During first floating, high spots shall be cut down and low spots shall be filled. Slab shall be refloated immediately to uniform sandy texture.

3. Troweled Finish - Surface shall first be float finished, followed by power trowel, and then hand troweled. Additional trowelings shall be performed after surface has hardened sufficiently. Final troweling shall be done when ringing sound is produced as trowel is moved over surface. Finished surface shall be free of trowel marks and uniformly smooth and hard. Dusting surface with cement is not permitted.

4. Broom Finish - Surface shall first be float finished and then given coarse texture by drawing broom over surface.

K. Finishing Tolerances:

1. Floor flatness (FF) and floor levelness (FL) tolerance for slabs on grade with trowel finish shall be FF25/FL20. Minimum local tolerance over 2 bay shall be 2/3 of specified tolerance.

2. Floated finish surfaces shall be constructed to tolerance of FF 20/FL17.

3. FL shall not apply to slabs where slope is shown or specified.

L. Liquid hardener shall be applied to interior exposed concrete floors which do not receive paint, dry-shake hardener, or other coating, or floor coverings. Material shall be

applied in accordance with manufacturer's instructions. Remove curing, sealer and dustproofing compounds prior to placing the liquid hardener.

M. Construction and control joints shall be filled with epoxy joint filler where shown. Joint filler shall be applied not sooner than 3 months after slab construction is completed and shall be installed in accordance with manufacturer's instructions.

N. Expansion and isolation joints shall be sealed using moisture insensitive and movement tolerating joint sealants per Section 07900.

3.07 CURING

A. Beginning immediately after placement, concrete curing shall be initiated to protect the concrete from moisture loss and premature drying. Concrete shall be continuously cured for a minimum of 7 days. Tanks and other liquid-retaining structures shall be cured for minimum of 10 days. Elevated slabs, joists, and beams shall be cured for at least 14 days and as many additional days as necessary for tests to verify that the concrete has attained 90% of its specified design strength up to a maximum of 21 days. For the entire duration of the curing period, the concrete shall be protected from detrimental weather conditions as specified elsewhere in this Section.

B. Curing procedures for each type of concrete section shall be submitted and shall be in accordance with ACI 308, "Standard Practice for Curing Concrete," subject to the additional requirements specified herein.

C. Concrete surfaces not in contact with forms shall be cured by one of following procedures:

1. Ponding, fog spraying, or continuous sprinkling with water. Care shall be taken to avoid thermal shock from use of cold curing water or excessive evaporation rates. Alternate drying and re-wetting of slabs during curing shall be avoided to avoid hairline cracks at the surface.

2. Application of burlap or absorptive mats kept continuously wet.

   a. Burlap shall be clean and thoroughly rinsed in water before it is used.

   b. Burlap and absorptive mats shall be soaked as frequently as required to maintain continuously wet surface.

   c. Burlap and absorptive mats shall remain in place unwetted for minimum of 3 days after end of curing period to permit concrete to dry slowly.

3. Application of waterproof sheet material conforming to ASTM C171.

   a. Sheet material shall be placed over the wet surface of fresh concrete as soon as possible without marring surface. Material shall be placed flat without wrinkles.

   b. Sheet material shall cover all exposed surfaces and shall extend beyond edges of slab a distance of at least twice the thickness of the slab.

c. Sheet material shall be lapped a minimum of 6 inches. Windrows of earth or wood shall be placed along edges and laps to seal joints and secure material from displacement by wind.

4. Application of approved curing compound.

a. Curing compound shall be used only after receiving approval by the Engineer.

b. Curing compound shall not be used on walls to receive smooth rubbed or grout cleaned finishes, prior to the completion of the application of these finishes. Curing compound maybe applied, at contractor discretion, over these finishes to complete the curing processes.

c. Curing compound shall not be used on surfaces to receive paint, liquid hardener, coatings, sealers, floor hardeners, tile, adhesives, or other materials requiring bond, unless positive measures are taken to remove it completely from the areas to receive bonded application.

d. Curing compound shall be placed in accordance with manufacturer's instructions after finishing, and immediately after water sheen has disappeared from concrete surface.

e. Exposed steel, keyways, or concrete to be surfaced shall be protected from curing compounds, unless the manufacturer of the surfacing material submits written documentation approving the use of their material on concrete on which the specific curing compound was applied.

f. Curing compounds shall not be used on surfaces to receive concrete toppings. Refer to Section 03510.

D. Moisture loss from surfaces placed against wooden forms or metal forms exposed to heating by sun shall be minimized by maintaining forms continuously wet.

1. Forms shall be continuously sprinkled or covered with wet burlap.

2. If forms are loosened but not removed, water shall be made to run down inside of form by use of soaker hoses.

3. If forms are removed prior to completion of curing period, concrete shall be cured by one of the methods specified for concrete surfaces not in contact with forms.

3.08 COLD WEATHER CONCRETING

A. Cold weather concreting procedures concerning production, transportation, placement, protection, curing, and temperature monitoring shall be submitted to Engineer for review prior to onset of cold weather.

B. Concrete Production:

1. Minimum concrete temperatures during mixing shall be as follows:

Air Temp	Least dimension less than 12 inch	Least dimension 12 inch or greater
30 to 45 degrees F	60 degrees F	55 degrees F
0 to 30 degrees F	65 degrees F	60 degrees F
Below 0 degrees F	70 degrees F	65 degrees F

2. The mixing temperatures shall not be more than 15 degrees F above the values given above. When necessary in order to produce concrete of the specified temperature, the mix water, the aggregates, or both, shall be heated prior to batching. Heating shall be done in a manner which is not detrimental to the mix and does not prevent the entrainment of the required amount of air. The methods used shall heat the materials uniformly. Aggregates shall not be heated directly by gas or oil flame, or on sheet metal over fire. Neither aggregates nor water shall be heated to over 150 degrees F. If either are heated to over 100 degrees F, they shall be mixed together prior to the addition of the cement so that cement does not come into contact with materials which are in excess of 100 degrees F.

C. Preparation - All snow, ice, and frost shall be removed from the surfaces, including reinforcement, against which the concrete is to be placed. Concrete shall not be placed around any embedment which is at 32 degrees F or less and is sufficiently massive as to cause the adjacent concrete to freeze.

D. Placing - Minimum concrete temperatures at the time of placement shall be 55 degrees F for sections with smallest dimension less than 12 inches, and 50 degrees F for larger sections. Maximum concrete temperature shall not exceed 20 degrees F above the minimum required temperatures at the time of placement.

E. Protection:

1. Protection shall be provided and shall be adequate to prevent the surface temperature of the concrete from falling below 50 degrees F for the duration of the specified curing period. During this period, the concrete surface shall not be exposed to heated air that is more than 20 degrees F above this minimum value. At the end of the protection period, concrete shall be allowed to cool gradually. Maximum decrease in surface temperature shall be 5 degrees F in a one-hour period and 40 degrees F in a 24-hour period.

2. At the time of placement, Contractor shall keep a record of the date, time, outside air temperature, temperature of concrete, and weather conditions (calm, windy, clear, cloudy, etc.). After placement, the Contractor shall keep a record of the date, time, outside air temperature, inside enclosure air temperatures, concrete surface temperatures and weather conditions for the duration of the specified curing period. These conditions shall be recorded at

regular intervals, but not less than twice per each 24-hour period, with no period exceeding 16 hours without recorded conditions. The concrete surface temperatures shall be recorded at several locations on the placed section including interior, edge and corner locations and their corresponding enclosure air temperatures at these locations where applicable. These records shall be submitted to the Engineer or resident field representative weekly. The Contractor shall place a sufficient number of thermometers on the concrete surfaces throughout the Work to allow monitoring of concrete surface temperatures representative of all the Work. The Contractor shall place a minimum of two thermometers, each capable of recording the high and low temperature.

3. Materials and equipment required for protection shall be available at Site before cold weather concreting commences.

4. Heated Enclosure:

   a. Enclosure shall be strong enough to be wind-resistant and weather-tight and ample space shall be provided between concrete and enclosure to permit free circulation of the warmed air.

   b. Maximum air temperature within enclosure shall be 70 degrees F.

   c. Heaters shall be indirect fired type and shall be vented outside of enclosure. Combustion products shall not be permitted to come in contact with protected concrete.

   d. Heaters and ducts shall be arranged so as not to cause areas of overheating or drying of concrete surface.

5. Insulation:

   a. Slabs not less than 12 inches thick placed on ground, elevated slabs, and walls may be protected by insulated forms and insulation blankets. Insulation shall be wind resistant and weather-tight.

   b. Insulation type and thickness shall be selected with due regard for concrete temperature, air temperature, and length of protection period in accordance with “Cold Weather Concreting” (ACI 306R). Special care shall be taken at corners and edges of structure. Insulation type, thickness, and “R” value shall be as indicated in cold weather concreting procedures.

   c. When minimum concrete temperature is not maintained, insulation shall be removed and immediately replaced by a heated enclosure. A sufficient number of surface thermometers shall be furnished and installed as directed by Resident Project Representative.

F. Curing - If water curing is used, it shall be terminated at least 24 hours before concrete is exposed to freezing temperatures. Curing period shall be completed by non-water curing methods.

3.09 HOT WEATHER CONCRETING

A. Hot weather concreting procedures including production, transportation, placement, protection, and curing shall be submitted for Engineer's review prior to onset of hot weather.

B. Concrete Production and Delivery - The temperature of the concrete at time of placement shall be maintained within specified temperature by any combination of the following:

1. Type III cement is prohibited.

2. The temperature of the aggregates shall be kept low by shading the aggregate piles or sprinkling the aggregate with water.

3. Concrete ingredients shall be cooled before mixing or flake ice shall be substituted for all or part of mixing water as required to reduce concrete temperature. Mixing shall continue until ice is completely melted.

4. Delivery of concrete shall be scheduled so that concrete is deposited as soon as practicable. Concrete shall be completely discharged within 1 hour after introduction of mixing water to cement.

5. Water reducing or retarding admixtures with shrinkage compensating cement shall be used in such quantities as recommended by the manufacturer.

C. Preparation - Steel forms, reinforcement, and embedments shall be cooled to below 90 degrees F by means of spraying with water or other approved methods immediately prior to concrete placement.

D. Placing - Concrete shall be placed at lowest practicable temperature. Temperature of concrete as placed shall not cause difficulty from loss of slump, flash set, or cold joints and shall be between 75 degrees F and 90 degrees F and in no case shall exceed 90 degrees F.

E. Protection:

1. During hot weather conditions prior to the application of curing materials, the concrete being placed and finished shall be protected from damage due to rapid evaporation. Such protection shall be adequate to prevent premature crusting of surface or an increase in drying shrinkage and cracking. Such protection shall be provided by raising the humidity of the surrounding air by fog spraying, the use of wind breaks or sun shades, additionally reducing of the temperature of the concrete, scheduling placement during the cooler times of days or nights, reducing time between placement of concrete and start of curing, or any combination thereof.

2. Forms shall be covered and kept moist.

F. Curing:

1. Curing shall be performed by water methods only unless approved otherwise.
2. When the use of waterproof sheet material is approved for hot weather concreting, the material shall be pigmented white.
3. Forms shall be loosened as soon as practicable and water curing shall be used as specified.

3.10 ~~RESERVED~~ MASS CONCRETE

A. Concrete sections with minimum dimension larger than 36 inches shall be treated as mass concrete.

B. Concrete Production:

1. Type III cement and accelerating admixtures are prohibited.
2. Cement content shall be reduced by substitution of fly ash within specified limit.
3. Concrete ingredients shall be cooled before mixing or flake ice shall be substituted for all or part of mixing water as required to reduce concrete temperature. Mixing shall continue until ice is completely melted.

C. Placing:

1. The temperature of concrete when deposited shall be between 50 degrees F and 70 degrees F.
2. Concrete shall be placed in layers approximately 18 inches thick. Vibrator shall extend into previously placed layer.

D. Curing:

1. The curing period for mass concrete shall be a minimum of 14 days.
2. When the surrounding air temperature exceeds 40 degrees F, forms and exposed concrete shall be kept continuously wet for the first 48 hours after placing. Concrete shall be cured by any acceptable method after the first 48 hours, except when surrounding air temperature exceeds 90 degrees F, water curing methods shall be used exclusively. When cold weather concreting provisions apply, continuous wetting during first 48 hours is not required.
3. During and at conclusion of the curing period, the temperature of the air immediately adjacent to concrete shall not fall more than 3 degrees F in any 1 hour, nor 30 degrees F in any 24 hours. **(Addendum 2, Issued 5/18/2026)**

3.11 TESTING

A. Concrete materials and operations shall be tested as the Work progresses.

B. Duties of testing laboratory shall be as follows:

1. Review, check, and test proposed materials for compliance with Specifications before the start of the Work.

2. Sample aggregates from concrete production stockpiles, at least once a month, during the placement of concrete and test for compliance with the specifications. The moisture content of each sample shall be measured and recorded.

3. Review and test proposed mixture design when required by Engineer.

4. Randomly sample concrete during construction in accordance with ASTM C172 and perform scheduled tests.

C. Test Schedule:

1. Strength:

a. One strength test shall be made for each 50 cubic yards, or fraction thereof, of each class of concrete placed on any one day. Frequency of testing shall not provide less than 5 strength tests for each class of concrete.

b. Concrete strength test shall consist of three specimens from each sample molded and cured in accordance with the section of ASTM C31, “Curing Specimens for Checking the Adequacy of Mixture Proportions for Strength or as the Basis for Acceptance or Quality Control”.

c. Specimens shall be tested in accordance with ASTM C39. Two specimens shall be tested at 28 days for acceptance and one shall be tested at 7 days for information. Strength test result shall be average of strengths of 28-day specimens. If one specimen shows evidence of improper molding, handling, or testing, it shall be discarded and remaining specimen shall be considered as strength test result. Should both specimens in a test show any of the above defects, the entire test shall be discarded.

2. Cold Weather Concreting and Form Removal:

a. When cold weather concreting procedures apply or when form removal provisions of Section 03100 apply, field cured specimens shall be made to determine when protection procedures may be terminated or when forms may be removed. These field cured specimens shall be in addition to strength tests and shall be made at same time as strength specimens.

b. Specimens shall be molded and cured in accordance with the section of ASTM C31, “Curing for Determining Form Removal Time or When a Structure May be Put into Service”. Contractor shall determine number of specimens required, but number of specimens shall not be less than three.

c. Specimens shall be tested in accordance with ASTM C39. Age-at-test of specimens shall be selected by Contractor.

3. Slump shall be measured for first batch of each concrete class delivered in morning and afternoon, for each strength test, and whenever consistency of concrete appears to vary. Slump shall be measured in accordance with ASTM C143. In the event that a batch fails to comply with specified requirements, the slump shall be measured on each successive batch until three batches meet the specified requirements.

4. Air content shall be determined for first batch of each concrete class delivered in morning and afternoon, for each strength test, and as required by field representative. Air content shall be measured in accordance with ASTM C231, ASTM C173, or ASTM C138. When concrete is placed by pumping, air content and slump shall be measured before pump and also at pump discharge. In the event that a batch fails to comply with specified requirements, the air content shall be measured on each successive batch until three batches meet the specified requirements.

5. Temperature of concrete sample shall be measured for each strength test.

6. If the measured slump or air content falls outside the specified limits, make additional tests immediately. Test all succeeding trucks for both slump and air until three in succession pass the slump and air tests.

3.12 EVALUATION OF STRENGTH

A. Contractor shall perform concrete mix work and produce concrete structures in full compliance with Specifications.

B. Concrete strength will be considered satisfactory if the average of three consecutive strength test results equals or exceeds the specified strength, and no individual strength test result falls below specified strength by more than 500 psi.

3.13 CONCRETE SCHEDULE

A. Unless indicated otherwise on the Drawings or specified, concrete shall be furnished as follows:

Class A-1: For all structures not defined under Class A-2 or Class B concrete.

Class A-2: For structures that cover, convey or store wastewater such as channels and tanks, and their attached auxiliary structures, and all other concrete that will be submerged or exposed to wastewater.

Class B: For pipe saddle supports, pipe pier supports, buried electrical duck banks, equipment pads, housekeeping pads and mudmats, unless noted otherwise. The above items shall not be exposed to weather and shall

not be submerged in liquids; otherwise, they shall be of Class A concrete as specified above.

3.14 CONCRETE FINISHING SCHEDULE

A. Concrete shall be finished as follows unless indicated otherwise:

1. Building Interior:

Floors intended as walking surfaces or to receive a floor covering, bases, and curbs:	Troweled finish*.
Other slabs intended to receive roofing, water-proofing membrane or sand bed terrazzo:	Float finish*.
Exposed formed surfaces:	Smooth-rubbed finish*.
Other formed surfaces:	Smooth-rubbed finish*.

2. Building Exterior:

Slabs, drives, and walks:	Broom finish*.
Exposed formed surfaces:	Grout-cleaned finish to 6-in below grade*.
Other formed surfaces:	Smooth form finish*.

3. Pedestrian Ramps and Exterior Stairs: Non-slip finish*.

4. Tanks and Other Liquid Retaining Structures:

Slabs:	Float finish*.
Interior formed surfaces to 6-inches below low water level:	Grout-cleaned finish*.
Interior formed surfaces lower than 6-inches below low water level:	Smooth form finish *.
Exterior formed surfaces:	Grout-cleaned finish to 6-in below grade*.
Other formed surfaces:	Rough form finish*.

* Concrete surface finish shall be coordinated and acceptable surface finishes to be applied to concrete.

3.15 ELECTRICAL CONDUITS AND LIQUID PIPE EMBEDMENTS

A. Prior to placing concrete with embedded conduits and pipes the contractor shall submit a layout plan drawing that includes the locations, quantity and size of these items. The layout plan shall be submitted to the Engineer at least 14 days prior to placement for approval.

B. Conduits, pipes and sleeves passing through slabs, walls or beams shall not impair significantly the strength of construction. Conduits and pipes shall not be embedded in columns or beams without the approval of the engineer.

C. Conduits and pipes embedded within slabs and walls shall not be larger in outside dimension than one-third the overall thickness of the slab or wall that they are embedded in.

D. Conduits and pipes embedded within slabs and walls shall not be spaced closer than 3 diameters on center.

E. Concrete cover over conduits, pipes and fittings shall not be less than 2 inches.

3.16 HOUSEKEEPING PADS

A. Unreinforced concrete pads shall be installed under all floor-mounted items such as motor control centers, electrical panels, control panels, transformers, and HVAC equipment that do not produce vibration. The pads shall be 4 inches high with chamfered edges and a troweled finish, unless noted otherwise on the drawings.

3.17 EQUIPMENT PADS

A. Reinforced concrete pads shall be installed under all generators, pumps, motors, blowers, drives or other pieces of equipment with internal moving parts that may produce vibration. The pads shall be a minimum of 4 inches high. Refer to standard pad details given on the drawings.

PART 4 SPECIAL PROVISIONS

4.01 CRYSTALLINE WATERPROOFING ADDITIVE

A. Contractor to provide crystalline waterproofing additive to cast-in-place concrete where indicated on the drawings or as specified. The crystalline waterproofing material shall be Xypex Admix C-500 NF or Penetron Admix. Dosage rate shall be 1.0% (minimum) of weight of cementitious material.

B. Concrete waterproofing system shall be of the crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. The system shall cause the concrete to become sealed against the penetration of liquids from any direction, and shall protect the concrete from deterioration due to harsh environmental conditions.

C. Admix must be added to concrete mix at time of batching. The actual dosage in the mix design shall be certified at the time of application.

D. Manufacturer shall coordinate with the concrete batch facility and other admixture suppliers to ensure compatibility with the concrete mix design, other admixtures and concrete properties. The addition of the crystalline water proofing shall not reduce the concrete strength or compromise the ASTM specifications or other quality standards governing the concrete mix.

E. Concrete containing crystalline waterproofing admixture shall be moist cured in accordance with ACI Reference 308, “Standard Practice for Curing Concrete”.

4.02 ADDITIONAL TESTING

A. Preparation and testing of field cured specimens required for cold weather concreting and for form removal requirements shall be furnished by Contractor at no additional cost to Owner.

END OF SECTION

SECTION 07200
WALL AND CEILING INSULATION

PART 1 GENERAL

1.01 SCOPE

A. This Section includes thermal insulation for buildings excluding roof insulation.

1.02 SUBMITTALS

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

1. Shop Drawings for Review:

a. Product literature.

b. Two samples of each type and thickness of insulation. Samples shall be minimum 8-inch by 8-inch.

2. Information for the Record:

a. Manufacturer's certification.

b. Manufacturer's installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Insulation shall be of type and thickness shown or specified.

B. Insulation shall not rot, disintegrate, slump, or leave uninsulated voids and shall not provide sustenance to vermin, rodents, insects, bacteria, or fungi. Insulation shall not react with or accelerate corrosion of steel, aluminum, or copper. Insulation shall be odorless.

C. Combustible insulation shall be treated with fire retardant.

D. Insulation shall retain thermal capacity for minimum of 20 years.

E. Production of insulation shall not utilize chemicals banned by the Montreal Accord.

2.02 TYPES

A. Type A - Fiberglass Insulation:

1. Manufacturers: Owens Corning, Johns Manville, Knauf Insulation, or equal.

2. Kraft Paper Faced Description: Pre-formed fiberglass or mineral fiber thermal and acoustical insulation, batt or roll form, kraft paper faced vapor barrier, complying with ASTM C665, Type II, Class C, Category 1.

3. Construction: Fiberglass insulation batts or rolls are bonded with thermosetting resin and adhered to a kraft paper vapor barrier.

4. Unfaced Description: Pre-formed fiberglass or mineral fiber thermal and acoustical insulation, batt or roll form, unfaced, complying with ASTM C665, Type I, ASTM E136.

5. Construction: Fiberglass insulation batts or rolls are bonded with thermosetting resin.

6. Physical Properties:

Physical Property	**Test Method**	**Specification**
Thermal Resistance (Thickness: R-Value) Min., degrees F-Sqft-Hr/BTU	ASTM C518	3-1/2": R-13 6-1/4": R-19 9-1/2": R-30
Critical Radiant Flux, W/Sqcm	ASTM E970	0.12 or greater
Water Vapor Sorption, Min., Percent by Weight	ASTM C1104	Less than 5
Water Vapor Permeance Kraft Faced, Min., Perms	ASTM E96	1.0
Surface Burning Characteristics, Flame Spread/Smoke Developed, Index Unfaced Kraft Faced	ASTM E94	 25/50 NR/NR

B. Type B Rigid Polyisoncyanurate Foam Board:

1. Manufacturers: Johns Manville, AP Foil-Faced Rigid Foam Sheathing, RMax, or equal.

2. Description: Foil-faced, rigid foam insulating sheathing product for exterior applications and concealment in cavity wall construction, complying with ASTM C1289, Type 1, Class 1.

3. Construction: Foam bonded on both sides in the manufacturing process to foil facers. Both sides printed with one side reflective foil facer and the other non-reflective foil facer.

4. Foam: Closed cell polyisocyanurate, CFC and HCFC free.

5. Physical Properties:

Physical Property	**Test Method**	**Specification**
Thermal Resistance per Nominal 1 inch Thickness Min., degrees F-Sqft-Hr/BTU	ASTM C518	6.0
Compressive Strength, Min. psi	ASTM D1621	16 or greater
Flexural Strength, Min. psi	ASTM C203	40 or greater
Water Absorption, Min., Percent by Volume	ASTM C209	0.1
Water Vapor Permeance, Min., Perms	ASTM E96	0.05

Physical Property	Test Method	Specification
Surface Burning Characteristics, Flame Spread, Index	ASTM E84	25 or less
Surface Burning Characteristics, Smoke Developed, Index	ASTM E84	450 or less
Service Temperature, degrees F		-100 to 250

6. Board Size: 48 inches wide by 96, 108, or 120 inches in length. Refer to the Drawings for required thickness.

7. Accessories:

   a. Insulation Flashing Tape: JM Ultrafast Flashing Tape, 3M All Weather Flashing Tape 8067, or equal.

   b. Wall Penetration Sealant: Tremco Spectrem 1, or equal.

   c. Insulation Fasteners: JM Ultrafast CI Plates and JM Ultrafast CI Philips screws, or equal. For masonry cavity walls refer to the masonry specification for insulation retainers.

C. Extruded Polystyrene Rigid Foam Insulation:

1. Manufacturers: Owens Corning Foamular, Dupont Styrofoam Brand SM, Dow, or equal.

2. Description: Rigid foam insulated sheathing for exterior applications complying with ASTM C578, Type IV.

3. Construction: Extruded polystyrene, closed-cell, moisture-resistant rigid foam boards.

4. Physical Properties:

Physical Property	Test Method	Specification
Thermal Resistance Min., R-Value per inch, degrees F-Sqft-Hr/BTU @75 degrees F Mean Temperature	ASTM C518	5.0
Compressive Strength, Min. psi	ASTM D1621	25
Flexural Strength, Min. psi	ASTM C203	50
Water Absorption, Max., Percent by Volume	ASTM C272	0.3
Water Vapor Permeance, Max., Perms	ASTM E96	1.5
Dimensional Stability, Max % by Volume	ASTM D2126	2.0
Surface Burning Characteristics, Flame Spread, Index	ASTM E84	10
Surface Burning Characteristics, Smoke Developed, Index	ASTM E84	175
Service Temperature, Max. degrees F		165

D. Type D - Block Insulation Inserts:

1. Manufacturers: Concrete Block Insulating Systems/Korfil ICON, or equal.

2. Description: Factory preinstalled single face universal inserts, individually molded expandable polystyrene, 2-1/4 inch to 3-1/2 inch oval, to fit in standard

two core masony units of 6, 8, 10, and 12-inch block widths for use in both single wythe and cavity wall construction complying with ASTM C-578.

3. Construction: Manufactured from flame-retardant treated expandable polystyrene within normal manufacturing tolerances.

4. Physical Properties:

Physical Property	Test Method	Specification
Thermal Resistance Min., R-Value per Inch, degrees F-Sqft-Hr/BTU	ASTM C518	5.0
Typical Density, Min., Lbs/Cuft	ASTM C303	1.05
Water Absorption, Max., Percent by Volume	ASTM C272	1.00 or less
Water Vapor Permeance, Max., Perms	ASTM E96	1.1
Surface Burning Characteristics, Flame Spread, Index	ASTM E84	5.00 or less
Service Temperature, Max. degrees F		184

E. Type E - Spray Polyurethane Foam Insulation:

1. Manufacturers: Johns Manville Corbond III, or equal.

2. Description: Closed-cell, spray in place polyurethane foam consisting of two components, medium-density, Class 1 rated, insulation system complying with ASTM C1029.

3. Physical Properties:

Physical Property	Test Method	Specification
Thermal Resistance Min., R-Value per Inch, degrees F-Sqft-Hr/BTU	ASTM C518	7.0
Core Density, Lb/Cuft	ASTM D1622	2.0
Compressive Strength, psi	ASTM D1621	36
Closed-Cell Content, Percent	ASTM D6226	90 or less
Water Absorption, Max., Percent by Volume	ASTM C2842	0.88
Water Vapor Permeance, Max., Perms	ASTM E96	1.5
Dimensional Stability, Max % by Volume	ASTM D2126	2.0
Surface Burning Characteristics, Flame Spread, Index	ASTM E84	25 or less
Surface Burning Characteristics, Smoke Developed, Index	ASTM E84	450 or less
Service Temperature, Max. degrees F		180

PART 3 EXECUTION

3.01 PREPARATION

A. Contractor shall examine surfaces to receive insulation prior to installation. Surfaces shall be dry, free of dirt, dust, and debris.

B. Unacceptable conditions shall be reported to Engineer.

3.02 INSTALLATION

A. Insulation shall be installed and secured in locations shown. Installation shall be in accordance with manufacturer's instructions.

B. For ceilings provide Type A insulation between the joist/rafter/truss ceiling construction. Provide Kraft paper vapor barrier faced insulation where covered by drywall or other interior building wall system. Kraft paper is installed towards the interior of the building just behind the wall or ceiling board. Where second layer of insulation is required provide unfaced insulation perpendicular and on top of the faced insulation that is installed between the ceiling members to give the proper thickness and R-Value required by the energy code.

C. For masonry cavity walls provide ~~Type B~~ Type C **(Addendum 2, Issued 5/18/2026)** insulation between the veneer masonry and the structural backup masonry and shall be secured with insulation retainers. The insulation shall be placed against the interior face of the structural backup masonry. Provide or cut the board height to match the vertical spacing between veneer ties.

D. For foundations provide Type C insulation around the inside face of foundation walls. Adhere the insulation to the foundation.

3.03 APPLICATION OF SPRAY POLYURETHANE FOAM INSULATION

A. The foam shall be applied uniformly over the entire surface with a tolerance of plus 1/4-inch, per inch of thickness, minus zero except where variations are required to ensure proper drainage or to complete a feathered edge.

B. The spray-applied foam shall be applied in uniform pass thicknesses from 2-inch to 3/4-inch.

C. Foam used in masonry block cores shall fill the entire core. Foam shall not be used in reinforced cores.

3.04 PROTECTION

A. Insulation shall be protected from moisture and inclement weather. Exposed insulation shall be covered at end of each work day or at onset of inclement weather.

B. Damaged or wet insulation shall be removed and replaced with new material.

PART 4 SPECIAL PROVISIONS

Not used.

END OF SECTION

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SECTION 09900
PAINTING

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing and application of protective coatings to all wood, concrete, and metal surfaces as specified or as shown on the Drawings.

B. Included in this Section is surface preparation, shop application inspection, and field touch up work as required to provide a complete protective coating system.

C. In general, the Work shall include the field painting of the following:

1. All exposed interior cast-in-place concrete (except floors) above ground floor.
2. All exposed concrete blocks and hollow core precast slabs.
3. All exposed plaster.
4. All exposed wood.
5. All exposed pipe insulation.
6. All exposed piping, including fittings, valves, couplings, flanges, and other in-line accessories.
7. All machinery, pumps, and equipment.
8. All metal surfaces except the following:
    a. Bronze surfaces.
    b. Stainless steel surfaces.
    c. Aluminum or galvanized steel not requiring color coding or otherwise specified to be coated.

D. Additional product requirements are specified in Section 01350.

E. A Coating Schedule appears in Part 4 of this Section.

1.02 SUBMITTALS

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

1. Shop Drawings for Review:
    a. Coating manufacturer’s product data and technical literature including:
        1) Catalog number.
        2) General classification.

3) Coating material analysis.

4) Detailed surface preparation guidelines.

5) Mixing, thinning, and application instructions for each material.

6) Induction time, pot life, viscosity, and drying and curing times for acceptable ranges of temperature and humidity.

b. Abrasive manufacturer's information including:

1) Name, address, and phone number of manufacturer and local supplier.

2) Bulk density.

3) Mohs ranking.

4) Sieve analysis.

5) Chemical analysis including impurities.

6) Free silica content.

7) Grain shape (roundness).

c. Submittals of coatings by a manufacturer not named in these specifications shall include performance criteria on abrasion, adhesion, exterior exposure, hardness, humidity exposure, salt spray (fog), impact, immersion, etc., as applicable, per the appropriate ASTM standards. If requested by the Engineer, the Contractor shall submit manufacturers complete formula for the coatings which are proposed to be furnished. The Engineer may also require the submission, at the Contractor's expense, of test reports from private laboratories showing results of comparable tests on the coatings proposed and the coatings specified.

d. Details of application equipment and procedures.

e. Samples of manufacturer's standard colors.

2. Information for the Record:

a. Certification that materials meet or exceed Specifications and that coating systems are suitable for intended use.

b. Certification that coating systems are compatible with substrate, specified surface preparation, prime coats, sealants and existing finishes.

c. Safety Data Sheets (SDS) for coating materials, thinners, diluents, abrasives, cleansers, and other materials.

d. Schedule of coating work showing each phase and step of Work.

1.03 QUALITY ASSURANCE

A. Standards - Surface preparation, coating, and patching work performed under this Section shall conform to the applicable provisions and recommendations of the following standards.

1. SSPC Steel Structures Painting Manual, Volume 1, “Good Painting Practice.”
2. SSPC Steel Structures Painting Manual, Volume 2, “Systems and Specifications.”
3. SSPC Vis. 1 and 2, visual standards and written guidelines.
4. NACE Coatings and Linings Handbook.
5. Applicable NACE standards and recommended practices including RP0178 and RP0184.

B. Field Mock-ups - Where specified in the Coating Schedule, a field mock-up shall be done prior to performing the required Work.

1. Field mock-ups shall be a minimum of 4 square feet in area, in a location chosen by the Owner or his representative.
2. The mock-ups will serve as a standard of acceptance for applicable coating work under this Contract.
3. The coating manufacturer’s representative will be available to advise the Contractor.
4. Step-down mock-ups, showing the prepared substrate, primer, intermediate, and finish coats, as applicable, shall be used. Where the substrate is a ferrous metal, the portion remaining exposed shall be protected with a clear varnish.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling shall be in accordance with Section 01350.

B. Include the following information on container labels or packing slips:

1. Manufacturer’s name.
2. Name or title of material.
3. Batch numbers.
4. Stock number and date of manufacture.
5. Shelf life or expiration date.
6. Contents by volume of pigment, binder, and vehicle.
7. Thinning instructions when recommended.
8. Application instructions.
9. Color name and number.

10. Safety Data Sheets (SDS).

C. Provide controlled storage for coating materials and abrasives. Store coating materials in environmentally controlled enclosure with minimum ambient temperature of 55 degrees F. Store abrasives in dry area.

D. Maintain inventory of coating materials, solvents, and cleaners.

1.05 SCHEDULING AND SEQUENCING

A. Notify Engineer two weeks in advance of surface preparation and coating application.

B. Work systematically in accordance with submitted schedule.

C. Sequence and coordinate abrasive blasting and coating application with Work of other sections. Do not interrupt plant process or interfere with Owner's operations.

D. Coordinate coating work with installation of sealants specified in Section 07900.

E. Furnish specified testing and inspection equipment to Owner a minimum of two weeks prior to beginning surface preparation and coating work.

1.06 MANUFACTURER'S RECOMMENDATIONS

A. Apply coatings in strict compliance with manufacturer's recommendations and instructions as to environmental conditions, surface preparation, mixing, application, and curing. Where Specifications are more stringent than manufacturer's recommendations, Specifications shall prevail.

B. Resolve conflicts between Specifications and manufacturer's recommendations and instructions by obtaining written agreement between Engineer and coating manufacturer prior to beginning Work.

1.07 DESCRIPTION

A. Shop Painting - Shop painting shall be performed to the extent and as required under Section 01350 and the various individual sections of the specifications. All metal surfaces shall be given a protective shop coat of primer compatible with the field coating. Shop primer color shall be beige where available. If a prime coat has not been applied in the shop, then a prime coat shall be applied in the field after proper surface preparation and prior to the application of the finish coats.

B. Compatibility - The Contractor shall ensure the primer or finish coating applied in the shop is compatible with the specified field coatings. If the coatings are incompatible, the shop coatings shall be removed by abrasive blasting and coatings applied in conformance with this Section.

PART 2 PRODUCTS

2.01 MATERIALS

A. The products shall be as specified in the Coating Schedule. Materials selected for each coating system shall be the product of one manufacturer. The Contractor shall be responsible for the compatibility of all components of each coating system including primer, thinner, and solvents.

2.02 COATING SCHEDULE

A. The Coating Schedule included in Part 4 of this Section identifies the areas to be painted, the required materials, and number of coats required.

PART 3 EXECUTION

3.01 ENVIRONMENTAL REQUIREMENTS

A. Environmental Conditions:

1. Perform Work of this Section under the following environmental conditions.

   a. Abrasive blast only when surface contamination can be prevented. Abrasive blast only when surface temperature is more than 5 degrees F above dew point and relative humidity is less than 85%.

   b. No coating shall be applied when the air temperature, as measured in the shade, is below 40 degrees F or above 90 degrees F. No coating shall be applied when the temperature of the surface to be painted is below 35 degrees F or as recommended by the paint manufacturer, whichever is greater. Coatings shall not be applied to wet or damp surfaces, when the relative humidity exceeds 85%, or when the surface to be painted is less than 5 degrees F above the dew point.

2. Coating work may proceed during inclement weather in environmentally controlled enclosures. Environment within enclosure shall comply with Specifications and manufacturer's recommendations. Provide adequate ventilation and illumination. Minimum illumination shall be 150-foot candles.

B. Interior Painting may be done only when the building has been thoroughly dried, by natural or artificial heat, and when the Work area is properly heated and ventilated, clean, and as nearly dust free as possible. Room temperature shall be maintained within the manufacturer's recommendations during application and until coatings are dry.

C. Dust - Coating shall not be applied in areas where dust is being generated.

3.02 PROTECTION

A. During the construction period, all electrical and mechanical equipment and other equipment and apparatus shall be protected from paint drippings by means of tarpaulins, burlap, wooden housings, or other protection.

B. Finished work of other trades, surfaces not being painted concurrently or not to be painted, and factory finished lockers, toilet partitions, etc., that will not require field painting shall be protected at all times from paint spots and damage to the finish.

C. Perform cleaning and coating operation in manner which prevents dust and contaminants from falling in newly applied coating.

D. Protect portions of Work which are partially or entirely completed and which are adjacent to surfaces being prepared by abrasive blasting.

E. Protect completed Work from solvents, contaminants, or other substances which may damage coating.

F. Prominently display “Wet Paint” signs in sufficient number to protect newly applied coating.

3.03 PREPARATION OF SURFACES

A. General - All surfaces, of whatever material, which are to be painted shall be thoroughly cleaned of dirt, grease, rust scale, or other injurious substance, and, at the time of application of the coating, shall be clean and dry.

B. Metal Surfaces:

1. Remove weld spatter and other projections. Grind sharp edges to a minimum radius of 1/8-inch. Grind rough welds smooth. Grinding shall be in accordance with SSPC Surface Preparation Commentary. Surfaces shall be smooth and contoured in compliance with SSPC-SP 12.

2. Surfaces which have not been shop coated shall be abrasive blasted prior to any prime coats. Abrasive blasting shall be done in accordance with the Coating Schedule.

3. Shop primed surfaces shall receive a field sweep blast prior to the application of subsequent coats.

4. Abrasions or defects on shop coated surfaces shall be spot primed.

5. Surfaces which are to receive a high heat coating shall be Near White Blast Cleaned (SSPC, SP-10) and painted within eight hours; or, if recommended by the manufacturer of the approved high heat coating, the surfaces may be thoroughly cleaned to bare metal and given wash coats or a cold phosphatizing treatment as recommended by the manufacturer and as approved by the Engineer.

C. Concrete and Masonry Surfaces:

1. New concrete and masonry surfaces shall be allowed to become completely cured for at least 30 days at a temperature of 75 degrees F and, immediately prior to treatment, shall be thoroughly cleaned of all dirt, grease, form release agents and stains. Curing compounds shall be removed.

2. Concrete surfaces shall be pressure washed with solution of trisodium phosphate (4 ounce per gallon) and detergent in hot water. Water temperature shall be approximately 180 degrees F. Immediately flush surface with clean potable water until pH of surface meets acceptance criteria of ASTM D4262.

3. If recommended by the coating manufacturer, on concrete surfaces less than six months old, one coat of zinc sulfate solution shall be uniformly applied and allowed to dry before application of the coating.

4. Concrete surfaces shall be abrasive blasted with coarse, hard, and angular abrasive after cleaning. Air stream shall be free of moisture and oil.

5. Acid etching is not permitted.

D. Wood Surfaces shall be sanded smooth and filled with an approved paste or liquid grain filler, and cracks and crevices shall be filled with a non-shrinking, elastic composition especially prepared for this purpose. Wood surfaces to be varnished shall be rubbed smooth with pumice and oil.

E. Clean up all debris from the surface preparation operation.

3.04 ABRASIVE BLASTING

A. Abrasives shall be expendable coal slag or aluminum oxide, free of silica, or a steel shot/grit mixture. Maintain abrasives free from dust, salts, and other impurities. Select the type and size of abrasive to yield a surface as specified in the Coatings Schedule.

B. Provide moisture and oil separators or traps of adequate size in compressed air system to provide dry and clean air supply. Drain traps automatically during blasting operation. Remove oil and moisture accumulated in air receiver by regular purging.

C. Remove weld splatter, slivers, laminations, and underlying mill scale which become visible after abrasive blasting, by grinding in accordance SSPC SP-3 and NACE RP0178. Follow grinding by final abrasive blast.

D. Surfaces which cannot be properly cleaned by abrasive blasting because of their location may be prepared by power tool cleaning in accordance with SSPC SP-11 (Power Tool Clean to Bare Metal) in lieu of abrasive blasting, subject to Engineer's approval.

E. After surface preparation but prior to priming inspect surface for corrosion. Remove corrosion products which become visible when viewed without magnification by re-blasting.

F. Remove dust and blasting residue by blowing with clean, dry air, and vacuum cleaning with clean tools.

3.05 MIXING AND THINNING

A. All mixing shall be performed by mechanical paint shakers or mixers in strict accordance with the manufacturer's printed instructions.

B. Do not use coating material which has livered, gelled, or otherwise deteriorated during storage. Thixotropic materials which obtain normal consistency when stirred are acceptable. Where a skin has formed in container, cut skin loose from sides of container and discard prior to mixing.

C. Each component of multi-component materials shall be mixed individually before use. The material shall be mixed in a manner which will insure the break-up of all lumps, complete dispersion of pigment, and a uniform composition. Materials shall be inspected after mixing for uniformity and to verify that no unmixed pigment remains at the bottom of the container.

D. The individual parts shall be mixed together in the proportions recommended by the manufacturer. The materials shall be mixed thoroughly before use and shall be agitated often enough during application to ensure a uniform composition.

E. Mixed coatings shall be strained after mixing unless the application equipment is provided with strainers. Strainers shall be of a type to remove skins and undesirable matter without removing pigment.

F. Thinner shall not be added unless required for proper application. Thinning shall be in strict accordance with the manufacturer's recommendations.

G. Mixed coatings shall have pot life stated on label and indicated in approved Shop Drawing. When pot life limit is reached, discard material, clean equipment, and mix and induct new material.

H. Store materials not in actual use in tightly covered containers. Maintain containers and equipment used in storage, mixing, and application in clean condition, free of foreign materials and residue.

3.06 COATING APPLICATION

A. Apply prime coat within eight hours of completion of surface preparation. If surface is degraded, contaminated, or wet by rain or moisture subsequent to surface preparation and prior to coating, restore surface in accordance with Specifications.

B. Prior to applying each coat, remove dust with industrial vacuum cleaner using new filters, clean tools, and clean hopper. Remove residue or foreign matter on coating before applying additional coats by pressure rinsing with 1800-2000 psi water, when required by Engineer's representative.

C. Apply coatings in accordance with applicable provisions of SSPC Paint Application Specification PA 1. Use equipment best suited for the coating material.

D. Cloudiness, spotting, laps, brush marks, roller marks, runs, sags, drips, ropiness, voids, discontinuities, pinholes, and other surface imperfections are unacceptable.

E. When spray application is approved by Engineer. Spare fittings, gun tips, gun parts, and other spray equipment shall be acceptable to Engineer.

F. Stripe coat edges, welds, corners, crevices, and other surfaces difficult to coat before applying full coat in accordance with SSPC-PA 1.

G. Coverage shall be in conformance with the manufacturer's instructions. The dry mil thickness of coatings shall be as specified in the Coating Schedule.

3.07 APPLICATION BY SPRAYING

A. Application of coatings by spraying may be permitted in locations and on surfaces approved by the Engineer. The Contractor must submit for approval a written request giving the proposed locations and the coating manufacturer's instructions for spray application. Applicator and equipment must conform to the following paragraphs:

1. Spraying shall conform to the manufacturer's recommendations.

2. Equipment:

a. The spray equipment used shall be suitable for the intended purpose, capable of properly atomizing the coating, and equipped with suitable pressure regulators and gages. The equipment shall be in good working order.

b. Spray equipment shall be kept sufficiently clean so that dirt, dried coating, and other foreign substances are not deposited with the coating.

c. All solvents used in cleaning the equipment shall be completely removed before use.

d. The equipment manufacturer's instructions for proper use shall be strictly followed.

3. Air Spray:

a. Air caps, nozzles, and needles shall be those recommended by the manufacturers of the coating system and spray equipment being used.

b. Moisture and oil separators or traps shall be used in the compressed air system to provide a dry and clean air supply. The traps or separators must be of adequate size and must be drained periodically during the coating application.

4. Airless Spray:

   a. Fluid tips shall be of the proper orifice size and fan angle, and the fluid control gun of proper construction, as recommended by the manufacturer of the coating system and the spray equipment being used.

3.08 CURING

A. Each coat shall be in a proper state of cure or dryness prior to the placement of the succeeding coat. Coating shall be considered sufficiently dry for recoating when an additional coat can be applied without the development of any detrimental film irregularities such as lifting, wrinkling, or loss of adhesion of the undercoat. Where an overcoat will not properly adhere to an overly cured undercoat, it shall be applied within the time period recommended by the manufacturer.

B. The curing times for the coatings shall conform to the coating manufacturer's recommendations considering ambient temperature and relative humidity.

3.09 FIELD QUALITY CONTROL

A. Thickness - The Contractor shall furnish the Engineer a suitable thickness detector of a type recommended by the coating manufacturer. Dry film measurements shall be taken in accordance with SSPC-PA 2.

B. The color of the prime coat shall be beige when available. It shall be inspected before application of intermediate or finish coats.

C. Intermediate Coats shall be the approximate shade of final coat; however, each coat shall be of a slightly different tint. Each coat shall be inspected and approved before the next coat may be applied; otherwise, credit will not be given and the Work shall be recoated.

3.10 PATCHING AND REPAIRS

A. All defective coatings shall be removed or repaired as the Engineer may direct. Surfaces with defective shop primer shall be repaired per the manufacturer's recommendations of the system in the Coating Schedule.

B. Before final approval of the Work all damaged coating surfaces (field or factory applied) shall be cleaned and repainted or touched up as directed.

3.11 CLEANING

A. Remove coating and splatter inadvertently placed on items not scheduled to be coated. Remove splatter by washing or scraping, taking care not to scratch or otherwise damage finished surfaces.

B. Remove and dispose spent abrasives, discarded coating materials, rubbish containers, rags, and other debris at the end of each work day.

3.12 MARRED EXISTING FINISHES

A. Existing buildings, pipelines, plumbing, etc., marred during construction by the Contractor shall be repainted to match the existing coating. Repainting shall be carried far enough to match the newly painted area with the existing coating.

B. Surface preparation, primer, and finish coats shall be in accordance with the Coating Schedule.

PART 4 SPECIAL PROVISIONS

4.01 PAINTING OF EXISTING EQUIPMENT AND STRUCTURES

A. Surface preparation shall be in accordance with the manufacturer's recommendations of the system in the Coatings Schedule.

B. The scope of the repainting work is described in the following table.

	Previously Painted Interior Concrete	Interior Piping	Doors and Interior Equipment	Interior Str. Steel	Window Frames	Door Frame
Headworks	X	X	X		X	
Grit Building	X	X	X	X	X	X
Oxidation Ditch	X	X	X	X	X	X
Sludge Thickening Building	X	X	X	X	X	X
Chemical/service Building	X	X	X	X		X
Administration/Maintenance Building	X	X	X	X	X	

1. Interior concrete includes all concrete walls, columns, beams, ceilings, curbs, and machinery bases. Floors and stair treads are not included.

4.02 COLORS

A. The colors used shall be selected by the Owner and the Engineer, from the manufacturer's standard colors.

B. All pipelines and associated equipment shall be color coded and banded as follows. Banding shall consist of 3-inch wide painted bands at 30-inch center to center.

Pipeline	Color of Pipe	Color of Legend
Natural Gas	Vermillion	White
City Water	Dark Blue	White
Plant Water	Aqua	Black
Compressed Air	Green	White
Chlorine	Yellow	Black
Raw Sewage	Light Gray	White
Scum	Dark Gray	White

Pipeline	Color of Pipe	Color of Legend
Primary Sludge	Brown	White
Thickened Sludge	Brown with 3-inch red band	White
Waste Sludge	Brown with 3-inch black band	White
Return Sludge	Brown with 3-inch orange band	White
Tank Drains	Black with 3-inch white band	White
Digested Sludge	Black	White
Iron Salt	Orange	White
Polymer	Light Blue	Black
Boiler Feed Water	White with 3-inch blue bands	Black
Digester Gas	Red with 3-inch white band	White
Hot Water Heat Piping	To match walls, ceilings, etc., with 3-inch brown bands	Black

Pipeline	Color of Pipe	Color of Legend
Raw	Olive Green	White
Settled or Clarified	Aqua	Black
Finished or Potable	Dark Blue	White
Alum	Orange	White
Carbon Slurry	Black	White
Caustic	Yellow with 3-inch Green Band	Black
Chlorine (Gas or Solution)	Yellow	Black
Chlorine Dioxide	Yellow with 3-inch Black Band	Black
Ferric Chloride	Orange with 3-inch Brown Band	White
Fluoride	Light Blue with 3-inch Red Band	Black
Lime Slurry	Light Green	White
Ozone	Yellow with 3-inch Orange Band	Black
Phosphate Compounds	Light Green with 3-inch Red Band	White
Polymers	Orange with 3-inch Green Band	White
Potassium Permanganate	Purple	White
Soda Ash	Light Green with 3-inch Orange Band	White
Sodium Chlorite	Yellow with 3-inch Brown Band	Black
Sulfuric Acid	Yellow with 3-inch Red Band	Black
Sulfur Dioxide	Light Green with 3-inch Yellow Band	White
Backwash Waste	Light Brown	White
Sludge	Dark Brown	White
Sewer (Sanitary or Other)	Dark Grey	White
Compressed Air	Dark Green	White
Gas	Red	White
Carbon Dioxide	Light Green with 3-inch Black Band	White

C. Electrical conduit, roof drains, sanitary drains, etc., shall be painted to match the color of adjacent wall or ceiling surface.

4.03 STENCILS AND LABELS

A. Lettering and flow direction arrows shall be stenciled on each pipeline describing the function of the pipeline near the equipment served, at both sides of walls and floors

where pipe passes through, and at intervals of not more than 50-feet. Flow direction arrows shall be stenciled on each pipeline adjacent to valves and at each branch or tee. It is intended that all pipelines shall bear labels at the most visible point. If, in the opinion of the Engineer, the foregoing requirements will result in an excessive number of labels or arrows on a run of pipe, the number shall be reduced as directed.

B. Where the flow of a pipeline is in one direction only, an additional flow arrow shall be stenciled in front of each legend on the pipe.

C. For pipes smaller than 1-inch in outside diameter, a white plastic tag with black lettering shall be used. Secure to piping with self-locking nylon straps.

D. The legends and flow arrows shall be stenciled with approved stencil paint. Following the completion of other Work under this Item, all stencils used shall remain the property of the Owner.

E. Each chemical storage tank shall have stenciled on its side a legend describing the tank contents and the tank number as shown on the Drawings such as “Alum Tank No. 1”.

F. Preprinted pressure sensitive vinyl labels may be used in lieu of stencils. Labels shall be additionally secured to the pipe at each end by 2-inch roll tape with preprinted directional arrows. Tape color shall match the label. Label size shall be determined by pipe size as recommended by the manufacturer’s standard literature. Labels shall be Opti-Code as manufactured by Seton Name Plate Corporation, or equal.

4.04 INSPECTION EQUIPMENT

A. The Contractor shall furnish the following testing equipment:

1. SSPC Surface Preparation Specifications, SSPC Publication 91-08:
   a. Quantity: 1 copy.
2. SSPC Visual Standard for Abrasive Blast Cleaned Steel Surfaces, SSPC VIS 1-89:
   a. Quantity: 1 each.
3. Keane-Tator Surface Profile Comparator with sand, grit/slag, and shot disks:
   a. Quantity: 1 each.
4. NACE Visual Comparator for Surface Finishing of Welds Prior to Coating, NACE Standard RP0178:
   a. Quantity: 1 required.
5. Wet Film Thickness Gauge:
   a. Nordson Model 790-010; Range 0 to 20 mils.
   b. Quantity: 3 required.
6. Wet Film Thickness Gauge:
   a. Nordson Model 790-015; Range 4 to 60 mils.

b. Quantity: 3 required.

7. Dry Film Thickness Gauges:
   a. Positector 6000 Series, Model F2; Range 0 to 60 mils.
   b. Quantity: 1 required.
8. Holiday/Pinhole Detector (Low Voltage):
   a. Elcometer Model No. 269; battery operated, low voltage; with probe, connecting wires and battery.
   b. Quantity: 1 required.
   c. If battery is rechargeable, furnish one spare battery for each detector supplied.
   d. If battery is not rechargeable, furnish six spare alkaline batteries.
9. US Weather Bureau Psychometric Tables:
   a. KTA-TATOR Model WB-235; standard tables from 23.0 to 30.0 inches barometric pressure.
   b. Quantity: 1 required.
10. Surface Temperature Thermometer:
   a. KTA-TATOR Model PTC/315F dial thermometer 0-150 degrees F.
   b. Quantity: 2 required.
11. Paint Thermometer:
   a. KTA-TATOR Model 6212 dial thermometer 25-125 degrees F.
   b. Quantity: 2 required.
12. Surface Profile Spring Micrometer:
   a. KTA-TATOR Model 354.
   b. Quantity: 1 required.
   c. Tape Required:
      1) 0.8 to 2.0 mils (50 per package) - 1 package.
      2) 1.5 to 4.5 mils (50 per package) - 2 packages.
13. 10X Magnifier:
   a. KTA-TATOR Model 405.
   b. Quantity: 1 required.

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4.05 COATING SCHEDULE

A. The following coating schedules is not guaranteed to be complete. The coating systems manufacturers are listed in no particular order, any of the four listed systems, or equal may be used.

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
A.	Ferrous metals, except galvanized or stainless steel, submerged or partially submerged in wastewater or non-submerged exposed to splash or spill, including all tank mechanisms and tank mechanism support structures; clips, beams, and walkway supports; pipes, valves, sluice gates, scum baffles, and weirs:				
	Surface Preparation:	SSPC-SP 10 (NACE 2) Near White Blast Cleaning with a 1.5-2.0 mil Profile	SSPC-SP 10 (NACE 2) Near White Blast Cleaning with a 2.0 mil Profile	SSPC-SP 10 (NACE 2) Near White Blast Cleaning with a 1.5-2.0 mils Profile	SSPC-SP 10 (NACE 2) Near White Blast Cleaning with a 1.5-2.0 mil Profile
	Primer:	1 coat, Carboguard 890 (4.0-6.0 mils DFT)	1 coat, N140 Pota-Pox Plus (DFT 3.0-5.0 mils).	N/A	1 coat, Macropoxy 240 (DFT 3.0-5.0 mils)
	Field Finish:	2 coats, Bitumastic 300m (8.0-16.0 DFT per coat)	2 coats, 46H-413 HB Tneme-Tar, (DFT 8.0-10.0 mils per coat).	N/A	2 coats, Targuard Coal Tar Epoxy (DFT 8.0-16.0 mils per coat)
B.	Ferrous metals, except galvanized or stainless steel, submerged or partially submerged in or exposed to potable water or water being treated for potable use, including all tank mechanisms and tank mechanism support structures; clips, beams, and walkways; pipes, valves, sluice gates, and weirs:				
	Surface Preparation:	SSPC-SP 10 (NACE 2) Near White Metal Blast Cleaning, surface profile 1.5-2.0 mils	SSPC-SP 10 (NACE 2) Near White Metal Blast Cleaning, surface profile 2.0 mils	SSPC-SP 10 (NACE 2) Near White Metal Blast Cleaning, surface profile 1.5-2.5 mils	SSPC-SP 10 (NACE 2) Near White Metal Blast Cleaning, surface profile 2.0-3.0 mils
	Primer (Zinc Rich):	N/A	1 coat Series 91 H2O Hydrozinc , (DFT 3.0-5.0 mils)	1 coat, Cathacoat 316 (DFT 2.5-3.5 mils)	1 coat, Corothane I Galvapac at DFT 2.0-4.0 mils
	Field Finish:	N/A	2 coats, N140 Pota-Pox Plus (DFT 4.0-6.0 mils per coat)	2 coats, Bar-Rust 233 H (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646 PW (DFT. 4.0-6.0 mils per coat)
	Primer (Non-Zinc Rich):	1 coat, Carboguard 61 (DFT 4.0-6.0 mils)	1 coat N140 Pota-Pox Plus (DFT 4.0-6.0 mils)	1 coat Bar-Rus 2334 (DFT 4.0-6.0 mils)	1 coat Macropoxy 646 PW (DF 4.0-6.0 mil per coat)
	Field Finish:	2 coats, Carboguard 61 (DFT 4.0-6.0 mils per coat)	2 coats, N140 Pota-Pox Plus (DFT 4.0-6.0 mils per coat)	2 coats, Bar-Rust 233 H (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646 PW (DFT. 4.0-6.0 mils per coat)
C.	Concrete walls, columns, beams, etc. in contact with potable water or water being treated for potable use:				

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
	Surface Preparation:	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry
	Filler:	Fill bugholes with Carboguard 501/510	215 Surfacing Epoxy or 218 MortarClad	Fill bugholes with Devran 133/Cabo-Sil M-5 (DFT up to 80.0 mils)	Fill all bugholes with Steel Seam FT 910 or Dura-Plate 2300 or cementitious repair mortar from AW Cook
	Primer:	1 coat, Carboguard 61 (DFT 4.0-6.0 mils)	1 coat, N140 Pota-Pox Plus (DFT 4.0-6.0 mils).	1 coat, Bar-Rust 233 H (DFT 4.0-6.0 mils)	1 coat, Macropoxy 646 PW (DFT 3.0-5.0 mils).
	Final:	2 coats, Carboguard 61 (DFT 4.0-6.0 mils per coat)	1 coat, N140 Pota-Pox Plus (DFT 4.0-6.0 mils)	1 coat, Bar-Rust 233 H (DFT 4.0-6.0 mils)	2 coats Macropoxy 646 PW (DFT 4.0-6.0 mils per coat)
D.	Exterior nongalvanized, ferrous metal surfaces not submerged:				
	1. Subject to splash or spills or atmospheric:				
	Surface Preparation:	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5- 2.0 mils	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils
	Primer:	1 coat, Carbozinc 859 (3.0-5.0 mils DFT)	1 coat, 90-97 Tneme-Zinc, (DFT 2.5-3.5 mils).	1 coat, CathaCoat 313 (DFT 2.0-4.0 mils)	1 coat, Corothane I Galvapac (DFT 2.0-4.0 mils)
	Intermediate:	1 coat, Carboguard 60 (4.0-6.0 mils DFT)	1 coat, 27 Typoxy, (DFT 2.5-4.0 mils).	1 coat, Devran 224HS (DFT 4.0-8.0 mils)	1 coat, Macropoxy 646 (DFT 3.0-5.0 mils).
	Final:	1 coat, Carbothane 134HG (2.0-2.5 mils DFT)	1 coat, 72/73 Endura-Shield (DFT 2.5-5.0 mils).	1 coat, Devthane 359 (DFT 3.0-5.0 mils)	1 coat, Hi-Solids Polyurethane (DFT 3.0-5.0 mils).

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
E.	Interior wall surfaces of masonry block construction and precast concrete walls and ceiling surfaces:				
	1. Concrete Masonry Block (CMU and AMU)				
	Surface Preparation:	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free.
	Sealer/Surfacer:	1 coat, Sanitile 100 (5.0-20.0 mils DFT) depending on porosity must be pin hole free prior to applying	1 coat, 130 Envirofill (DFT 10.0-15.0 mils).	1 coat, Tru-Glaze-WB 4015 (DFT 9.0-11.0 mils)	1 coat, Cement Plex 875 Masonry Filler/Sealer (DFT 13-25 mils).
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	2 coats, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	2 coat, Devran 224HS (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646 (DFT 4.0-6.0 mils per coat)
	2. Pre-Cast Concrete				
	Surface Preparation:	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.
	Filler:	Fill bug holes with Carboguard 501/510	Fill bug holes with 215 surfacing epoxy or 218 MortarClad	Fill bug holes with Devfil 145 (DFT 16.0-22.0 mils)	Fill all bugholes with Steel Seam FT 910 or Dura-Plate 2300 or cementitious repair mortar from AW Cook

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	2 coats, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	2 coats, Devran 224HS (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646 (DFT 4.0-6.0 mils per coat)
F.	Interior concrete walls, columns, beams, and ceilings; concrete curbs; concrete bases for machinery and equipment; etc.:				
	Surface Preparation:	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete). Abrade precast concrete, if recommended by coating manufacturer, per ASTM D4259. ASTM D4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, retest until dry.
	Filler:	Fill bugholes with Carboguard 501/510	Fill bugholes with 215 Surfacing Epoxy or 218 MortarClad	Fill bug holes with Devfil 145 (16.0-22.0 mils DFT)	Fill all bugholes with Steel Seam FT 910 or Dura-Plate 2300 or cementitious repair mortar from AW Cook
	Primer:	1 coat, Carboguard 60 (DFT 4.0-6.0 mils)	1 coat, 27 Typoxy (DFT 2.5-4.0 mils).	1 coat, Devran 224HS (DFT 4.0-8.0 mils)	1 coat, Macropoxy 646 (DFT 3.0-5.0 mils).
	Final:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils)	2 coats, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils).	2 coats, Devran 224 HS (DFT 4.0-6.0 mils per coat)	2 coats Macropoxy 646 (DFT 4.0-6.0 mils).
G.	Interior, nongalvanized, ferrous metal surfaces of items such as pipe; machinery, equipment; doors and door frames; rolling doors; exposed ductwork; hoppers, chutes, pipe supports, trays, and hangers; walkway platforms; stairs; structural members; floor frames and covers; miscellaneous metal tanks shall be finished as follows:				
	Surface Preparation:	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5 to 2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.
	Primer:	1 coat, Carboguard 60 (DFT 4.0-6.0 mils)	1 coat, 27 Typoxy (DFT 2.0-4.0 mils).	1 coat, Devran 201H (DFT 2.0-3.0 mils)	1 coat, Recoatable Epoxy Primer, Macropoxy 646 (DFT 3.0-5.0 mils).

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	2 coats, N69 H.B. Epoxoline II, or equal (DFT 4.0-6.0 mils per coat).	2 coats, Devran 224 HS (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646, (DFT 4.0-6.0 mils per coat).
H.	Ferrous metal surfaces of all chemical pipe supporting trays throughout the project and ferrous metal surfaces of items in chemical rooms such as pipes, machinery, equipment, doors, ductwork, hoppers, walkways, and stairs, but not structural wall panels and roof joists, shall be finished as follows:				
	Surface Preparation:	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5-2.0 mils.	SSPC-SP 6 (NACE 3) Commercial Blast Cleaning, surface profile 1.5 -2.0 mils.
	Primer:	1 coat, Carboguard 60 (4.0-6.0 mils DFT)	1 coat, 27 Typoxy, or equal (DFT 2.0-4.0 mils).	1 coat, Devran 201H (DFT 2.0-3.0 mils)	1 coat, Recoatable Epoxy Primer, Macropoxy 646 (DFT 3.0-5.0 mils).
	Finish:	2 coats, Carboguard 890 (4.0-6.0 mils DFT)	2 coats, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	2 coats, Devran 224 HS (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646, (DFT 4.0-6.0 mils per coat).
I.	Galvanized ferrous, aluminum, copper, fiber reinforced plastic or other plastic piping and conduits located inside buildings requiring color coding:				
	1. Aluminum and Copper:				
	Surface Preparation:	SSPC-SP 16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals	SSPC-SP 16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals	SSPC-SP 16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals	SSPC-SP 16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
	Primer:	N/A	1 coat, 27 Typoxy, or equal (DFT 2.0-4.0 mils).	1 coat, Devran 201H (DFT 2.0-3.0 mills)	N/A
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	1 coat, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	1 coat, Devran 224 HS (DFT 4.0-6.0 mils)	2 coats, Macropoxy 646 (DFT 4.0-6.0 mils per coat).
	2. Galvanized Metal:				
	Surface Preparation:	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 “Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
	Primer:	None	1 coat, 27 Typoxy, or equal (DFT 2.0-4.0 mils).	1 coat, Devran 201H (DFT 2.0-3.0 mills)	N/A
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	1 coat, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	1 coat, Devran 224HS (DFT 4.0-6.0 mils)	2 coats, Macropoxy 646 (DFT 3.0-5.0 mils per coat).
3. FRP, PVC, CPVC, and Other Plastics:					
	Surface Preparation:	Scuff sand to uniformly roughen surface	Scuff sand to uniformly roughen surface	Scuff sand to uniformly roughen surface	Scuff sand to uniformly roughen surface
	Primer:	None	1 coat, 27 Typoxy, or equal (DFT 2.0-4.0 mils).	1 coat, Devran 201H (DFT 2.0-3.0 mills)	None
	Finish:	2 coats, Carboguard 60 (DFT 4.0-6.0 mils per coat)	1 coat, N69 H.B. Epoxoline (DFT 4.0-6.0 mils per coat).	1 coat, Devran 224 HS (DFT 4.0-6.0 mils)	2 coats, Macropoxy 646 (DFT 3.0-5.0 mils per coat).
J.	Exterior piping requiring color coding and made of galvanized ferrous, aluminum, fiberglass reinforced plastic, or other plastic and all exterior fiberglass reinforced plastic piping and galvanized conduit:				
	Surface Preparation:	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals	SSPC SP 16 “Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-ferrous Metals
	Surface Preparation: FRP and Other Plastics:	Scuff sand to roughen surface	Scuff sand to roughen surface	Scuff sand to roughen surface	Scuff sand to roughen surface
	Primer:	1 coat, Carboguard 60 (4.0-6.0 mils DFT)	1 coat, 27 Typoxy, or equal (DFT 2.0-3.0 mils).	1 coat Devran 201H (DFT 2.0-3.0 mils)	1 coat, Macropoxy 646 (DFT 2.0-3.0 mils).
	Finish:	2 coats, Carbethane 134 HG (DFT 4.0-6.0 mils per coat)	1 coat, 72/73 Endura-Shield (DFT 2.0-4.0 mils).	1 coat, Devthane 359 (DFT 2.0-4.0 mils)	1 coat Hi-Solids Polyurethane (3.0-5.0 mils DFT)
K.	Exterior wall surfaces of masonry block construction (Not previously Coated):				
	Surface Preparation:	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). ASTM	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). ASTM	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). ASTM	SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free.

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
		D4261 (Block). Masonry shall be moisture free.	D4261 (Block). Masonry shall be moisture free.	D4261 (Block). Masonry shall be moisture free.	
	Primer:	N/A	N/A	1 coat Bloxfil 4000 (DFT 7.0-14.0 mils)	N/A
	Finish	2 coats, Flexxide Elastomer (DFT 6.0-8.0 mils per coat)	2 coats, 180/181 Tneme-Crete (DFT 4.0-8.0 mils per coat)	2 coats Decra Flex 300 Elastomeric (2260 smooth) (DFT 6.0-8.0 mils per coat)	2 coats Loxon XP (DFT 6.0-8.0 mils per coat).
L.	Interior and exterior wood surfaces such as soffits and trim:				
	Surface Preparation:	Surface must be clean and dry. Sand rough areas and fill knots and voids	Surface must be clean and dry. Sand rough areas and fill knots and voids	Surface must be clean and dry. Sand rough areas and fill knots and voids	Surface must be clean and dry. Sand rough areas and fill knots and voids.
	Primer:	1 coat, Sanitile 120 (DFT 2.0-3.0 mils)	1 coat, 10-99W Tnemec Primer (DFT 2.0-3.0 mils)	Exterior: 1 coat, Hydrosealer 6001 (DFT 1.4-1.7 mils); Interior: 1 coat, Gripper 3210 (DFT 1.8-2.1 mils)	1 coat PrepRite ProBlock Interior/Exterior Latex Primer Sealer (DFT 1.0-2.0 mils).
	Finish:	2 coats, Carbocrylic 3359 (DFT 2.0-3.0 mils DFT per coat)	2 coats, 1028/1029 Enduratone (DFT 2.0-3.0 mils per coat)	2 coats, Lifemaster Oil Semi-Gloss 1506 Lifemaster Oil Semi-Gloss (DFT 2.0-3.0 mils per coat)	2 coats Metalatex Semi-Gloss or Pro Industrial 0 VOC Acrylic (DFT 2.0-4.0 mils per coat)
M.	Plaster or drywall finished walls and ceilings:				
	Surface Preparation:	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.
	Primer:	1 coat, Sanitile 120 (DFT 2.0-3.0 mils)	1 coat, 51-1204 PVA Sealer (DFT 2.0-3.0 mils)	Plaster: 1 coat, Gripper 3210 (DFT 1.8-2.1 mils); Drywall: 1 coat, PVA Wall Primer 1030 (DFT 2.0-3.0 mils)	1 coat, ProMar 200 Interior Latex Wall Primer (DFT 1.0-2.0 mils).
	Finish:	2 coats, Carbocrylic 3359 (DFT 2.0-3.0 mils per coat)	1 coat, 6 Tneme-Cryl (DFT 2.0-3.0 mils)	Ceilings: 2 coats, Ultra Hide 250 Interior Flat Paint 1200N (DFT 1.2-1.4 mils); Walls: 2 coats, Ultra Hide 250 Interior	2 coats, ProMar 200 Interior Latex Eg-Shel (DFT 1.5-2.0 mils per coat).

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
				Eggshell Paint 1402N (DFT 2.0-3.0 mils)	
N.	Exposed pipe insulation				
	Surface Preparation:	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.
	Finish:	2 coats, Carbocrylic 3359 (DFT 2.0-3.0 mils per coat)	2 coats, 6 Tneme-Cryl (DFT 2.0-3.0 mils)	2 coats, Devflex 4020 PF (DFT 2.0-3.0 mils per coat)	2 coats, Metalatex Semi-Gloss Acrylic or Pro Industrial 0 VOC Acrylic (DFT 2.0-4.0 mils per coat).
O.	Stained finish carpentry:				
	Surface Preparation:	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination.	Surface must be clean and dry, no contamination	Surface must be clean and dry, no contamination.
	Primer:			Wood Pride Water-Based Wood Finishing Semi-Transparent Stain 1700V (300-400 sq ft/gal)	Minwax Water Based Wood Stain (300-400 sq ft/gal)
	Finish:			Wood Pride Water-Based Satin Varnish 1802 or Water-Based Gloss Varnish 1808 (400-500 sq ft/gal)	Minwax Water Based Polyacrylic Clear Satin Protective Finish (400-500 sq ft/gal)
P.	Interior Ferrous metals that are part of the PEMB structure and are either unfinished or factory primed: Color to be PT-1				
	Surface Preparation:	Surface must be clean, dry and degreased, no contamination.	Surface must be clean, dry and degreased, no contamination.	Surface must be clean, dry and degreased, no contamination.	Surface must be clean, dry and degreased, no contamination.
	Primer:	1 coat, Carboguard 60 (4.0-6.0 mils DFT). (not required if factory primed)	1 coat, 27 Typoxy, or equal (DFT 2.0-3.0 mils). (not required if factory primed)	1 coat Devran 201H (DFT 2.0-3.0 mils). (not required if factory primed)	1 coat Devran 201H (DFT 2.0-3.0 mils). (not required if factory primed)
	Finish:	2 coats, Carbethane 134 HG (DFT 4.0-6.0 mils per coat)	2 coats, N69 H.B. Epoxoline II (DFT 4.0-6.0 mils per coat).	2 coats, Devran 224 HS (DFT 4.0-6.0 mils per coat)	2 coats, Macropoxy 646, (DFT 4.0-6.0 mils per coat).
Q.	Interior Masonry and Gyp Bd Walls that are not in Process Areas (admin building)				

		Carboline	Tnemec	AkzoNobel (International, Devoe, Glidden Professional)	Sherwin Williams
	Surface Preparation:			Masonry: SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free. Gyp Bd: Level 3 finish (GA-214).	Masonry: SSPC-SP 13 (NACE 6) Remove surface contaminates per ASTM D4258 (Concrete), and ASTM D4261 (Block). Masonry shall be moisture free. Gyp Bd: Level 3 finish (GA-214).
	Primer:			Masonry: 1 coat, Tru-Glaze-WB 4015 (DFT 9.0-11.0 mils) Gyp Bd: 1 coat, Hydrosealer 6001 (DFT 1.4-1.7 mils); Interior: 1 coat, Gripper 3210 (DFT 1.8-2.1 mils)	Masonry: 1 coat, Cement Plex 875 Masonry Filler/Sealer (DFT 13-25 mils). Gyp Bd: 1 coat PrepRite ProBlock Interior/Exterior Latex Primer Sealer (DFT 1.0-2.0 mils).
	Finish:			2 coats, PPG Speedhide Interior (DFT 4.0-6.0 mils per coat)	2 coats, ProMar 200, (DFT 4.0-6.0 mils per coat).

(Addendum 2, Issued 5/18/26)

END OF SECTION

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SECTION 11210
ORBAL AERATION SYSTEM

PART 1 GENERAL

1.01 SCOPE

A. Provide all labor, material, and equipment to furnish and install the Orbal Aeration System Equipment as specified herein.

B. This specification covers the general requirements for the design, fabrication, and installation of one Orbal Aeration System.

C. Work and Components Included (But Not Limited To):

1. The Equipment Manufacturer shall furnish the items listed below:

a. ~~Submersible Mixer.~~ **(Addendum 2, Issued 5/18/2026)**

b. Aeration disc assemblies with hardware.

c. Solid shaft assemblies.

d. Shaft-mounted drive assemblies.

e. Pillow block roller bearings with bearing base plates and splash shields at shaft openings.

f. Weatherhood assemblies with all related supports.

g. SmartBNR Control Panels.

h. Stainless steel anchor bolts.

2. Like items of equipment specified herein shall be the end products of one manufacturer in order to achieve standardization for operation, maintenance, spare parts and manufacturer's service.

1.02 MANUFACTURER

A. Evoqua Water Technologies, of Waukesha, WI shall be the manufacturer.

B. The equipment Manufacturer shall have not less than five successful years' experience in the design, construction and operation of equipment specified here-in at five different plants.

1.03 SUBMITTALS

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

1. Shop Drawings for Review:
    a. Dimensions and installation requirements.
    b. Descriptive information including catalogue cuts and manufacturers' specifications for major components.
    c. Electrical schematics and layouts.
    d. Demonstration of compliance with the required performance and hydraulic characteristics.
2. Information for the Record:
    a. Evoqua shall provide a letter of approval of the concrete structure as shown on the drawings and specified prior to final approval of submittals.
    b. Manufacturer’s certification of installation.
    c. Operation and Maintenance Manuals.
    d. Provide an electronic copy of the PLC program to the owner for restoration of the system program.

1.04 EQUIPMENT MANUFACTURER’S SERVICE REPRESENTATIVE

A. The Manufacturer's field service technician shall check the installation of the equipment, assist in the start-up, and provide training on the maintenance of the equipment. A minimum of 2 trips and a total of 4 days per trip on site shall be provided.

B. The Manufacturer's process engineer shall provide process training. The training is conducted 4-6 weeks after the system has begun receiving wastewater. At that time, plant analytical and operational data will be reviewed, and training provided. Prior to the actual field visit, the manufacturer's process engineer will be in contact with the plant operators to discuss operational issues including the actual process start-up. The total service shall not be less than 1 trip and 2 days at site.

1.05 WARRANTY

A. The Oxidation System shall be warranted for two years after substantial completion.

1.06 DESIGN CRITERIA

A. Manufacturer Letter of Approval shall include:
    1. The Manufacturer shall certify they have reviewed the drawings and specifications for the structures in which their equipment will be installed and operated. The certification shall state that Manufacturer has no concerns, modifications, alterations, or alternate details and that their system shall operate as intended in the structure as planned.

2. Certify that manufacturers standard system will be suitable for installed without significant modifications that would result in a custom installation, unless specified herein.

B. Influent Characteristics:

Parameter	
Average Daily Flow, mgd	0.93
Peak Hourly flow, mgd	8.0
Influent BOD_5, mg/L	80
Average BOD Load (lbs/day)	620
TSS, mg/L	80
Average TSS (lbs/day)	620
NH3-N, mg/L	13
TKN, mg/L	16
Total Phosphorous, mg/L	4
Temperature, Degree Celsius	9.11 (Min); 14.72 (Max); 11.81 (Avg)
Total Alkalinity	TBD
pH	6.70 (Min); 7.54 (Max); 7.09 (Avg)

C. Effluent Permit Limits:

Parameter	
BOD_5 (Weekly), mg/L	15
BOD_5 (Monthly) mg/L	10
TSS (Weekly), mg/L	18
TSS (Monthly), mg/L	12
Nitrogen, Ammonia (Weekly), mg/L	11.7 (Winter); 1.5 (Summer)
Nitrogen, Ammonia (Monthly), mg/L	7.8 (Winter); 1.0 (Summer)
Total Phosphorous, (Weekly) mg/L	N/A
Total Phosphorous, (Monthly) mg/L	N/A
Dissolved oxygen (minimum), mg/L	6.0

D. RAS pumping 50 to 150 percent of design average flow rate.

PART 2 PRODUCTS

2.01 GENERAL

A. There shall be provided, as shown on the plans, one complete Orbal Aeration System.

B. The principal structure shall consist of three endless aeration channels arranged in a concentric manner with common intermediate walls. Raw wastewater, after entering the system, shall pass progressively through aerated channels and then to the final clarifier(s). The raw wastewater may be introduced into any one of the channels depending upon the operating conditions. Return Activated Sludge shall be returned to

the influent flume. The flow from one aeration channel to another shall be by displacement of the mixed liquor circulating in each channel through submerged ports interconnecting each adjacent aeration channel. The displaced flow shall be equal to the volume of raw waste and recycled sludge introduced into the aeration system.

C. The effluent from the final aeration channel (inner ring) shall be controlled by means of a weir plate provided by the contractor and shall be, designed to allow a liquid level variation of 5.0 inches in the aeration channels with variations in the flow of wastewater and recycled sludge. During the times when the inner ring is taken out of service, the oxidation ditch effluent shall be discharged from the outer ring aeration channel by a Telescoping Valve.

D. The design and layout shown on the drawings are based on the Manufacturer listed in Section 1.02.A.1.

E. Changes in architectural, structural, electrical, mechanical, and plumbing requirements for the substitution shall be the responsibility of the Bidder wishing to make the substitution. This shall include the cost of re-design by affected designers. Any additional cost incurred by affected subcontractors shall be the responsibility of the Bidder and not the Owner.

2.02 EQUIPMENT

A. General:

1. The aeration equipment for the Orbal Aeration System shall be as described herein and as shown per general arrangement drawings.

2. The aeration equipment shall consist of 4 complete rotary aerator assemblies designed for operation at controlled disc submergence of 24 inches and at max 51 rpm in the center island and 49 rpm outer ring so that the oxygen transfer rate and power requirements can be varied with the flow and treatment requirements.

3. A process control system shall be provided to monitor and control dissolved oxygen levels and ORP in the Orbal system based on process objectives.

B. Design Criteria:

1. Each rotary aerator assembly to be furnished and installed shall be capable of delivering a maximum total SOR of 48.42 pounds O2/hour 16.14 pounds O2/hour for each of the three channels respectively. The oxygen values are measured at Standard Operating Requirements of 68 degrees F (20 degrees C) and 30-inch Hg.

Oxygen Transfer Delivery for Disc Aerator Assemblies Flow of 0.93 mgd						
			Outer Channel		Island (two channels)	
Aerator No.	Installed HP	Design Disc Speed RPM*	Disc (Qty)	Delivery (SOR, lb O_2/hr)	Disc (Qty)	Delivery (SOR, lb O_2/hr)
			at 19-Inch Disc Immersion			
1	7.5	41.5	4	8.07		
2	7.5	41.5	4	8.07		
3	15.0	41.5			8	16.14
4	15.0	41.5			8	16.14
Total	45	--		13.43	16	32.28
***Maximum Disc Speed = 51 rpm Center Island and 49 rpm Outer Channel**						

C. Disc Aeration Equipment:

1. Total of two 15 HP complete disc rotary aerator assemblies and two 7.5 HP complete disc rotary assemblies shown per the general arrangement drawings.
2. There shall be a total of 24 circular aeration discs, located as determined by the Manufacturer to provide the required oxygen requirements.
3. The discs shall be 66-inch in diameter and US manufactured. The disc shall be fabricated of 1/2-inch-thick molded polystyrene structural foam, resistant to corrosive action of the mixed liquor being aerated. Each disc shall have a compound for ultra-violet stabilization. A multiplicity of cavities and raised protrusions shall be provided in the disc to cause entrained air to be dispersed in the mixed liquor. The raise protrusions shall be of cup shape with a trailing tail.
4. The aeration discs shall be firmly attached to the shafting by means of a shaft locating collar. This shaft locating collar shall be an integral part of the aeration discs. To enable the individual discs to be attached, adjusted, or removed from the shafting without disassembling the shafting, discs shall be split into half sections held in position by bolts at the shaft. All bolts, washers and nuts shall be 304 stainless steel.
5. The Contractor shall be required to field install discs and set disc location along the shaft as required meeting the specifications and the treatment process as determined by the Manufacturer and the Engineer.

D. Aerator Shafting:

1. Aerator shafts shall be made from solid, 6-inch diameter, SAE 1045 machine steel bar stock, turned and polished. Shaft ends shall be true concentric.
2. The shafting shall be capable of withstanding all dead, live, and radial loads imposed on it. The maximum allowable deflection shall be 0.15 inch per 10 feet length of shaft.
3. Shafts to be blast cleaned per SSPC-SP10-63. Shafts shall be supplied with finish utilizing Sherwin Williams Dura-Plate 235 B67A235 Haze Gray. Shafts shall be

supplied with the Manufacturer's standard paint to ensure proper fit-up between the aeration discs and the disc aerator shaft system which provides the grip required for this application.

E. Bearings:

1. Each aerator shaft shall be supported by self-aligning, grease lubricated, roller bearings with cast iron pillow block housings. Housings shall be coated for corrosion protection. Each bearings shall have double row spherical roller bearings with locking collars to secure the bearing to the shaft. Heavy duty contact seals shall be provided to insure positive sealing against contaminants. The seals shall be designed for operation in a moisture laden environment.

2. Minimum B-10 bearing life shall be 200,000 hours.

F. Bearing Base Plates:

1. Base plates shall be provided for setting the pillow block bearings. Base plates must be set and grouted level by the contractor in accordance with approved general arrangement drawings. Bearing base plates shall be fabricated from commercial quality steel, and coated for corrosion protection according to the specification specified herein. Stainless steel hardware shall be provided for securing the bearings to the base plates.

G. Remote Bearing and Automatic Lubrication System:

1. A remote lubrication system will be provided for each bearing assembly. The system will provide convenient access for bearing lubrication by the plant operator.

2. The remote lubrication system will consist of tubing and an installation kit. Fit-up and installation is to be by the contractor.

3. A Memolub or equal automatic lubricator shall be installed which will deliver small, metered amount of grease over a period of time.

4. It is factory pre-lubricated with Mobilth 460.

5. The remote lubrication system shall have below:

Operation:	Electro-Mechanical, positive displacement pump
Lubricant cartridge capacity:	240cc, 1 pt or 480cc , 2 pt (Replaceable)
Connection thread:	1/4" NPT Male
Max operating pressure:	350psi (25 bar)
Temperature Range:	5°F to 120°F (-15°C to 50°C)
Output timing settings:	52 Adjustable settings
Power supply:	4.5VDC Alkaline battery pack
External On/Off Control	No
Remote Installation:	Up to 40 feet, single point
Reusable	Yes
Multi-Point:	2pt for a double bearing and 1pt for single bearing

H. Direct Drive:

1. The drive mechanism for each aerator assembly shall consist of a single speed motor and a shaft mounted AGMA Class II helical gear reducer sized for 24-hour continuous operation with allowance for moderate shock loads. The motor and reducer shall be fully suitable for outdoor service and exposure to the atmosphere encountered and shall be coated for corrosion protection according to the manufacturer's standards.

2. An adjustable torque arm shall be provided to secure the reducer in position. The reducer shall be attached to the motor using a cast iron adapter. The two island drives shall produce a maximum aerator speed of 51 rpm, and the two outer channel drives shall produce a maximum aerator speed of 49 rpm.

3. Motors shall be two 15 HP and two 7.5 HP TEFC, 1800 RPM, 460 volt, 3 phase, 60 Hz, induction type, NEMA Design A or B, with Class F insulation and a 1.15 service factor. All motors shall be compatible with variable frequency drive (VFD) controller (inverter-duty rated), and shall be premium efficiency design. Each motor shall be C-faced mounted to the drive.

4. Direct drives shall be equipped with vibration and temperature sensors. The sensors shall be data secure, wireless, intrinsically safe, include up to 2 years of battery life and have a non-rechargeable and non-replaceable battery. The sensors shall be directly positively attached to the monitored equipment and be commissionable with hand-held Wi-Fi or cellular tablet or phone. The data shall be stored in a secure cloud accessible by customer created secure credential or via a customer created secure API key.

I. ~~Splash Shields:~~

1. ~~Splash shields shall be provided to prevent the wetting of bearings, and drive units from disc spray. Shields shall be constructed of 304 Stainless Steel.~~

2. ~~The upper section of the splash shield (top retainer plate) will need to be removed when taking out the shaft assembly, but the bottom plate should be able to remain in place.~~

3. ~~Mounting brackets for the splash shields shall be fabricated from 304 Stainless Steel for corrosion protection. Components for the splash shields shall be shipped loose for field assembly and installation by the Contractor in accordance with manufacturer's instructions, and approved submittals.~~

4. ~~Neoprene seals shall be attached to the splash shields where the shaft passes through the plate.~~ **(Addendum 2, Issued 5/18/2026)**

J. Flat Fiberglass Weather Protection:

1. The weather hood assemblies shall be made from a series of flat panels constructed of fiberglass reinforced polymer (FRP) with dimensions sufficient to

assure clearance between the rotating aeration disc and the panels. Panel sections shall sized so that the weight does not exceed 100 pounds.

2. The flat panel weather hoods provided shall be 13.7-inch and 23.79-inch in standard sizes, but custom sizes shall also need to be provided if required.

3. The FRP panels shall be secured with 304L stainless steel hold down clamps to prevent uplift.

4. Each FRP panel shall contain an ultraviolet inhibitor to protect against UV degradation. The color of each panel shall be slate gray.

5. The top surface of all FRP panels shall have non-skid grit affixed to the surface by an epoxy resin followed by a topcoat of epoxy resin allowing the panels to be used as additional walkway area.

6. Each weatherhood assembly shall provide accessibility to an aerator shaft, to facilitate the addition, removal, or relocation of discs.

7. The FRP panels shall be capable of withstanding a uniform load of 100 PSF or a concentrated load of 300 pounds. The following minimum mechanical properties shall apply:

Properties	ASTM Test Method	Units	Value
Flexural Strength, LW	D790	ksi	24.5
Flexural Strength, CW	D790	ksi	8.2
Flexural Modulus, LW	D790	ksi	885
Flexural Modulus, CW	D790	ksi	646
Tensile Strength, LW	D638	ksi	31.1
Tensile Modulus, LW	D638	ksi	2,486
Short Beam Shear, LW	D2344	ksi	3.19

8. ~~3-inch x 2-inch~~ 2.5-inch x 3-inch (**Addendum 2, Issued 5/18/2026)** FRP embedment angles shall be provided with the FRP panels to create a plank system. The embedment angles shall be provided in 20-foot lengths. The contractor shall cut to length and set with concrete.

9. The FRP panels shall have lifting points attached to each panel for panel removal.

K. Neoprene seals shall be attached to the end panels to prevent water from moving along the shaft to the bearings. The neoprene gasket shall be shipped in 25-foot rolls.

L. Rotor Immersion Gauge:

1. One rotor immersion gauge shall be provided for each channel to indicate disc submergence levels. Gauge shall be anodized aluminum.

M. Anchors and Hardware:

1. All anchor bolts shall be 304 stainless steel and furnished by the Manufacturer and set with proper projection by the Contractor in accordance with approved, certified drawings furnished by the Manufacturer.

2. All hardware shall be 304 stainless steel.

N. Painting:

1. Bearing base plates shall be blast cleaned followed by one coat of Tnemec Series ~~FC20~~ N 140 F epoxy primer **(Addendum 2, Issued 5/18/2026)**. Finish painting shall be done in the field by the installing contractor after equipment installation and alignment.

2. Exposed machined surfaces - solvent wiped followed by one coat of shop preservative.

3. Non-ferrous materials stainless steel, aluminum, and galvanized surfaces unpainted.

4. Reducers, motors, base plates, guards, and other related drive components shall be coated per the manufacturer's standards.

5. Bearings and couplings – Manufacturer’s standard coating.

O. Valves and Gates

1. Provided by others.

P. Smart BNR® Lite Process Controls:

1. The Smart BNR Lite control system shall contain all interlocks, alarm functions and aerator control as required for operation of the Orbal system. It shall be furnished by Evoqua or pre-qualified and approved Equal.

2. System Function:

a. The Orbal system shall be designed to monitor oxidation reduction potential (ORP) in outer channel and dissolved oxygen (DO) in the inner channel, and control oxygen delivery based on the ORP, DO and process objectives.

b. All of these functions shall be incorporated in a single package from the same Manufacturer of the Orbal system.

3. Control Panel – A control panel shall be supplied and will include the following:

a. Design and construction shall conform to the latest edition of the NEC. There shall be a main power on/off switch for the control system rated for the voltage and current required. Individual branch circuit breakers shall be provided as required. Power on indicating light will be provided. Control panel will operate on 120Vac, single phase, 60Hz, electrical service.

b. Control panel equipment shall be mounted in a NEMA 12 painted steel wall-mounted enclosure located in the electrical room of the RAS/WAS and Chemical Building. Enclosure shall be Hoffman, or equal.

c. Surge suppression will be provided inside the panel for the electrical service to protect control panel components, surge suppressors shall be Phoenix Contact SFP, EDCO, or equal.

d. Corrosion inhibitors will be provided, Hoffman AHCI10E, or equal.

e. The panel shall incorporate a Programmable Logic Controller (PLC) for accomplishing the control logic. The PLC shall be capable of online program editing without stopping the process control system. The system shall not require a battery for program memory and include removable Secure Digital (SD) card for program backup. The PLC processor shall be an Allen-Bradley CompactLogix 5370 ~~L3~~ L2 **(Addendum 2, Issued 5/18/2026)** Series with Ethernet communications protocol and will utilize 1769 Series I/O modules. The panel PLC shall communicate with the plant Main PLC via Ethernet/IP per the Network Architecture diagram (Sheet XXXX).

f. Where indicated, starters and variable frequency drives shall communicate with the panel PLC via Ethernet/IP.

g. The PLC shall contain input/output points for the following equipment and instruments. Analog inputs and outputs shall be of the 4-20 mA type.

Digital Inputs:

1) Aerator 1 in Auto.

2) Aerator 1 Running.

3) Aerator 1 VFD Fault.

4) Aerator 2 in Auto.

5) Aerator 2 Running.

6) Aerator 2 VFD Fault.

Digital Outputs:

1) Aerator 1 VFD Start.

2) Aerator 2 VFD Start.

Analog Inputs:

1) Outer Channel ORP.

2) Middle Channel D.O.

3) Inner Channel D.O.

Analog Outputs:

1) Aerator 1 Speed Command.

2) Aerator 2 Speed Command.

h. Gate and Stormflow would be in the system integrators panel.

i. VFD Points DI-Run, DO-Start, AO-Speed Command.

j. An Operator Interface shall be provided for displaying process and entering selected functions and operating variables. The operator interface shall be a Siemens TP700 Color Touch Panel. The minimum screen size shall be 7-inch. The panel shall use Siemens Simatic WinCC HMI software.

k. Control panel shall include all required power supplies for DC circuits. Power supplies shall be Phoenix Contact, Sola, or equal.

l. Surge Arrestors shall be provided for any analog circuits that originate from outside of the control panel building, surge arrestors shall be Phoenix Contact TT, EDCO PC series, or equal.

m. Where used, operator indicating lights, selector switches and pushbuttons shall be industrial duty, rated NEMA 4X, and be 30.5mm nominal size with required nameplates. Pilot lights shall be of the LED push to test type, color as required. Operator devices shall be Allen Bradley, or equal.

n. Relays supplied shall be industrial plug-in type, minimum DPDT, with contacts rated for 10 amps. Relays shall be Phoenix Contact, IDEC, Potter Brumfield, or equal.

o. Timers shall be multi-range, multi-function, industrial plug-in type. Timers shall be IDEC RTE, Siemens, or equal.

p. All wiring in the control panel shall be in wire-ways or suitably tie-wrapped to provide for neat appearance. Internal wiring shall be color coded. All wires which connect outside the panel shall terminate on NEMA rated terminal blocks. Terminal Blocks shall be Phoenix Contact UT, WAGO, or equal.

q. Provide in control panel a Phoenix Contact or N-TRON 4 port (RJ45, 10/100) network switch for interface to the plant SCADA system provided by others.

4. Instruments:

a. Manufacturer shall supply:

1) Two Dissolved Oxygen (DO) probes. The DO probes shall be Hach LDO or YSI **(Addendum 2, Issued 5/18/2026)**.

2) One Oxidation Reduction Potential (ORP) probe. The ORP probe shall be Hach DRS5 or YSI **(Addendum 2, Issued 5/18/2026)**.

3) Probe handrail mounting kit for each probe. The mounting kit shall be constructed of aluminum (as shown in general arrangement drawings) with 316 stainless steel fasteners.

4) Two Hach SC4500 transmitters or YSI transmitters **(Addendum 2, Issued 5/18/2026)** shall be supplied. The transmitters shall have 4-20 mA outputs for transmission of the signals to the PLC. Manufacture shall supply 1 Sun Shield for each SC4500 transmitter.

5. Control Programming:

a. The aeration program shall control using a system approach. Oxygen delivery to the entire process shall be determined using all sensor inputs rather than each sensor control aerators in discrete reactors.

b. The ORP and DO control shall be based upon Evoqua Water Technologies LLC “Variable Set Point” control, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. The Contractor shall install the Orbal Aeration System as shown on the drawings.

B. Equipment shall be installed in accordance with General Mechanical Requirements, and in accordance with the Manufacturer's recommendations to provide a complete installation.

C. The Contractor shall level, align shafting, grout beneath bearing base plates, install drives, aeration discs, and accessories in accordance with the Manufacturer's drawings and installation manual.

PART 4 SPECIAL PROVISIONS

4.01 PLC BASED PROCESS CONTROLS

A. The PLC based process controls shall be supplied by the vendor under this specification section and provided as a complete self-contained package.

B. The PLC based process controls shall be provided with the discrete and analog I/O control signals as shown on the Contract Instrumentation Drawings (P&ID Drawings).

C. The supplier shall perform all the PLC programming required for the vendor’s provided panels. Where these panels include a local operator interface terminal (OIT) the supplier shall also perform all required screen development and configuration. The PLC program and OIT screens shall be submitted with the shop drawings to the Engineer for approval. The equipment vendor shall provide PLC tag names/data table addresses in the form of list and coordinate with the owner’s engineer, so that the plant SCADA system screens specific to the vendor’s process can be developed by the Owner’s Engineer.

D. The supplier shall allocate time for coordinating with the Owner's Engineer and for testing to facilitate SCADA integration of the vendor's process.

END OF SECTION

SECTION 11260
GRIT REMOVAL

PART 1 GENERAL

1.01 SCOPE

A. Work described in this section includes furnishing all labor, equipment, materials, tools and incidentals required for a complete and operable installation of the grit removal system as shown on the drawings and specified herein. The manufacturer shall supply the equipment and the general contractor shall install the equipment.

1.02 DESIGN REQUIREMENTS

A. The Grit Removal, Washing, and Dewatering System shall:

1. Grit removal shall be designed for an average daily flow of 0.93 mgd and a peak flow of 8.0 mgd.

2. Removal efficiency, as outlined in each components section below, shall be based on the following gradation:

% Passing Cumulative									
Micron	75	106	150	212	300	425	600	1000	
North Central	2.2	7.8	18.4	36.2	54.1	64.0	73.5	87.7	Physical Average
North Central	2.0	13.0	41.0	62.0	84.2	91.7	95.3	97.9	SES Average

B. The Grit Removal System shall be comprised of the following components:

1. HeadCell® Grit Concentrator
2. Grit Pump provided under section 11735
3. TeaCup® Grit Washing / Classification unit
4. Decanter
5. Control Panel

1.03 SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS

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

1. Shop Drawings for Review:

a. The Contractor shall indicate all variances from the requirements of the Contract Documents.

b. Scaled dimensional drawings for all components of the system

c. Head loss calculations for the system.

d. Manufacturer's catalog data and descriptive literature including equipment weights and performance data.

e. Written recommended procedures for job site storage, handling, and installation of the equipment.

2. Information for the Record:

a. Hydro International's Intellectual Property licensing agreement.

b. Manufacturer performance information showing compliance with the specifications.

c. Manufacturer's certification.

d. Operation and maintenance manual.

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

1.04 WARRANTY

A. Any product that proves defective in material, workmanship or design within twelve (12) months after substantial completion shall be, modified, repaired or replaced, or Buyer's payment for the products shall be refunded. This shall be Buyer's sole remedy.

1.05 QUALITY ASSURANCE

A. Certificate of Compliance

1. The Manufacturer shall warrant that the Grit Removal System to be supplied shall be manufactured in compliance with the Contract Documents.

B. The system shall be furnished by a Manufacturer who is ISO 9001:2008 and 14001 Certified.

C. Manufacturer shall be successful in the experience of manufacture, operation, and servicing of Grit Removal Systems of type, size, quality, performance, and reliability equal to that specified for a period of not less than ten (10) years. The Manufacturer shall submit evidence of experience having supplied a minimum of ten (10) installations in North America of similar size to the proposed system and with a maximum surface loading of 11.8 gpm/square foot or less at the specified peak design flow.

D. In the absence of verifiable experience, the Manufacturer shall be required to provide an extended warranty and subsequent Performance Bond for the same number of years that the Manufacturer was found lacking in experience from the specified ten (10) year period. The performance bond shall commence with acceptance of the equipment and time described herein and beyond the standard warranty period.

1.06 MANUFACTURER

A. The entire Grit Removal System shall be manufactured by Hydro International, Hillsboro, OR. 2925 NW Aloclek Drive #140, Hillsboro, Oregon, 97124, telephone 503-615-8130.

PART 2 PRODUCTS

A. Product Description, the Grit Concentrator unit shall be placed in a concrete tank and receive the incoming screened flow. The Grit Concentrator shall provide sufficient surface area to remove the specified grit particles from the specified peak flow and concentrate the grit in a sump at the bottom of the unit. The de-gritted effluent from the Grit Concentrator shall be weir-discharged as shown on the drawings.

B. The Grit Concentrator shall be all-hydraulic, self-activating and shall not require internal moving parts.

C. The Grit Removal System and all appurtenances shall be supplied by a single supplier.

D. The system to be furnished hereunder shall be made by a manufacturer regularly engaged in such work and who has furnished similar installations and had them in successful and continuous operation for a minimum period of ten years.

E. Data on performance testing, service history and operation of existing installations using the submitted equipment shall be made available to the Engineer, upon request, for use in determining that the Grit Removal components offered meets the intent of the contract, performance requirements and criteria stated in these specifications.

F. The Grit Concentrator technology shall be designed utilizing Computational Fluid Dynamics (CFD) and field data to verify its flow regime, headloss and grit removal characteristics. Upon request, data on the computation methods used and generic simulation results shall be made available to the engineer.

G. Units using a piped upflow influent distribution design to feed the grit concentrator shall not be accepted.

2.02 GRIT CONCENTRATOR

A. Design Data

1.	Number of Units:	1
2.	Size:	9-foot diameter
3.	Number of Trays per Unit:	8
4.	Surface Area/Unit:	509 ft^2
5.	Peak Loading Rate:	10.9 gpm/ft^2
6.	Performance:	95% removal of all grit (specific gravity 2.65)
		≥ 75 microns at average flow

7.	Performance:	95% removal of all grit (specific gravity 2.65) ≥ 106 microns at peak flow
8.	Average Flow/Unit:	1.0 mgd with no more than 1" headloss
9.	Peak Flow/Unit:	8.0mgd with 8" headloss
10.	Influent Duct Opening:	TBD
11.	Discharge:	Weir
12.	Underflow Connection:	4"
13.	NPW Connection:	1.5" NPT
14.	Materials of Construction:	304 SS Support structure/duct/underflow; HDPE trays

B. Operation

1. Flow shall transition from the inlet channel or pipe to the trays via an inlet duct positioned above the trays. Each tray shall be connected to the inlet duct by a horizontal nozzle with a rectangular cross section and large clear openings. Round nozzles which reduce cross sectional area shall not be allowed. Designs with hydraulic turns greater than 45 degrees shall not be allowed.
2. The Grit Concentrator shall have a maximum surface loading rate of 11.8 gpm/square foot to ensure adequate surface area for settling and specified particle removal efficiency.
3. The Grit Concentrator shall be characterized by a controlled boundary layer flow to enhance settleable solids concentration and removal.
4. The Grit Concentrator shall be all-hydraulic consisting of self-cleaning corrosion resistant, non-metallic trays with no moving parts within the unit.
5. All flow passages shall be self-cleaning and free of sharp projections or fittings that may snag stringy or fibrous materials.
6. Water shall be intermittently supplied to the solids underflow sump.
7. The Grit Pump shall convey the concentrated grit slurry from the underflow of the Grit Concentrator to the Grit Washing / Classification unit. Grit pump provided under Section 11735 under Section
8. The Grit Washing / Classification unit shall receive the underflow from the Grit Concentrator. The unit shall be mounted above and discharge the concentrated and washed grit slurry to the Decanter. The de-gritted overflow shall be discharged upstream of the Grit Concentrator.
9. The Decanter shall receive concentrated grit slurry from the Grit Washing / Classification unit. It shall allow the washed grit to settle in its clarifier and

discharge the de-gritted overflow upstream of the Grit Washing / Classification unit.

C. Construction

1. The inlet flume shall be constructed of minimum 14 gauge formed stainless steel sheet with minimum 3-inch clear openings. Multiple flexible connections to the trays shall not be allowed. Units using a piped upflow influent distribution design shall not be accepted. Designs with hydraulic turns greater than 45 degrees shall not be allowed.

2. Grit Concentrator trays shall be molded thermoplastic with a minimum 1/4-inch-thick LDPE on the pans and sidewalls. Formed and welded stainless steel trays shall not be allowed.

3. Grit Concentrator trays shall be molded thermoplastic with a minimum 1/4-inch-thick LDPE on the pans and sidewalls. Formed and welded stainless steel trays shall not be allowed.

4. The stack of trays shall securely fit into a stainless-steel support frame. The support frame shall fit and secure to the bottom of the Contractor supplied concrete support structure.

5. A fluidizing ring complete with nozzles and spray shields shall be provided with the Grit Concentrator to aid in transporting the grit to the Contractor supplied underflow pipe. The fluidizing ring shall be mounted to the walls of the Contractor supplied concrete grit sump and incorporate a threaded connection to the water supply line.

D. Valves and Accessories

1. The Grit Concentrator shall be provided with the following accessories:

   a. One (1) 1.5 -inch bronze globe valve to regulate the system water flow rate to the grit collector.

   b. One (1) 1.5 -inch bronze ball valve for shut off.

   c. One (1) 4-80 gpm acrylic flow meter.

   d. One (1) 1.5-inch NEMA 4X brass solenoid valve to automate the fluidizing water supply.

2. Unions or quick disconnects are to be incorporated into the piping on either side of the flow meter for ease of removal and cleaning. The quick disconnects or couplings are to be supplied and installed by the contractor.

2.03 GRIT PUMP

A. Grit pump shall be as specified in section 11735.

B. The grit pump shall be controlled by the Grit Removal system controls and operate intermittently whenever there is flow entering the Grit Concentrator unit.

2.04 GRIT WASHING/CLASSIFICATION UNIT

A. Design Data

1.	Number of Units:	1
2.	Size:	24" diameter
3.	Performance:	95% removal of all grit (specific gravity 2.65) ≥ 75 microns at design flow
4.	Influent Solids Concentration:	≤ 1.0 %
5.	Design Flow/Unit:	200 gpm @ 69” headloss
6.	Peak Flow/Unit:	250 gpm @ 108” headloss
7.	Influent Connection:	3” flanged pipe
8.	Effluent Connection:	4” flanged pipe
9.	Underflow Connection:	3” flanged pipe
10.	NPW Connection:	1.5” NPT
11.	Material of Construction:	304 SS
12.	Operation:	Intermittent 10-15 minutes

B. Operation

1. The Grit Washing / Classification unit shall be designed to handle screened raw wastewater.
2. The Grit Washing / Classification unit shall be characterized by a dominant, strong free vortex which utilizes centrifugal and gravitational forces and secondary boundary layer velocities to affect the separation, collection and classification of grit from the unit's inflow.
3. Defining characteristics of the dominant free vortex / secondary boundary layer velocity type units are as follows:
    a. Dominating increasing tangential velocity profile toward the center of the unit.
    b. The ability to handle increasing flows with no loss of the specified grit removal efficiency and with increasing headloss requirements.
    c. The ability to classify (wash) the grit from lighter organic material to meet the specified organic solids content.

d. No requirements for electrical or mechanical components, flow deflecting / guiding weirs or baffles, or compressed air lines within the unit to meet the specified performance.

e. Continuous removal of washed, clean grit.

4. The Grit Washing / Classification unit shall be all-hydraulic with no moving parts within the unit.

5. The grit underflow from the Grit Washing / Classification unit shall be transported by gravity to the Grit Dewatering unit.

6. Flushing/fluidizing Water shall be intermittently supplied to the Grit Washing / Classification unit.

C. Construction

1. The Grit Washing / Classification unit shall be fabricated from stainless steel. The dished and flanged heads shall be 1/4 inch thick. The vessel walls shall be 3/16 inch thick.

2. The Grit Separation / Classification unit shall be designed to withstand a maximum working pressure of 14.7 psig. The actual maximum pressure at the inlet shall be no more than 14.7 psig.

3. All flanges shall be rotatable and conform to ANSI B16.1 bolt patterns.

4. A minimum 18-inch diameter access shall be provided in the top of the Grit Washing / Classification unit. All internal elements shall be removable from inside the unit.

5. The Grit Washing / Classification unit shall be free standing on three legs and mounted above a Grit Dewatering unit. Clearance shall be provided between the bottom of the grit underflow pipe and the Grit Dewatering unit clarifier surface.

D. Valves and Accessories

1. The Grit Washing / Classification Unit shall be supplied with the following equipment to regulate and automate the system water supply:

a. One (1) 3 inch electrically actuated cast iron plug valve to isolate the underflow

b. One (1) 1.5-inch bronze ball valve for main water supply shut off.

c. One (1) 1.5-inch bronze ball valve to regulate flushing water supply.

d. One (1) 1.5-inch NEMA 4X brass solenoid valve to automate the flushing water supply.

e. One (1) 1-inch bronze ball valve to regulate fluidizing water supply.

f. One (1) 1-inch NEMA 4X brass solenoid valve to automate the fluidizing water supply.

2. The Grit Washing / Classification Unit shall be supplied with a flow controller to limit the underflow into the Grit Dewatering unit.

2.05 GRIT DEWATERING ESCALATOR

A. Design Data

1.	Number of Units:	1
2.	Maximum Grit Load:	up to 1.0 cy/hour
3.	Performance:	95% removal of all grit (specific gravity 2.65) > 75 microns. Grit in the dumpster shall contain less than 20% volatile solids and greater than 60% total solids
4.	Belt Width:	6"
5.	Clarifier size:	60" square
6.	Min. Free Water Surface area:	17.3 ft^3
7.	Motor:	0.33 hp, TENV
8.	Overflow Connection:	6" flanged pipe
9.	Drain Connection:	3" flanged pipe
10.	NPW Connection:	1" NPT
11.	Body Material:	304 SS
12.	Belt Material:	Neoprene Rubber, re-enforced with Polyester and Aluminum
13.	Model Number:	GS0660

B. Operation

1. The Grit Dewatering Escalator unit shall be designed to capture and dewater concentrated, washed grit slurry from the Grit Collection/Washing/ Classification unit.

2. The Grit Dewatering Escalator unit clarifier shall be designed based on a settling rate not to exceed 3.2 gpm/square foot.

3. The tailroll mechanism shall be self-cleaning. As the belt rotates with the tailroll at the bottom of the unit the belt cleats shall lift from the belt to provide a gap of at least a 1-inch. The Grit Dewatering Escalator unit belt shall be provided with 2-inch openings to allow transfer of fine solids internal to the belt to the

underside of each cleat. The tailroll shall be fitted with a scraper, which shall also function as an internal belt scraper.

C. Construction

1. The Grit Dewatering Escalator shall be provided with an integral square clarifier which shall provide at least 3 inches of freeboard.

2. The housing for the Grit Dewatering Escalator belt shall be fitted under the clarifier. The housing for the Grit Dewatering Escalator belt shall be stainless steel with urethane bonded to the internal surfaces. The belt housing shall be inclined at 30 degrees.

3. The belt housing shall be provided with clean out plates and one (1) flanged drain.

4. The Grit Dewatering Escalator unit shall be supplied with a belt made of 1/8-inch x 1/32-inch two-ply polyester reinforced continuous conductor belting. The belt cleats shall be 3-3/8-inch x 4-9/16-inch of molded 90 Durometer neoprene and aluminum reinforced and shall be vulcanized on the belt. The cleats shall attach to the belt with minimum 5/32-inch-thick neoprene hinges.

5. The Grit Dewatering Escalator unit shall be provided with a 9-3/4-inch diameter lagged headroll. The headroll shall be adjustable to allow take-up of slack in the Grit Dewatering Escalator belt. Adjustment of the headroll shall not affect the headroll retainer plate, scraper, or drive unit.

6. The Grit Dewatering Escalator unit shall be provided with a headroll scraper having 1/4-inch-thick high-density polyethylene (HDPE) contact surfaces with a 1/4-inch-thick HDPE retainer plate. Both retainer plate and scraper shall be loaded to keep belt cleats closed tightly around the headroll during operation.

7. The Grit Dewatering Escalator unit shall be provided with a tailroll designed to mount internally to the unit belt housing with external sealed bearings.

8. The Grit Dewatering Escalator unit support structure shall be as shown on the general arrangement drawing and anchored to a stable base.

9. The Grit Dewatering Escalator unit shall be supplied with a factory installed rinse bar system. The system shall include:

   a. Two spray bars located above the belt and below the clarifier liquid level to enhance grit washing.

   b. One spray bar located at the bottom of the clarifier as a tailroll area rinse.

D. Drive Unit

1. The Grit Dewatering Escalator shall be provided with a drive unit consisting of the motor and the helical gear reducer, mounted as a single integrated unit. All Bearings shall be anti-friction, ball, or roller type bearings.

2. The motor shall be 3 phase, 460 VAC, 60 Hz, NEMA Design B, TENV enclosure.
3. The helical gear reducer shall have hardened alloy steel gears accurately cut to shape.
4. A mechanical torque-limiting clutch shall be mounted on the headroll gear assembly to prevent an accidental overload of the drive unit and belt.
5. The drive speed shall be adjusted by a variable ~~speed~~ frequency drive (refer to Specification 16230 for VFD requirements) **(Addendum 2, issued 5/18/2026)** housed in the control enclosure. The belt speed shall be adjustable from 1-5 feet/minute.

E. Valves and Accessories

1. The Grit Dewatering Escalator unit shall be supplied with the following valves:
2. One (1) 3-inch eccentric cast iron plug valve located on the unit drain.
3. One (1) 1-inch NEMA 4X brass solenoid valve to automate the water to the rinse bar system.
4. Two (2) 1-inch bronze ball valves to manually shut off flow to the rinse bar system.
5. One (1) 1-inch bronze globe valve to manually regulate flow to the tailroll spray bar.
6. One (1) 3/4-inch bronze ball valve to manually shut off the top rinse bars.
7. One (1) 0.5-5 gpm acrylic flow meter
8. The Grit Dewatering Escalator unit shall be supplied with one (1) motion sensor installed on the side of the Grit Dewatering Escalator unit to detect movement of the headroll scraper arm.

2.06 CONTROLS AND INSTRUMENTATION

A. Control Panel

1. One (1) control panel shall be furnished, completely pre-wired and tested.
2. The control panel shall adhere to the following specifications:

a.	Enclosure Rating:	NEMA 4X
b.	Material:	304SS
c.	Voltage:	480 Volt
d.	Phase:	3 Phase
e.	Frequency:	60 Hz
f.	Load:	TBD Amp

g. Logic: AB Micro ~~logic1400~~ 850 PLC (Refer to Specification 16905 Par 2.06)

h. OIU: PanelView 800 with 4-inch OIU **(Addendum 2, Issued 5/18/2026)**

3. The Control panel shall contain all timers, VFD, switches, indicator lights, and other components necessary to operate the following equipment:
   a. One (1) Grit Concentrator
   b. One (1) Grit Pump
   c. One (1) Grit Washing / Classification unit
   d. One (1) Grit Dewatering Escalator
4. The control panel shall be supplied with applicable control relays and time delay relays with a minimum one extra normally closed and one extra normally opened contact is provided for each relay.
5. Remote monitoring of the control panel is required by the SCADA and the control panel and PLC shall be ethernet compatible for connecting to the SCADA network.
6. The panel door layout shall include the following items:
   a. Front panel mounted combination main disconnect switch and circuit breaker
   b. Back lit, push-to-test Power On indicating light
   c. System three position HOA switch
   d. System Emergency Stop push button
   e. System Alarm Reset push button
   f. Grit Concentrator fluidizing valve OPEN light
   g. Grit Concentrator fluidizing water HOA switch
   h. Grit Pump running light
   i. Grit Pump three position HOA switch
   j. Grit Pump fail indicating light
   k. Grit Pump manual START push button
   l. Grit Pump manual STOP push button
   m. Grit Pump manual speed potentiometer
   n. Grit Separation / Classification three position HOA switch
   o. Grit Separation / Classification underflow valve three position HOA switch

p. Grit Separation / Classification underflow valve OPEN indicating light

q. Grit Separation / Classification fluidizing water ON/OFF switch.

r. Grit Separation / Classification fluidizing water valve OPEN indicating light

s. Grit Separation / Classification flushing water valve OPEN indicating light

t. Grit Separation / Classification flushing water valve three position HOA switch

u. Grit Separation / Classification auto drain three position HOA switch

v. Grit Separation / Classification WET/DRY/REMOTE three position switch

2.07 SEQUENCE OF OPERATION

A. The system shall be controlled to provide automatic or manual operation, manual starting and stopping and system shut down when a fault is detected.

B. Plant water shall be supplied and distributed between the Grit Concentrator fluidizing line and the Grit Collection/Washing/Classification unit.

C. Screened raw wastewater shall be gravity fed into the Grit Concentrator continuously.

D. Grit Concentrator

1. Grit shall be intermittently discharged from the sump via the Grit Pump. Prior to the Grit Pump operating, the fluidizing valve shall open for a predetermined period of time and remain open for the duration of the discharge cycle.

2. If the time between grit discharge cycles exceeds a certain threshold, the fluidizing valve shall open for a period of time to ensure that the grit stays liquefied.

E. Grit Collection/Washing/Classification Unit

1. Screened raw wastewater shall be gravity fed to the Grit Collection / Washing / Classification unit continuously.

2. An accumulating timer (AT) shall reset and begin timing out when a signal is received indicating flow of plant influent to the Grit Washing / Classification unit. (The signal, provided by others, would be initiated by either the influent pump run signal, by the opening of the valves that provide flow to the Grit Collection/Washing/Classification unit, or from a flow transmitter indicating flow to the Grit Collection/Washing/ Classification unit.) The AT regulates the length of time between GUC, (Grit Underflow Cycle). When the AT times out it shall send a signal to initiate a GUC. The timing between, and duration of, the grit GUC is site specific; the AT should be adjustable between 5 minutes to 8 hours, normally set at 3 hours. The panel shall be equipped with two timers, one for dry weather, and one for wet weather. For higher grit loads, the wet

weather timer shall increase the frequency of the UC as compared with the dry weather timer. The timer being used shall be selected by a local switch or by remote contact closure on terminals provided in the panel.

3. The fluidizing timer (FT) shall reset and begin to time out when the AT signals the start of a GUC. The FT shall send a signal to open the solenoid valve on the 1-inch fluidizing line. The water flowing into the fluidizing line shall agitate and clean the grit collected in the bottom of the Grit Collection/Washing/Classification unit's sedimentation cone. When the FT times out, the 1-inch solenoid valve shall close. The FT shall be adjustable from 0-6 minutes, normally set at 30 seconds.

4. Time out of the FT shall send a signal to the underflow timer (UT); the UT shall reset and begin to time out. The UT shall send a signal to open a 3 inch electrically actuated plug valve. When the valve opens, the grit collected in the bottom of the sedimentation cone shall flow to the dewatering unit. When the UT times out the plug valve shall close. The grit underflow timer (UT) shall be adjustable from 0 - 60 minutes it shall normally be set for 1 minute.

5. Time out of the UT shall send a signal to the flushing/purging timer (PT); the PT shall reset and begin to time out. The PT shall send a signal to open a 1.5-inch solenoid valve. Water shall flow into the grit underflow line and flush or purge the grit underflow line of residual grit. When the PT times out, the solenoid valve shall close. The flushing / purging timer (PT) shall be adjustable from 0-60 minutes it shall normally be set for 1 minute.

6. Concurrent with the closing of the 3-inch plug valve, the AT is set back to zero and begins accumulating Grit Collection/Washing/Classification unit inflow time again.

7. The unit shall have an automatic drain feature that can be turned off and on as desired. The Automatic drain shall enable the unit to be drained whenever influent stops flowing to the unit. This is used to provide for freeze protection or maintenance.

F. Grit Dewatering Escalator unit

1. The Grit Dewatering Escalator belt shall run whenever grit slurry is being transported to the unit.

2. While the dewatering unit is running, water shall be directed to the tailroll self-cleaning mechanism and grit rinse system.

3. The belt speed shall be adjustable via a manual speed control potentiometer on the control panel or by remote signal (4-20ma) from the plant DCS.

4. A motion sensor shall be installed on the side of the Grit Dewatering Escalator take-up frame and shall detect movement of the headroll scraper arm. Lack of motion of the headroll scraper arm shall indicate lack of belt movement, drive unit failure and/or scraper arm overload. Lack of belt movement or scraper arm

overload shall interrupt signal from the motion sensor to the timer. If the motion sensor fails to reset the timer, the Grit Dewatering Escalator shall stop and the failure light illuminate.

5. After a System Shut Down the Grit Dewatering Escalator shall continue to operate for a pre-determined amount of time to allow for the removal and dewatering of all grit accumulated in the clarifier. The off delay timer shall be adjustable from 0-60 minutes with a typical delay off time of 15 minutes.

2.08 UTILITY REQUIREMENTS

A. Water

1. The Grit Concentrator Unit shall require a minimum supply of 32 gpm non-potable water at a minimum 50 psig.

2. The Grit Collection/Washing/Classification Unit shall require a minimum supply of 30 gpm clarified non-potable water supplied at a regulated 50 psig ± 5 psi.

3. The Grit Dewatering Escalator shall require a minimum supply of 5 gpm non-potable water supplied at a regulated 50 psig ± 5 psi.

B. Electrical

1. The system shall require one (1) 480 VAC, three phase electrical service connection to operate

2.09 MATERIALS AND FINISHES

A. Materials

1. All stainless steel used for the fabrication of the equipment shall conform to the following standards:

Plate and Sheet	ASTM A 167
	ASTM A 240
Bar	ASTM A 276
	ASTM A 479
Tube	ASTM A 312

B. Exterior Surfaces Finishes

1. All surfaces shall be free of sharp edges, weld spatter and residue. All welds shall be ground smooth.

2. All stainless-steel surfaces shall be acid washed.

3. All non-submerged exterior surfaces shall be Glass Bead Blasted to a uniform finish.

PART 3 EXECUTION

3.01 DELIVERY AND INSTALLATION

A. The equipment and material shall be shipped complete except where partial disassembly is required by transportation regulations or for protection of components.

B. Spare parts shall be packed in containers bearing packing lists clearly designating contents and pieces of equipment for which they are intended.

C. The Contractor shall inspect equipment prior to unloading and notify the Manufacturer of any damage to equipment to effect proper remedial action.

D. The Contractor shall unload, store and safeguard equipment, materials, and spare parts in accordance with manufacturer's recommendations.

3.02 START-UP, TRAINING AND MANUFACTURER'S SERVICES

A. A factory trained representative for the equipment specified herein shall be present at the jobsite and/or classroom designated by the Owner for a maximum of two (2) 8-hour man-days (two (2) visits) for installation inspection, startup, functional testing, and operator instructions; travel time excluded.

B. Manufacturer shall provide an electronic copy of the final PLC programming on portable digital media device.

3.03 FUNCTIONAL TESTING

A. Prior to startup, all equipment shall be inspected for proper alignment, operation, connection, and satisfactory operation by means of a functional test. It is the General Contractor's responsibility to duly notify the manufacturer of any inabilities to perform functional testing prior to operator training.

3.04 MANUFACTURER'S CERTIFICATE(S)

A. Provide Manufacturer's certificate of installation and commissioning following functional testing and startup.

PART 4 SPECIAL PROVISIONS

~~Not used.~~

4.01 Local Control Stations (LCS)

A. Local control stations shown on Drawings for the Grit collection equipment shall be provided under this Section. **(Addendum 2, Issued 5/18/2026)**

END OF SECTION

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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:

Upstream Water Level (ft) = Number of Scrapers below Water level
1.745 ft

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
(upstream clearance) Channel Height:	~~26 ft~~ 27 ft **(Addendum 2, Issued 5/18/2026)**
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:	~~To be provided~~ 1.0 ft **(Addendum 2, Issued 5/18/2026)**
Maximum Flow:	10 mgd
Maximum Water Level:	~~To be provided~~ 17.0 ft **(Addendum 2, Issued 5/18/2026)**
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 ~~3:1~~ 1:1 **(Addendum 2, Issued 5/18/2026)** 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 ~~greased ball bearing type, non-self-aligning, sealed and lubricated~~ Thordon self-lubricating type **(Addendum 2, Issued 5/18/2026)** 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 ~~1075U~~ 1095 **(Addendum 2, Issued 5/18/2026)** 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. ~~Relay Based Controls shall include the following:~~

1) ~~Variable Frequency Drive (VFD)~~

2) ~~Electronic torque control~~

3) ~~Hard contact SCADA Interlock(s)~~

4) ~~Adjustable on/off cycle timers~~ **(Addendum 2, Issued 5/18/2026)**

g. 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, Forward, Jog Reverse and E-Stop buttons.

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 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. ~~Drive Clevis Pin (1)~~ **(Addendum 2, Issued 5/18/2026)**
2. Snap/Retaining Rings (10)
3. Link Clevis Pins (4)
4. Scraper Bolts (4)
5. Scraper Nuts (4)
6. Snap Ring Tool (1)
7. 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)
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 ~~mail~~ male drain port. Overflow port required. **(Addendum 2, Issued 5/18/2026)**

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. (**Addendum 2, Issued 5/18/2026)**

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, ~~0.75~~ 1.0 **(Addendum 2, Issued 5/18/2026)** 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 ~~4X 304 SSTL~~ 12 **(Addendum 2, Issued 5/18/2026)** 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/Forward/Off/Reverse and E-Stop buttons.~~ Hand/Off/Auto, Forward/Off/Jog-Reverse selector switches and E-Stop push button. **(Addendum 2, Issued 5/18/2026)**

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

SECTION 15195
FACILITY NATURAL-GAS PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Natural gas piping buried beyond 5-feet of building.
2. Natural gas piping buried within 5 feet of building.
3. Natural gas piping above grade.
4. Unions and flanges.
5. Valves.
6. Pipe hangers and supports.
7. Strainers.
8. Natural gas pressure regulators.
9. Natural gas pressure relief valves.
10. Underground pipe markers.
11. Bedding and cover materials.

1.02 REFERENCES

A. American National Standards Institute:

1. ANSI Z21.15 – Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves.

B. American Society of Mechanical Engineers:

1. ASME B16.3 – Malleable Iron Threaded Fittings.
2. ASME B16.26 – Cast Copper Alloy Fittings for Flared Copper Tubes.
3. ASME B16.33 – Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 125 psig (sizes ½ – 2).
4. ASME B31.9 – Building Services Piping.
5. ASME Section IX – Boiler and Pressure Vessel Code – Welding and Brazing Qualifications.

C. ASTM International:

1. ASTM A53/A53M – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. ASTM A234/A234M – Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
3. ASTM B88 – Standard Specification for Seamless Copper Water Tube.
4. ASTM B280 – Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
5. ASTM B749 – Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
6. ASTM F708 – Standard Practice for Design and Installation of Rigid Pipe Hangers.

D. American Welding Society:

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

E. American Water Works Association:

1. AWWA C105 – American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.

F. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 58 – Pipe Hangers and Supports – Materials, Design and Manufacturer.
2. MSS SP 67 – Butterfly Valves.
3. MSS SP 69 – Pipe Hangers and Supports – Selection and Application.
4. MSS SP 78 – Cast Iron Plug Valves, Flanged and Threaded Ends.
5. MSS SP 89 – Pipe Hangers and Supports – Fabrication and Installation Practices.
6. MSS SP 110 – Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

G. National Fire Protection Association:

1. NFPA 54 – National Fuel Gas Code.

H. Underwriters Laboratories Inc.:

1. UL 842 – Valves for Flammable Fluids.

1.03 SYSTEM DESCRIPTION

A. Natural gas service to the plant is to be supplied by Columbia Gas Company. A 2-inch diameter natural gas service line enters the plant from portage street and is installed back to the meter and pressure regulator set located at the front of the plant near the Digester Building. Tap-in, service line, and meter and pressure regulator set shall be

furnished and installed by Columbia Gas Company. Delivery pressure at the outlet of the pressure regulator at the meter shall be 2 psi. All piping downstream of the meter and pressure regulator set (house lines) within the plant site shall be furnished and installed by the contractor.

B. Where more than one piping system material is specified, provide compatible system components and joints. Use non-conducting dielectric connections when joining dissimilar metals in systems.

C. Provide flanges, unions, or couplings at locations requiring servicing. Use unions, flanges, or couplings downstream of valves and at equipment connections. Do not use direct welded or threaded connections to valves, equipment.

D. Provide pipe hangers and supports in accordance with ASME B31.9, ASTM F708, MSS SP 58, MSS SP 69, and MSS SP 89.

E. Use plug, ball, or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.

1.04 SUBMITTALS

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

1. Product Data:

a. Piping: Submit data on pipe materials, fittings, and accessories. Submit manufacturers catalog information.

b. Valves: Submit manufacturers catalog information with valve data and ratings for each service.

c. Hangers and Supports: Submit manufacturers catalog information including load capacity.

d. Piping Specialties: Submit manufacturers catalog information including capacity, rough-in requirements, and service sizes for the following:

1) Strainers.

2) Natural gas pressure regulators.

3) Natural gas pressure relief valves.

e. Test Reports: Indicate results of piping system pressure test.

f. Manufacturer’s Certificate: Certify Products meet or exceed specified requirements.

g. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

2. Information for the record:

   a. Manufacturer's Installation Instructions: Submit manufacturer's published literature indicating proper installation procedures.

   b. Substantiation of vendor compliance with codes, standards, or test methods noted herein.

   c. Operation and Maintenance Data: Submit for valves and gas pressure regulators installation instructions, spare parts lists, and exploded assembly views.

1.05 QUALITY ASSURANCE

A. Perform natural gas Work in accordance with NFPA 54.

B. Perform work in accordance with applicable code and local gas company requirements.

C. Perform Work in accordance with ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.

D. Perform Work in accordance with applicable code and authority having jurisdiction, AWS D1.1 for welding hanger and support attachments to building structure.

E. Furnish shutoff valves complying with ASME B16.33 or ANSI Z21.15.

F. Perform Work in accordance with applicable standard.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

C. Design piping system, hangers and supports under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location in State of Ohio.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Section 01350 – Common Product Requirements: Product storage and handling requirements.

B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

C. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation. Furnish temporary protective coating on cast iron and steel valves.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground piping when bedding is wet or frozen.

1.09 COORDINATION

A. Coordinate trenching, excavating, bedding, and backfilling of buried piping systems with the requirements of Section 02200 – Excavation and Backfill.

1.10 EXTRA MATERIALS

A. Furnish two packing kits for each type and size valve.

PART 2 PRODUCTS

2.01 NATURAL GAS PIPING BURIED BEYOND 5 FEET OF BUILDING

A. Pipe: ASTM D2513, ANSI B31.8, and AGA standards polyethylene pipe. Pipe shall be SDR 11 with a working pressure of 100 psi and shall be Phillips Driscopipe 8000, or equal.

1. Fittings: Approved plastic for making heat fusion joints complying with ASTM D2513 or D2683. When applicable, compression fittings shall be Dresser 401 plastic.

2. Joints: Fusion-welded.

B. Trace Wire: All underground piping shall be traced with No. 12 insulated magnetic detectable wire taped and installed as required by the governing authority.

2.02 NATURAL GAS PIPING BURIED WITHN 5 FEET OF BUILDING

A. Pipe: ASTM D2513, ANSI B31.8, and AGA standards polyethylene pipe. Pipe shall be SDR 11 with a working pressure of 100 psi and shall be Phillips Driscopipe 8000, or equal.

1. Fittings: Approved plastic for making heat fusion joints complying with ASTM D2513 or D2683. When applicable, compression fittings shall be Dresser 401 plastic.

2. Joints: Fusion-welded.

B. Anodeless Riser: Flexible steel casing or rigid non-corrosive steel encased plastic and shall be coated and cathodically protected.

C. Trace Wire: All underground piping shall be traced with No. 12 insulated magnetic detectable wire taped and installed as required by the governing authority.

2.03 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Steel Pipe: ASTM A53 Schedule 40 black.

1. Fittings: ASTM A234/A234M forged steel welding type.

2. Joints: ASME B31.9, welded.
3. Jacket: AWWA C105 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.

2.04 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53 Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234 forged steel welding type.

B. Joints: Threaded for pipe 2 inch and smaller; welded for pipe 2-1/2 inches and larger.

2.05 REGULATOR VENT PIPING, ABOVE GRADE

A. Indoors: Same as natural gas piping, above grade.

B. Outdoors: PVC pipe, tubing, and fittings, UL 651.

2.06 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:
   1. Ferrous Piping: Class 150, malleable iron, threaded.
   2. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Flanges for Pipe 2-1/2 inches and Larger:
   1. Ferrous Piping: Class 150, forged steel, slip-on flanges.
   2. Gaskets: 1/16-inch-thick preformed neoprene gaskets.

2.07 BALL VALVES

A. Manufacturers: Nibco, Inc., Apollo Valves, or equal.

B. ¼ inch to 1 inch: MSS SP 110, Class 125, two-piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, full port.

C. 1-1/4 inch to 3 inch: MSS SP 110, Class 125, two-piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 listed for flammable liquids and LPG, conventional port.

2.08 PLUG VALVES

A. Manufacturers: Nordstrom/Flowserve Corporation.

B. 2 inches and Smaller: MSS SP 78, Class 150, semi-steel construction, rectangular port, regular opening, pressure lubricated, teflon packing, threaded ends. UL listed for use

with natural gas. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.

2.09 PIPE HANGERS AND SUPPORTS

A. Furnish materials in accordance with applicable standards.

B. Conform to NFPA 54, ASME 31.9, ASTM F708, MSS SP 58, MSS SP 69, and MSS SP 89.

C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or carbon steel, adjustable swivel, split ring.

D. Hangers for Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.

E. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.

F. Wall Support for Pipe 3 inches and Smaller: Cast iron hook.

G. Vertical Support: Steel riser clamp or angle ring.

H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

J. Sheet Lead: ASTM B749, 2.5 lb./sq ft, 0.039 inch thick.

2.10 STRAINERS

A. Manufacturers: Keckley Company, or equal.

B. 2 inch and Smaller: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32-inch stainless steel perforated screen.

2.11 NATURAL GAS PRESSURE REGULATORS

A. Manufacturers: Sensus/A Xylem Brand, Fisher/Emerson Electric Company, or equal.

B. Product Description: Spring loaded, general purpose, self-operating service regulator including internal relief type diaphragm assembly and vent valve. Diaphragm case can be rotated 360 degrees in relation to body.

1. Comply with ANSI Z21.80.
2. Temperatures: minus 20 degrees F to 150 degrees F.
3. Body: Cast iron or steel.
4. Spring case, lower diaphragm casing, union ring, seat ring and disk holder: Aluminum.
5. Disk, diaphragm, and O-ring: Nitrile.
6. Maximum inlet pressure: 150 psig.

7. Furnish sizes 2 inches and smaller with threaded ends. Furnish sizes 2-1/2 inches and larger with flanged ends.

2.12 UNDERGROUND PIPE MARKERS

A. Trace Wire: Magnetic detectable conductor, clear or brightly colored plastic covering, imprinted with "Natural Gas Service" in large letters.

2.13 BEDDING AND COVER MATERIALS

A. Bedding, Cover, and Backfill: In accordance and as specified in Section 02200.

PART 3 EXECUTION

3.01 EXAMINATION

A. 01300 - Administrative Requirements: Coordination and project conditions.

B. Verify excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION – INSERTS

A. Provide inserts for placement in concrete forms.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.04 INSTALLATION – PIPE HANGERS AND SUPPORTS

A. Install hangers and supports in accordance with ASME B31.9, ASTM F708 and MSS SP 89.

B. Support horizontal piping hangers as scheduled.

C. Install hangers to provide minimum 1/2-inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Install hangers to allow 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.

F. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.

G. Where installing several pipes in parallel and at same elevation, provide multiple pipe hangers or trapeze hangers.

H. Prime coat exposed steel hangers and supports in accordance with Section 09900. Finish paint exposed steel hangers and supports in accordance with Section 09900. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

I. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

3.05 INSTALLATION – BURIED PIPING SYSTEMS

A. Install natural gas piping in accordance with NFPA 54.

B. Verify connection size, location, and invert are as indicated on Drawings.

C. Establish elevations of buried piping with not less than 12 inches of cover.

D. Establish minimum separation from other services piping in accordance with the applicable code.

E. Remove scale and dirt on inside of piping before assembly.

F. Excavate pipe trench in accordance with Section 02200.

G. Install pipe to elevation as indicated on Drawings.

H. Place bedding material at trench bottom to provide uniform bedding for piping, level bedding materials in one continuous layer not exceeding 4 inches compacted depth; compact to 95 percent maximum density.

I. Install pipe on prepared bedding.

J. Route pipe in straight line.

K. Install pipe to allow for expansion and contraction without stressing pipe or joints.

L. Install trace wire continuous over top of pipe.

M. Pipe Cover and Backfilling:

1. Backfill trench in accordance with Section 02200.

2. Maintain optimum moisture content of fill material to attain required compaction density.
3. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in 6 inches compacted layers to 12 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
4. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
5. Do not use wheeled or tracked vehicles for tamping.

N. Install Work in accordance with applicable standards.

3.06 INSTALLATION – ABOVE GROUND PIPING SYSTEMS

A. Install natural gas piping in accordance with NFPA 54.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient.

D. Where required, bend pipe with pipe bending tools in accordance with procedures intended for that purpose.

E. Install piping to conserve building space and not interfere with use of space.

F. Size and install gas piping to provide sufficient gas to supply maximum appliance demand at pressure higher than appliance minimum inlet pressure.

G. Group piping whenever practical at common elevations.

H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

I. Sleeve pipe passing through partitions, walls and floors.

J. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping. Refer to Section 07270.

K. Provide clearance for installation of insulation and access to valves and fittings.

L. Provide access where valves and fittings are not exposed.

M. Where pipe support members are welded to structural building framing, scrape, brush clean, weld, and apply one coat of zinc rich primer.

N. Provide support for utility meters in accordance with requirements of utility company.

O. Install vent piping from gas pressure reducing valves to outdoors and terminate in weatherproof hood. Protect vent against entry of insects and foreign material.

1. Minimum Vent Size: Connection size at regulator vent connection.
2. Run individual vent line from each relief device, independent of breather vents.

P. Breather vents may be manifolded together with piping sized for combined appliance vent requirements.

Q. Prepare pipe, fittings, supports, and accessories not pre-finished, ready for finish painting. Refer to Section 09900.

R. Install identification on piping systems including underground piping.

S. Install valves with stems upright or horizontal, not inverted.

T. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

U. Install medium pressure gas pressure regulator with tee fitting between regulator and upstream shutoff valve. Cap or plug one opening of tee fitting.

V. Install medium pressure gas pressure regulator with tee fitting not less than 10 pipe diameters down stream of regulator. Cap or plug one opening of tee fitting.

W. Install gas pressure regulator with independent vent full size opening on regulator and terminate outdoors.

X. Provide and install new gas service complete with tap in to main, service piping to gas meter location, and installation of gas meter and regulators. Gas service distribution piping upstream of meter to have a pressure of 20-60 psi. Gas delivery pressure downstream of the pressure regulators at the meter shall be 2 psi. A shutoff valve and pressure regulator at each building within the plant will reduce gas pressure from 2 psi to 7-14 inches w.c. required of the equipment.

Y. Install Work in accordance with applicable standards.

3.07 FIELD QUALITY CONTROL

A. Field inspecting, testing, adjusting, and balancing.

B. Where gas appliance will be damaged by test pressure, disconnect appliance and cap piping during pressure test. Reconnect appliance after pressure test and leak test connection.

C. Where gas appliance is designed for operating pressures equal to or greater than piping test pressure, provide gas valve to isolate appliance or equipment from gas test pressure.

D. Pressure test natural gas piping in accordance with NFPA 54.

E. Where new branch piping is extended from existing system, pressure test new branch piping only. Leak test joint between new and existing piping with noncorrosive leak detection fluid or other approved method.

F. When pressure tests do not meet specified requirements, remove defective work, replace and retest.

G. Immediately after gas is applied to a new system, or a system has been restored after gas service interruption, check pipe for leakage.

H. Where leakage is detected, shut off gas supply until necessary repairs are complete.

I. Do not place appliances in service until leak testing and repairs are complete.

3.08 SCHEDULES

A. Natural Gas Service:

Structure	Gas Flow (CFH)	Regulator Inlet Pressure (PSI)	Regulator Outlet Pressure Range (Inches W.C.)	Regulator Outlet Pressure (Inches W.C.)
Headworks Building	300	2	6-14	11
Administration/Maintenance Building	744	2	6-14	11
Sludge Holding Building	~~749~~ 474	2	6-14	11
Digester Building	150	2	6-14	11
Existing Blower Building	100	2	6-14	11
Service Building	199	2	6-14	11
Total	~~2242~~ 1967			
	(Addendum 2, Issued 5/18/2026)			

3.09 OWNER'S ACCEPTANCE

A. All materials, accessories, and methods of installation and fabrication are subject to the Owner's inspection and approval during any phase of the Work.

PART 4 SPECIAL PROVISIONS

Not used.

END OF SECTION

SECTION 16905
PROGRAMMABLE CONTROLLER SYSTEM

PART 1 GENERAL

1.01 SCOPE

A. Work under this Section includes programmable controllers and accessories to be furnished and installed as part of the Programmable Controller System (PCS).

B. The programmable controller hardware installed shall perform process control and data acquisition.

C. The PCS shall consist of Ethernet compatible PLC's, located in the control panels and as shown on the Drawings, including all component interconnections and network connections.

D. All programmable controllers provided as part of this Work, including those provided under Division 11, shall meet the requirements of these specifications, and shall be directly integrated as a part of the plant control system Ethernet network without additional communication hardware or software communication drivers.

E. The Contractor shall furnish all labor, tools, equipment, and materials necessary to furnish and install the PCS in accordance with the Drawings and as specified herein.

1.02 SUBMITTALS

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

1. Shop drawings for review

a. Materials list identifying quantities, manufacturer's name, and catalog number for each device.

b. Manufacturer's data sheets for all equipment indicating model numbers, serial numbers, and a detail of each component.

c. Addressing of the PCS I/O points shall be provided within 60 days of the Engineer's approval of the PCS. The addressing and wire numbers, as approved by the Engineer, shall be used as the basis of the Contractor's wire and terminal numbering system.

d. Wiring diagrams showing connections for all equipment furnished under this Section.

1) Control schematics for each I/O point shall identify the module, terminal designations, and individual wiring numbers.

2) A system block diagram shall be furnished and shall show hardware layout, all hardware interconnections, connection type and cabling.

3) Programmable controller control panel schematics shall include all internal device interconnections.

e. Scaled drawings for each control panel having programmable controller hardware installed within, showing layout of control panel interior and exterior, including overall dimensions, voltage rating within wire ducts, and panel mounting.

2. Information for the record

a. Drawings revised and approved per the installed and tested system.

b. Operation and maintenance manuals.

1.03 QUALITY ASSURANCE

A. Equipment and materials shall be new and, if of the same type as other performing parts of the same system, shall be the products of the same manufacturer.

B. Equipment and material shall be furnished by a manufacturer that has had an installed base of similar equipment for a minimum of the past five years. Equipment shall be of top-quality construction and design, and shall be guaranteed to perform the service required.

C. Applicable Standards:

1. NEC.

2. UL.

3. NEMA.

4. NFPA.

1.04 ELECTRICAL AND CONTROL COORDINATION

A. The provision and installation of PCS hardware that interfaces with other devices not provided under this Section shall be coordinated to ensure compatibility between the control hardware and other devices. This includes checking signal type and device rating for existing and new instruments during installation to confirm actual connections. The coordinated installation shall include the provision of appropriate modules and ancillary devices recommended by the control hardware or device manufacturer.

B. The power source for the PCS will be from power circuits shown on the Drawings. The Contractor shall be responsible for furnishing and installing a constant voltage filtering transformer of sufficient size for the programmable controller and its associated input

devices and modules. The constant voltage transformer provided shall be in accordance with the uninterruptible power supply requirements described herein.

1.05 PRODUCT HANDLING

A. Deliver all programmable controller equipment installed in the enclosure(s). If replacing existing hardware installed in the field, ensure new equipment is packaged in manufacturer's original containers, including wrappings, to properly protect devices from damage.

B. Store programmable controller equipment in manufacturer's furnished packaging and protect from weather and construction traffic. Store indoors and within a temperature-controlled area. Never store outdoors.

C. Handle programmable controller equipment carefully to prevent physical damage. Do not install damaged equipment. Damaged equipment shall be removed from Site and replaced with new equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. The PCS shall be a complete operating system including: a central control processor, memory modules, main chassis, expansion chassis as required, appropriate interface and communication modules, input and output modules, power supplies, and interconnection cabling.

B. Each PCS shall be provided with I/O modules to accommodate all input and output signals included as part of this Work, necessary to meet the operational requirements, and as shown on the Drawings, including indicated future I/O points, plus an additional 25% spares for each type of signal used in the chassis. Chassis size shall be selected to accommodate all of the required I/O modules plus 25% spare slots with a minimum of two spare slots.

C. Equipment and catalog references in this Specification refer to a PCS as manufactured by Allen-Bradley. The Contractor shall furnish the programmable control system hardware specified.

D. Where required, interposing relays shall be provided for inductive loads greater than the capability of the digital output modules. Where required to eliminate the effects of electrical interference for inductive AC devices such as relays, solenoids, motor starters, small motors and the like, surge suppressors shall be provided and installed at the devices.

E. Circuit breakers shall be provided and installed for input isolation as recommended by the manufacturer and as required herein.

2.02 PROGRAMMABLE LOGIC CONTROLLER HARDWARE

A. Programmable Logic Controller (PLC) hardware shall be provided and installed as shown on the Drawings and described herein.

B. The main control processor shall provide monitoring and control for all devices as shown on the Drawings.

C. All cables, removable terminal blocks, and connectors necessary to provide required interfacing shall be provided.

D. PLCs are to be provided with firmware no more than 1 rev below the latest major firmware revision unless an older version is specifically requested by the Engineers, System Integrator, or end client for compatibility and support purposes.

E. PLCs and selected I/O modules are to be on Rockwell Automation's active Lifecycle list. Products on the Active Mature, End of Life, or Discontinued list are not acceptable.

F. No single processor or communication module shall serve as an interface for more than one radio communication device to ensure communication link redundancy.

G. Interface modules for other communication protocols are to utilize compatible ProSoft Technology modules.

2.03 LARGE SYSTEM PLCS

A. Main Processors shall be of the Allen-Bradley ControlLogix 1756-L8xE family.

B. Chassis and PLC power supplies are to be of the 1756 offerings sized as needed.

C. All digital and analog I/O are to be 1756 family I/O. Where possible, individually isolated I/O modules are to be used.

D. All unused chassis slots to be filled with 1756-N2 cover plates.

E. 1756-EN2Tx or 1756-EX3T or 1756-EN2F (fiber) Ethernet port(s) can be used for additional, segmented, or specialized networks.

F. No ControlNet interface modules are to be used unless they support an existing ControlNet infrastructure.

G. ProSoft Technology MVI56 series modules are to be used for other communication protocols.

2.04 SMALL TO MEDIUM PLC HARDWARE (ALSO PROVIDED UNDER DIVISION 11 AS A PART OF A COMPLETE EQUIPMENT PACKAGE)

A. Main Processor(s) shall be of the Allen-Bradley 5069 CompactLogix family.

B. Each control processor shall be located within the equipment control panel.

C. The control processor shall be connected to the plant Ethernet control network and shall support direct Ethernet/IP communication with the main control processor(s).

D. Devices shall be DIN rail mounted as per the manufacturer's recommendations.

E. All digital and analog I/O are to be 5069 family I/O. Where possible, individually isolated I/O modules are to be used.

F. ProSoft Technology ILX69 series modules are to be used for other communication protocols.

2.05 REMOTE TELEMETRY UNIT PROGRAMMABLE CONTROLLER HARDWARE

A. There shall be one control processor provided for each remote telemetry site. Each control processor shall be installed within the remote telemetry enclosure located at each site, and as described in Section 16910, and shall serve as a remote telemetry unit.

B. The processor shall be of the Allen-Bradley 5069 CompactLogix family.

C. All cables and connectors necessary to provide required interfacing shall be provided.

D. Devices shall be DIN rail mounted as per the manufacturer's recommendations.

E. All digital and analog I/O are to be 5069 family I/O. Where possible, individually isolated I/O modules are to be used.

F. ProSoft Technology ILX69 series modules are to be used for other communication protocols.

2.06 VERY SMALL APPLICATION PROGRAMMABLE CONTROLLER HARDWARE

A. For small, specialized control applications, where the I/O count is minimal, the Allen-Bradley Micro820 PLC is to be the minimum processor in that family to be used.

B. Only I/O cards/modules in that family are acceptable.

C. All cables and connectors necessary to provide required interfacing shall be provided.

D. Devices shall be DIN rail mounted as per the manufacturer's recommendations.

2.07 PROGRAMMING SOFTWARE

A. If requested by the Client, system integrator shall **(Addendum 2, Issued 5/18/2026)** provide one copy of the current English version of programming software for each type of processor provided. Software shall be RSLogix Studio 5000 Designer and RSLinx OEM (9355-WABOEMENE) or connected Components Workbench Software for Micro820 applications.

B. The programming software shall be licensed to the Owner.

C. If needed, each software package shall include programming cables and one year of manufacturer's support service and warranty.

2.08 POWER REGULATION AND BACKUP POWER SUPPLY

A. Uninterruptible power supplies shall include protective regulation and shall provide uninterruptible power for all designated devices simultaneously. Each uninterruptible power supply shall be sufficiently sized to provide battery packed power for 30 minutes upon complete power failure.

B. Uninterruptible power supplies shall be installed in accordance with the manufacturer's recommendations, IEEE standards, and NEC.

C. Devices shown on the drawings and designated herein shall be powered by 120 VAC, 60 Hz, single phase and shall include protective regulation. A constant voltage, uninterruptible power supply shall be provided for the devices to protect from such problems as transient disturbances, voltage dips, voltage surges, noise, brownouts and blackouts, with 60-minute battery backup upon complete power failure. The regulation to all sensitive equipment shall be 3% of the rated value with less than 5% total harmonic distortion.

D. Located within each control panel having a control processor and/or control processor I/O modules installed within, there shall be one UPS. Each uninterruptible power supply shall provide power for all programmable controller processor, I/O, and communication hardware, instrument power supplies, and signal control and indication devices located, or powered from, within the control panel. Each uninterruptible power supply shall be of sufficient size and shall meet the following requirements:

Constant Voltage Regulation/Uninterruptible Power Supply (UPS)	
Function:	Provide constant, regulated clean power, surge protection, galvanic isolation and brownout protection
Surge Protection:	459 Joules surge energy rating
Filtering:	Full time multi-pole noise filtering 0.3% IEEE surge let through, zero clamping response time, meets UL 1449
Input Voltages:	120 volt, 50-60 Hz (auto sensing)
Output Voltages:	120 volt - 60 Hz, sine wave
Output Power:	2700 Watts / 3000 VA
Output Connections:	Eight NEMA 5-15R Battery Back-Up and two NEMA 5-20R surge protection with individual circuit breakers
Management:	Ethernet or USB or RS232 Interface Ports
Battery Type:	Maintenance free, sealed lead acid, leak-proof or Lithium-Ion
Status Indicators:	LED display with load and battery bar graphs; on-line, on battery, replace battery, and overload indication
Audible Indication:	Distinctive audible alarms for on battery and low battery
Approval:	FCC Part 15 Class A, UL 1778
Temperature:	32 to 104 degrees F
Thermal Dissipation:	275 Btuh
Size:	As required with 25% additional capacity and 30 minutes minimum runtime at total device load, 3000 VA minimum
Warranty:	2-year warranty, repair or replace
Manufacturer:	APC, Eaton, Vertiv, ABB or CyberPower

E. The Contractor shall provide a minimum of one spare 120 VAC outlet in the Control Room, powered from the UPS. The location of the outlet in the Control Room shall be approved by the Owner and the Engineer.

2.09 NETWORK DEVICES

A. The monitoring/control system shall be networked for accessibility. Ethernet switches shall be provided and installed for necessary connectivity between the control processors, the operator interface workstations, and other devices shown on the drawings and described herein, over fiber and Category 6 cable in accordance with Section 16121.

1. Fiber-Optic Switches:

a. Source power for the Ethernet managed switch shall be from a constant voltage, battery-backed, uninterruptible power supply.

b. The fiber optic managed switches may be fully manageable. Interfaces shall include Ethernet 100Base-FX network host and Ethernet 10Base T/100Base-TX network node. The switches shall be securely and remotely manageable through Web interface. Each fiber optic managed switch shall be as follows:

Performance:	Layer 2 switching, 8000 MAC addresses
Network Host Port:	100Base-FX fiber uplink port
Network Node Ports:	Eight 10/100Base-TX autosensing ports with auto MDI/MDX
Switching:	Store and forward 3.6 Gbps switching 2.69 Mbps forwarding
Traffic Control:	IEEE 802.1p traffic prioritization
Communication Mode:	Full/half duplex and negotiation
Security:	Radius session accounting SSHv2 IEEE 802.1x network login
Management	Web interface, command line, TELNET; SNMP compatibility
Immunity:	EN 55024
Power Requirements:	120 VAC/60 Hz
Manufacturer:	Cisco, Hirschmann, Stratix, 3Com

2. Standard Network 10/100/1000 Switch:

a. Source power for the Ethernet switch shall be from a constant voltage, battery-backed, uninterruptible power supply.

b. The switch interfaces shall include Ethernet 10/100/1000Base-TX network node. The switch shall be as follows:

Performance:	Layer 2 switching, 8000 MAC addresses, full two-way data transfer
Network Node Ports:	Eight 10/100/1000Base-TX non-blocking, auto-sensing ports with Link Aggregation Control Protocol, support for 16 VLANs
Switching:	Store-and-foreward, 13.6 Gbps
Traffic Control:	IEEE 802.1X Radius authentication an accounting, Port Security, Storm Control, DoS attack prevention
Communication Mode:	Full/half duplex auto negotiation
Power Requirements:	120 VAC/60 Hz
Warranty:	Limited Lifetime
Manufacturer:	Cisco, Hirschmann, Stratix
Model:	Various

PART 3 EXECUTION

3.01 INSTALLATION

A. All components of the system shall be fully assembled, front accessible, with power supplies, processor, communication modules, I/O modules, and all auxiliary equipment wired to terminal strips within the enclosure.

B. Digital input and output signal sources shall provide an isolated contact rated at 5 amp minimum, 115 VAC to the PCS.

C. Analog input signals to the PCS shall be isolated 4-20 mA DC and where required, current to current transducers or other devices shall be furnished to produce an isolated signal to the programmable controller analog input modules.

D. Circuit breakers or in-line fuses with LED indication shall be provided on the hot side of digital inputs. These devices shall be coordinated with the main control power fuse or circuit breaker so that no more than eight digital inputs are disabled by the tripping of a single circuit interrupter. Digital inputs shall be so arranged that the tripping of a single circuit interrupter shall not disable inputs directly controlling more than one motor or other piece of machinery.

E. All programmable controller hardware shall be powered through a battery backed power supply having protective power regulation.

F. Tighten field-connected connectors and terminals, including screws and bolts, in accordance with equipment manufacturer’s published torque tightening values. Where manufacturer’s torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specific in UL Standards 486A and UL 486B.

G. Provide equipment grounding connections for individually mounted units as indicated and as required by the NEC. Tighten connectors to comply with tightening torques specified in UL Standard 486A to assure permanent and effective grounding.

3.02 IDENTIFICATION

A. Identify components in accordance with Section 16030.

B. Individual nameplates shall be labeled to match the single line and schematic Drawings.

3.03 TESTING AND INSPECTION

A. Verify network settings to be appropriate for final system arrangement and conditions. Where discrepancies are found, test organization shall recommend final network settings. Use accepted revised settings to make the final system adjustments.

B. Inspect for defects and physical damage, NRTL labeling, and nameplate compliance with single line and/or schematic diagrams.

C. Exercise and perform operational tests of all mechanical and electrical components and other operable devices in accordance with manufacturer's instruction manual.

D. Check connector, terminals, modules, and mountings for tightness to ensure that all components are securely attached.

E. Check tightness of electrical connections by visually looking at wiring and pulling on wires for tightness in terminals. All wires shall be properly restrained.

F. Contractor shall check all I/O points from module to field device for proper operation and signal response verification.

G. Programming of unit(s) shall be based on standards given by Owner or listed within Programming Requirements document.

PART 4 SPECIAL PROVISIONS

4.01 SPARE PARTS

A. The Contractor shall furnish spare parts as shown in the Spare Parts Schedule. The spare parts shall be individually packaged for protection against dirt and moisture. Each package shall be labeled as to its contents, including a description and part number.

B. All spare parts shall become the property of the Owner. The Contractor shall maintain the spare parts inventory level as shown in the Spare Parts Schedule, and replace at no cost to the Owner all spare parts consumed during the start-up procedures and during the one-year warranty period.

4.02 SPARE PARTS SCHEDULE

A. In addition to the requirements of 2.01, the Contractor shall provide a minimum of 10% spare modules for each type of module installed, with a minimum of one of each type. Contractor shall provide at least one spare programmable controller for each type installed.

B. If the processor features a lithium battery, one spare lithium battery shall be provided for each control processor.

C. One spare Ethernet switch shall be provided. This spare switch shall have the same quantity and type of parts as the largest switch provided under this Section.

END OF SECTION

LEGEND

- WET FLOW
- SOLIDS FLOW
- EXISTING PIPING
- GATE AND/OR WEIR GATE (TYPICAL)

EXISTING CSO CONTROL SYSTEM
PROPOSED WWTP

EQ BASIN PUMP STATION

CSO EQ BASIN

PROPOSED WEIR WALL

36" CSO INTERCEPTOR

54" CSO INTERCEPTOR

60"

EXISTING CSO CONTROL SYSTEM

36"

MH

RAW WASTEWATER

24"

RAW WASTEWATER

EXISTING CSO CONTROL SYSTEM
PROPOSED WWTP

48"

SAMPLER

GRIT DEWATERING AND CLASSIFIER

DUMPSTERS

WASHER/COMPACTOR 2

BAR SCREEN 2

BAR SCREEN 1

WASHER/COMPACTOR 1

HEADWORKS

GRIT

DRAIN

INFLUENT

INFLUENT

SCUM

WAS

TO SLUDGE HANDLING
(SEE SOLIDS FLOW DIAGRAM)

OXIDATION DICTH

MV

FSG

TSV

WEIR

FLOW

DRAIN

ORBAL INFLUENT CHANNEL

GRIT

HEADCELL

RAS

FSG-3-1

FSG-3-2

RAS

EFFLUENT

SPLITTER BOX

WEIR

FSG

FINAL EFFLUENT

INFLUENT

SCUM

MH

RAS

SCUM

INFLUENT

CLARIFIER 2

SLUDGE

RAS PUMP STATION

SLUDGE

CLARIFIER 1

FINAL EFFLUENT

FINAL EFFLUENT

P-5

P-4

P-3

P-2

P-1

FSG

WAS

FINAL EFFLUENT

POST AERATION BLOWER

U.V. POWER/CONTROL

SAMPLER

SERVICE BUILDING

AIR

POST AERATION

WEIR

UV DISINFECTION

UV LEVEL CONTROL WEIR

FLOW METER

UV

FINAL EFFLUENT

OUTFALL

PORTAGE RIVER

WET STREAM FLOW DIAGRAM

STATE OF OHIO
JOSEPH A. LEHMAN
E-43606
REGISTERED
PROFESSIONAL ENGINEER

WET STREAM FLOW DIAGRAM

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

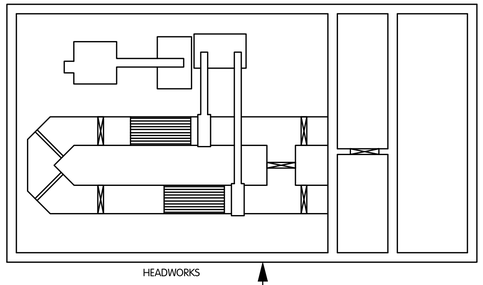
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2	5/18/26	ADDENDUM 2	JAH
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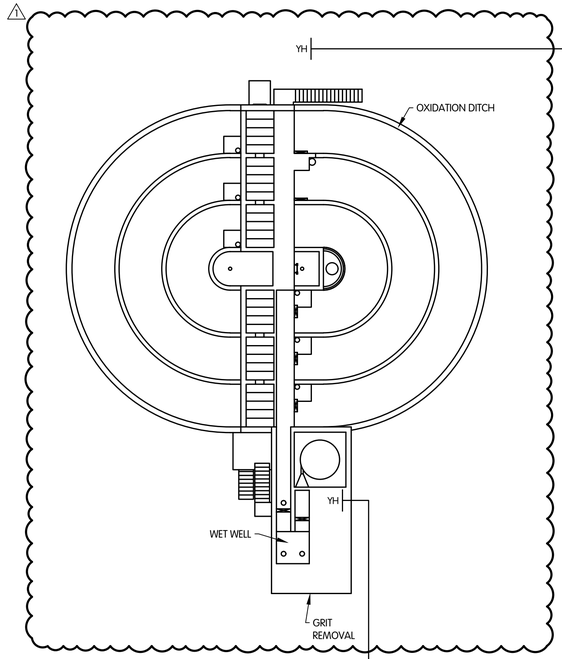
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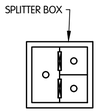
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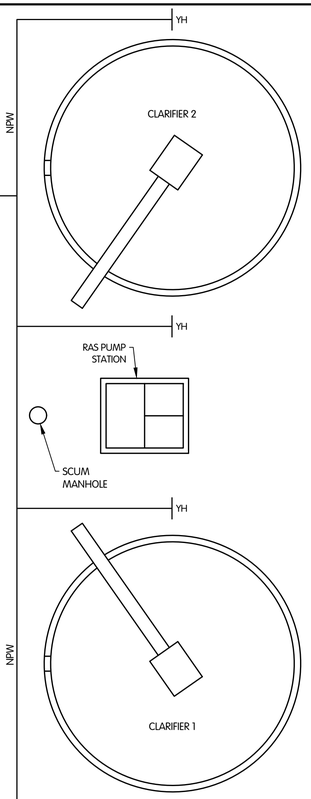
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DATE	APRIL 2026
SHEET NO.	G-0.4
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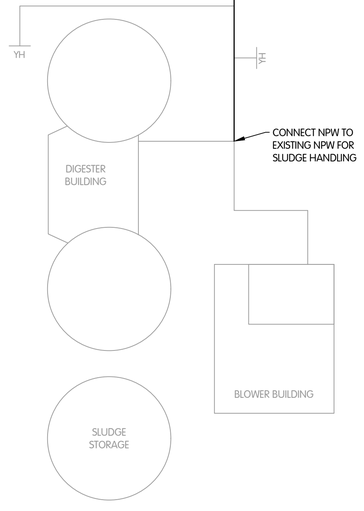
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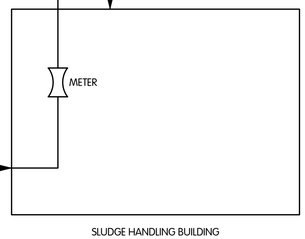


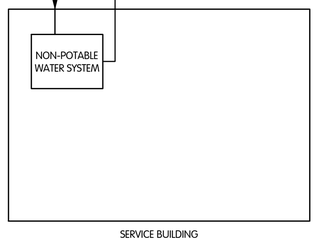


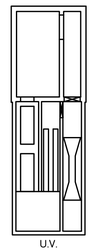


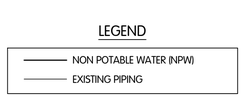












NPW
YH
CONNECT NPW TO EXISTING NPW FOR SLUDGE HANDLING
CITY WATER
CITY WATER SUPPLY
EXISTING CITY WATER

NON POTABLE WATER (NPW) FLOW DIAGRAM

NON POTABLE WATER (NPW)
SITE FLOW DIAGRAM

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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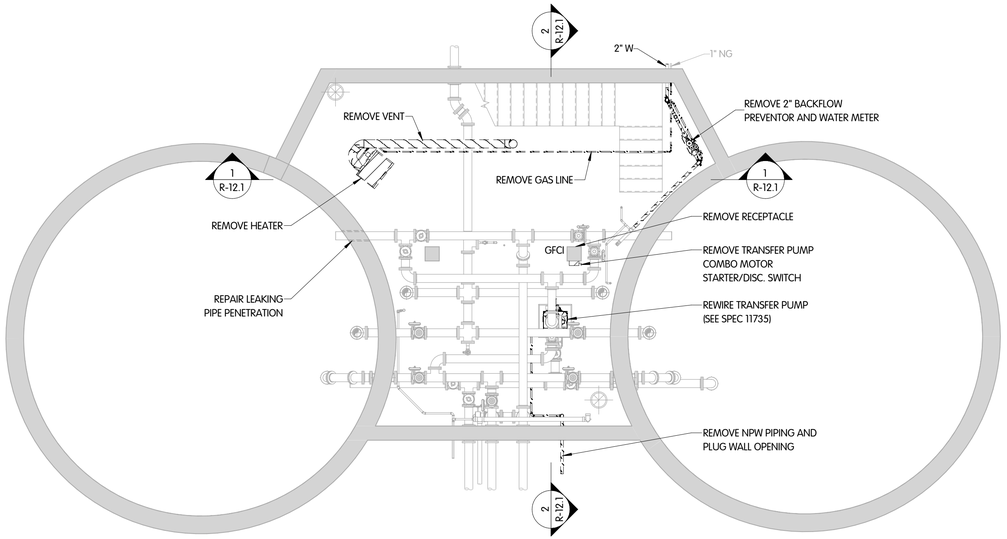
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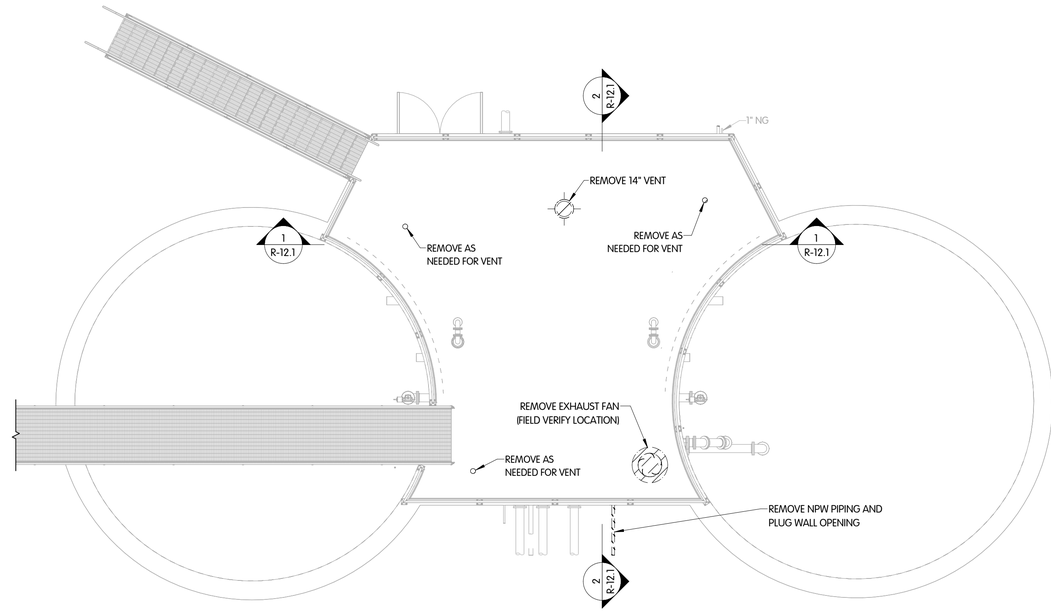
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G-0.6
6 OF 309

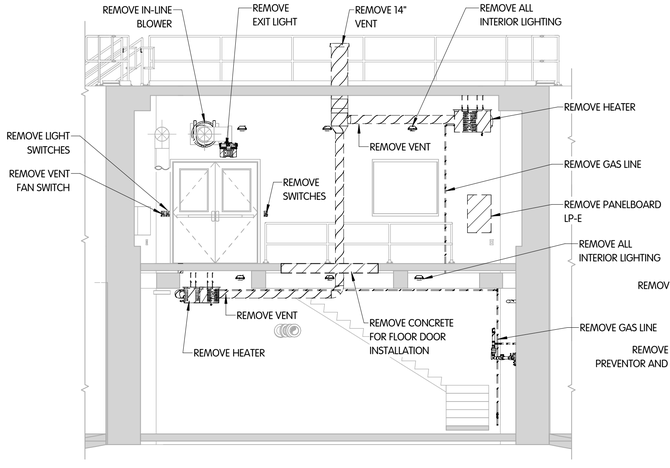
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5/18/2026 2:02 PM



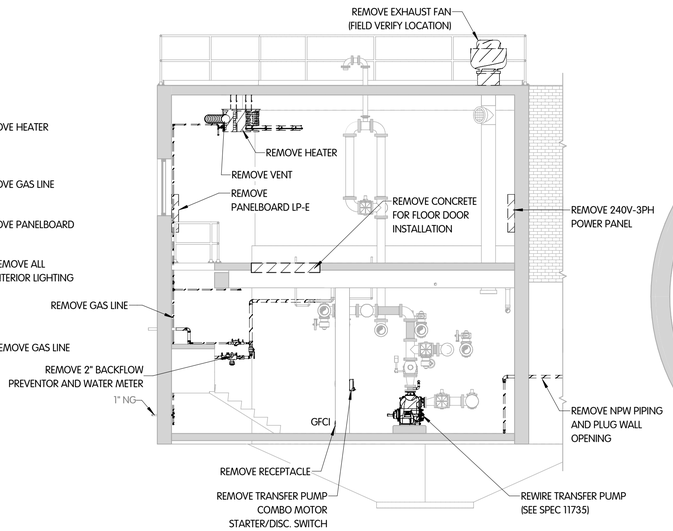
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3/16" = 1'-0"



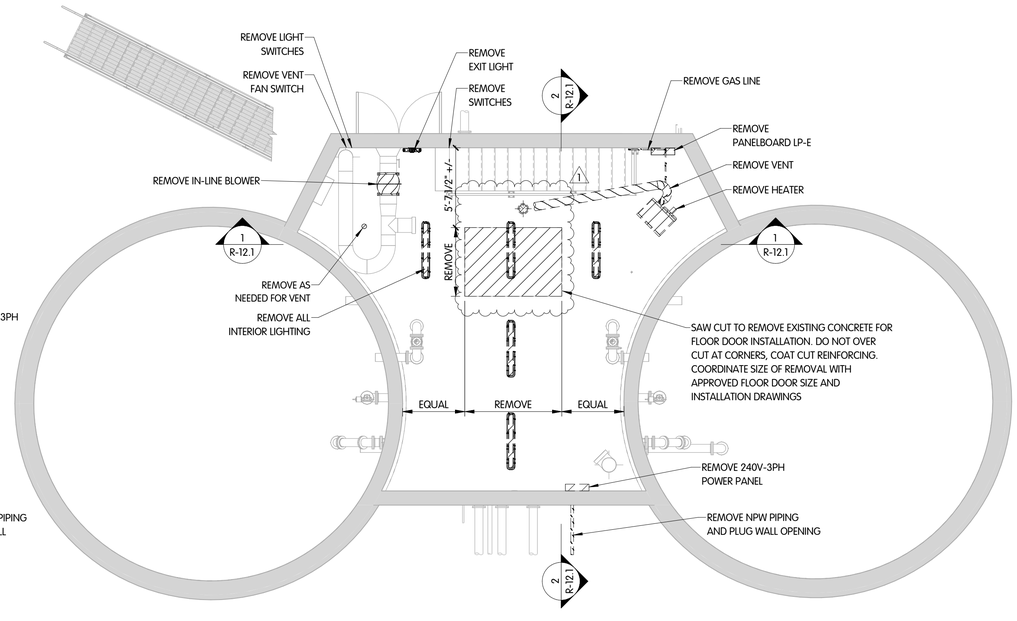
TOP PLAN
3/16" = 1'-0"



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



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



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

NOTE:
1. REMOVE ASSOCIATED CONDUIT/WIRE OF ALL EQUIPMENT INDICATED AS BEING REMOVED.

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGHT
E-93148
REGISTERED
PROFESSIONAL ENGINEER
03-25-26

DIGESTER CONTROL BUILDING
REMOVALS
PLANS AND SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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

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R-12.1
13 OF 309

C:\USERS\VLAIRS.CUSTOMER\DOCUMENTS\8119002-RM_RWHALE@JHENG.COM.RVT
5/18/2026 2:12:09 PM

MATCH LINE SHEET C-102.1

CONTRACTOR AND ENGINEER FIELD OFFICE CONTRACTOR SHALL LEVEL THE EXISTING GRADE AND PLACE 8" 304 OVER FILTER FABRIC.

EQ BASIN PUMP STATION

DIVERSION WEIR

MAINTENANCE BUILDING

ADMINISTRATION BUILDING

GENERATOR

GUARDRAIL SEE CIVIL DETAILS

HEADWORKS BUILDING

FUTURE CLARIFIER 3

OXIDATION DITCH

CLARIFIER 2

CLARIFIER 1

SPLITTER BOX

RAS/WAS PUMP STATION

GRIT REMOVAL

POST AERATION

ULTRAVIOLET DISINFECTION (U.V.)

SERVICE BUILDING

DEWATERING PRESS

SLUDGE LOADING

N670,906.85 E1,794,094.61

N670,906.85 E1,794,154.69

N670,836.27 E1,794,094.61

N670,836.27 E1,794,154.69

N670,781.31 E1,794,097.65

N670,781.31 E1,794,151.68

N670,780.31 E1,794,089.11

N670,780.31 E1,794,157.19

N670,746.24 E1,794,089.11

N670,744.74 E1,794,089.11

N670,744.74 E1,794,125.69

N670,744.99 E1,794,129.66

N670,763.87 E1,794,245.66

N670,763.87 E1,794,267.50

N670,709.63 E1,794,188.10

N670,709.63 E1,794,173.10

N670,694.63 E1,794,217.41

N670,694.63 E1,794,157.83

N670,695.93 E1,794,273.94

N670,695.93 E1,794,255.39

N670,664.46 E1,794,217.41

N670,664.46 E1,794,157.83

N670,853.54 E1,794,418.25

N670,821.87 E1,794,418.16

21.64'

N670,770.37 E1,794,335.76

N670,770.37 E1,794,348.76

N670,771.31 E1,794,402.81

N670,771.31 E1,794,420.69

N670,763.87 E1,794,418.25

N670,756.43 E1,794,420.69

N670,756.43 E1,794,402.81

N670,757.37 E1,794,348.76

N670,757.37 E1,794,335.76

N670,705.87 E1,794,418.16

20.85'

N670,657.94 E1,794,340.91

N670,657.94 E1,794,358.41

N670,674.20 E1,794,418.25

N670,635.44 E1,794,358.41

N670,635.44 E1,794,340.91

N670,604.44 E1,794,358.16

N670,604.44 E1,794,341.16

N670,579.71 E1,794,152.80

N670,579.71 E1,794,212.27

N670,543.58 E1,794,152.80

N670,543.58 E1,794,212.27

B-1 B-2 B-3 B-4 B-5 B-6 B-8 B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-18

Gravel

Chain Link Fence

Grass

Grass Area

Woods Area

Existing Building

MATCH LINE SHEET C-102.3

TOL-8119002\24-C-102.2 SITE PLAN B
5/18/2026 2:08 PM - KWORLEY
5/18/2026 2:08 PM

STATE OF OHIO JOSEPH A. HENRY 75-43606 REGISTERED PROFESSIONAL ENGINEER

SITE CIVIL PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
2	5/18/26	ADDENDUM 2	JAH

Jones & Henry Engineers, Ltd.

Fluid thinking®
www.JHeng.com

JOB NO. 904-8119.002

SCALE 1"=20'

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
PAL	BJD	JAH

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.

C-102.2

24 OF 309

MATCH LINE SHEET C-103.1

MAINTENANCE BUILDING
F.F. EL. 583.50

ADMINISTRATION BUILDING
F.F. EL. 583.50

FUTURE CLARIFIER 3

OXIDATION DITCH

CLARIFIER 2

CLARIFIER 1

TOP OF WALL EL. 585.50

SPLITTER BOX

RAS/WAS PUMP STATION

TOP OF SLAB EL. 586.00

TOP OF WALL EL. 587.50

TOP OF WALL EL. 589.50

TOP OF WALL EL. 585.50

GRIT REMOVAL

TOP OF SLAB EL. 594.75

HEADWORKS BUILDING
F.F. EL. 582.00

SHEET PILE
SEE NOTE 1

F.F. EL. 581.38
Existing Building
SERVICE BUILDING

POST AERATION

TOP OF WALL EL. 583.17

U.V.

DEWATERING PRESS

SLUDGE LOADING

F.F. EL. 582.50

EQ BASIN PUMP STATION

DIVERSION WEIR

SPLITTER

1713 12" Inv. 581.41

1781 12" Inv. 581.10

1799 15" Inv. 581.42

1820 15" Inv. 581.11

Chain Link Fence

Gravel

Grass

Grass Area

Woods Area

B-1 B-2 B-3 B-4 B-5 B-6 B-8 B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-18

MATCH LINE SHEET C-103.3

NOTES:

1. CONTRACTOR SHALL PROVIDE TEMPORARY SHEET PILE TO FACILITATE EXCAVATION OF HEADWORKS BUILDING. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE TEMPORARY SHORING, SOIL TIE BACKS, IF REQUIRED AND FOR DETERMINING THE PILE DEPTH AND PLAN AREA REQUIRED TO FACILITATE THE CONSTRUCTION OF THE WORK. SHEET PILING IS NOT INTENDED TO ELIMINATE THE CONTRACTOR'S REQUIREMENTS FOR MEANS AND METHODS SUCH AS THE DESIGN OF EXCAVATION, GROUND WATER CONTROL MEASURES AND COMPLIANCE WITH SAFETY STANDARDS. SEE SPECIFICATIONS SECTION 02200 FOR SHEET PILE. SEE CONSTRUCTION SEQUENCING IN SPECIFICATION SECTION 01043 FOR THE COORDINATION OF SHEET PILE INSTALLATION WITH THE WORK.

STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED PROFESSIONAL ENGINEER

GRADING
CIVIL
PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

Jones & Henry Engineers, Ltd.

Fluid thinking®
www.JHeng.com

JOB NO. 904-8119.002

SCALE 1"=20'

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
PAL	BJD	JAH

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
C-103.2
27 OF 309

T:\OL-8119\00223-C-103.2 GRADING PLAN B
PAL 5/18/2026 1:48 PM - ARWORLEY
5/18/2026 2:02 PM

MATCH LINE SHEET C-104.1

MAINTENANCE BUILDING

ADMINISTRATION BUILDING

HEADWORKS BUILDING

FUTURE CLARIFIER 3

OXIDATION DITCH

CLARIFIER 2

CLARIFIER 1

SERVICE BUILDING

Existing Building

SPLITTER BOX

RAS/WAS PUMP STATION

EQ BASIN PUMP STATION

DIVERSION WEIR

DEWATERING PRESS

SLUDGE LOADING

GRIT REMOVAL

POST AERATION

U.V.

CB-ST-1

CB-ST-2

CB-ST-3

CB-ST-4

CB-ST-8

CB-ST-9

CB-ST-10

CB-ST-11

CB-ST-12

CB-ST-13

MH-SA-1

MH-SA-3

MH-SA-4

MH-SA-6

MH-SA-8

MH-SA-9

MH-SA-10

MH-SA-11

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-13

B-14

SEE STORM PROFILE 1

SEE STORM 3 PROFILE

SEE STORM 4 PROFILE

SEE STORM 2 PROFILE

SEE SANITARY INFLUENT SEWER 2 PROFILE

SEE SANITARY INFLUENT SEWER 1 PROFILE

SEE SANITARY 3 PROFILE

FIRE HYDRANT ASSEMBLY WITH WATCH VAVLE (VILLAGE STANDARD)

4" SANITARY

2" WATER LINE

1-1/4" NG

12" STORM

15" STORM

21" STORM

48" SANITARY

36" SANITARY

24" SANITARY

8" STORM

10" TD

4" GT

10" RS

20" RS

8" RAS

6" WAS

3" SPA

SEE NOTE 1

3" NPW

2" NPW

3/4" NPW

3/4" NG

8" SC

6" SC

20" ML

30" ML

20" FE

30" FE

4" SANITARY

4" WATER LINE

2" NG

3" NPW

8" SANITARY

1713 12" Inv. 581.41

1781 12" Inv. 581.10

1799 15" Inv. 581.42

1820 15" Inv. 581.11

Chain Link Fence

Gravel

Grass

Grass Area

Woods Area

Existing Building

ABANDONED

RAS6

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

MATCH LINE SHEET C-104.3

STATE OF OHIO JOSHUA A. HENRY E-43606 REGISTERED PROFESSIONAL ENGINEER

YARD PIPING
CIVIL
PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

Jones & Henry Engineers, Ltd.

Fluid thinking©.
www.JHeng.com

JOB NO.	904-8119.002
SCALE	1"=20'

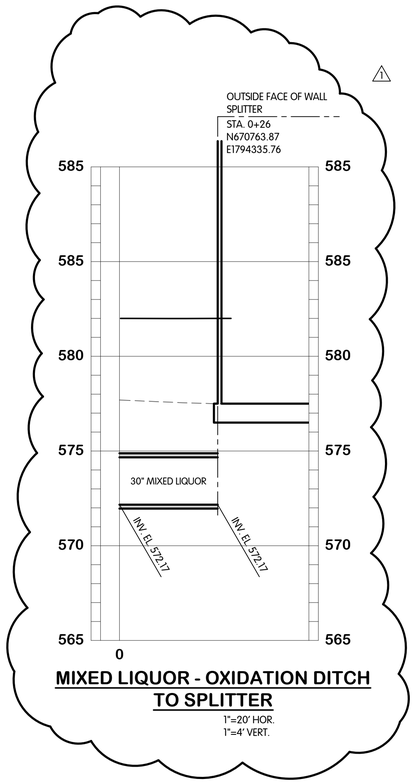
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
PAL	BJD	JAH

STATUS: ISSUED FOR BID
DATE: APRIL 2026

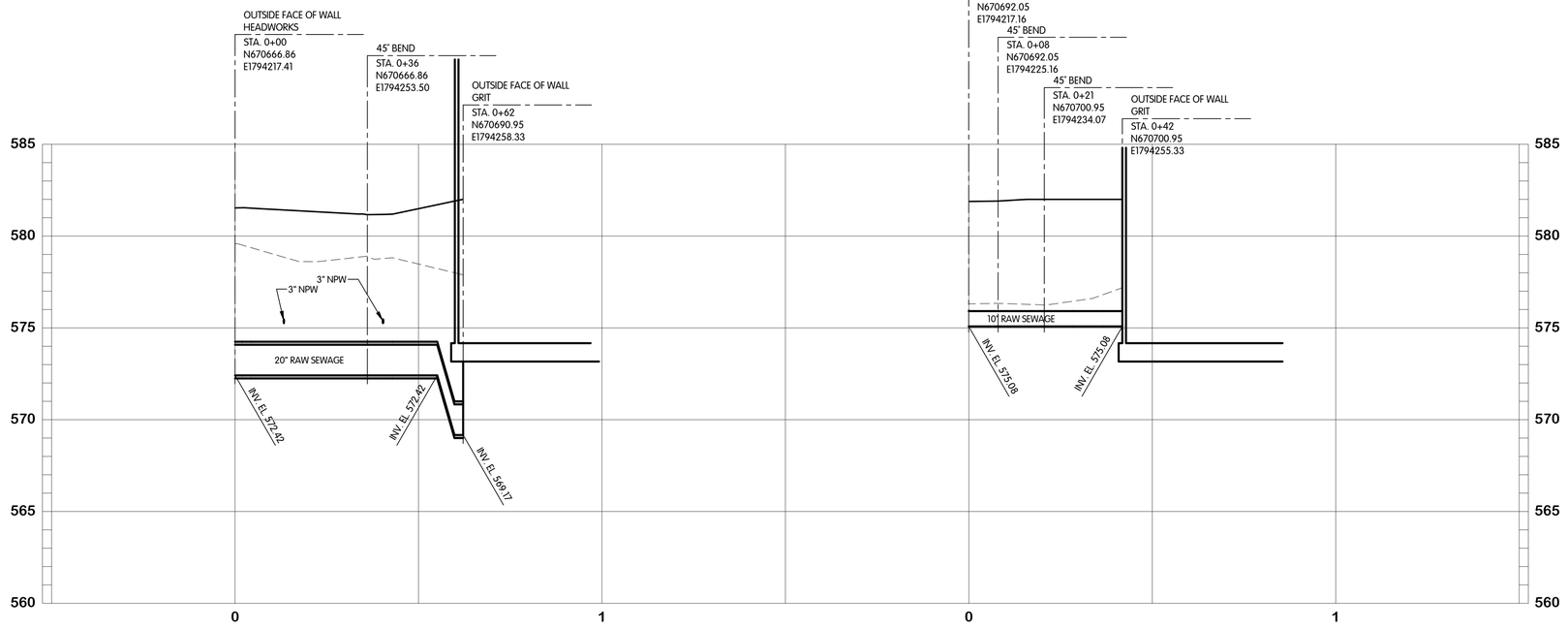
SHEET NO.
C-104.2
30 OF 309

TOL-8119002\Cs-C-104.2 YARD PIPING PLAN B
5/18/2026 10:49 AM JWORLEY
5/18/2026 2:03 PM



MIXED LIQUOR - OXIDATION DITCH TO SPLITTER

1"=20' HOR.
1"=4' VERT.

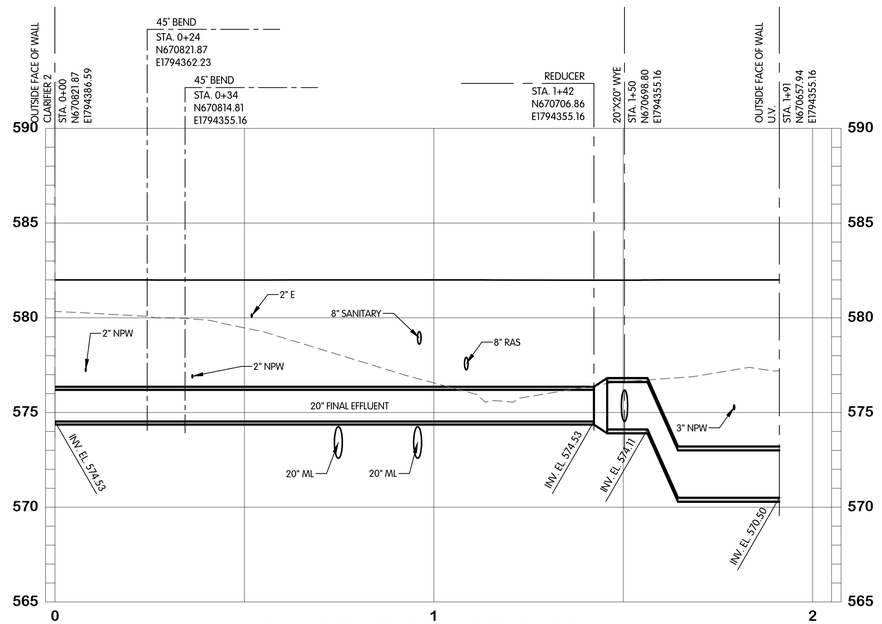


RAW SEWAGE - WET WEATHER FORCE MAIN

1"=20' HOR.
1"=4' VERT.

RAW SEWAGE - DRY WEATHER FORCE MAIN

1"=20' HOR.
1"=4' VERT.



FINAL EFFLUENT - CLARIFIER 2 TO U.V.

1"=20' HOR.
1"=4' VERT.

STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

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	5/18/26	ADDENDUM 2	JAH
1			

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	DRAWN	CHECKED
JAH	BJD	JAH

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
C-104.5
33 OF 309

TOL-8119002\C-C-104.5 YARD PIPING PROFILES
5/18/2026 1:03 PM KWORLEY
5/18/2026 2:03 PM

MATCH LINE SHEET C-105.1

MAINTENANCE BUILDING

ADMINISTRATION BUILDING

ELECTRICAL ROOM

HEADWORKS BUILDING

OXIDATION DITCH

FUTURE CLARIFIER 3

CLARIFIER 2

CLARIFIER 1

SPLITTER BOX

RAS/WAS PUMP STATION

GRIT REMOVAL

POST AERATION

U.V.

SERVICE BUILDING

Existing Building

DEWATERING PRESS

SLUDGE LOADING

EQ BASIN PUMP STATION

DIVERSION WEIR

N670,906.85
E1,794,094.61

N670,906.85
E1,794,154.69

N670,906.78
E1,794,204.75

N670,836.27
E1,794,094.61

N670,836.27
E1,794,154.69

N670,836.27
E1,794,092.58

N670,820.26
E1,794,154.75

N670,781.31
E1,794,151.68

N670,781.24
E1,794,085.87

N670,781.31
E1,794,097.65

N670,776.24
E1,794,125.69

N670,780.53
E1,794,212.41

N670,763.27
E1,794,064.40

N670,729.63
E1,794,212.41

N670,741.31
E1,794,081.77

N670,696.24
E1,794,127.83

N670,694.63
E1,794,157.83

N670,691.24
E1,794,079.63

N670,694.63
E1,794,217.41

N670,669.71
E1,794,084.30

N670,629.70
E1,794,271.76

N670,629.44
E1,794,287.60

N670,629.36
E1,794,271.77

N670,623.69
E1,794,287.60

N670,623.69
E1,794,329.52

N670,604.71
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N670,625.31
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N670,617.03
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N670,596.04
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N670,594.71
E1,794,222.27

N670,579.71
E1,794,212.27

N670,579.71
E1,794,152.80

N670,569.71
E1,794,080.21

N670,564.71
E1,794,080.00

N670,549.29
E1,794,014.62

N670,543.58
E1,794,144.41

N670,543.58
E1,794,212.27

N670,538.58
E1,794,144.25

N670,537.28
E1,794,027.74

N670,493.58
E1,794,120.13

N670,493.58
E1,794,212.27

B-1 B-2 B-3 B-4 B-5 B-6 B-8 B-9 B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-18

R50.00' R40.00' R20.00' R12.00' R35.00' R30.00' R10.00'

15.00' 13'

Gravel Chain Link Fence Grass Woods Area Grass Area

MATCH LINE SHEET C-105.3

T:\DL-8119002\C5-C-105.2 SURFACE RESTORATION B
5/8/2026 2:03 PM - RWORLEY
5/8/2026 2:03 PM

STATE OF OHIO JOSEPH A. HENRY E-43606 PROFESSIONAL ENGINEER

SITE
CIVIL
SURFACE RESTORATION PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

Jones & Henry Engineers, Ltd.

Fluid thinking©.
www.JHeng.com

JOB NO. 904-8119.002

SCALE 1"=20'

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
JAH	BJD	JAH

STATUS ISSUED FOR BID

DATE APRIL 2026

SHEET NO.
C-105.2
38 OF 309

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	BASE	FLOOR	NORTH		EAST		SOUTH		WEST		CEILING			REMARKS
				MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	MATERIAL	FINISH	HEIGHT	
2-HEADWORKS															
200	HEADWORKS	-	CONC	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	14'-8"	
10-ADMINISTRATION/MAINTENANCE BUILDING															
1000	HALL	RWB-1	CONC	CMU	PT-1	CMU	PT-1	CMU	PT-1	CMU	PT-1	ACT-1		8'-0"	
1001	OFFICE	RWB-1	CONC	GYP-BD	PT-1	GYP-BD	PT-1	GYP-BD	PT-1	GYP-BD	PT-1	ACT-1		8'-0"	
1001A	CLO	RWB-1	CONC	GYP-BD	PT-1	GYP-BD	PT-1	GYP-BD	PT-1	GYP-BD	PT-1	EXP		EXP	
1002	LAB	RFB-1	RF-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	ACT-1		9'-0"	
1002A	CLO	RFB-1	RF-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	GYP-BD	EPT-1	EXP		EXP	
1003	ELECTRICAL ROOM/CONTROLS	RWB-1	CONC	CMU	PT-1	CMU	PT-1	CMU	PT-1	CMU	PT-1	GYP BD	PT-1	EXP	
1004	TLT	RFB-1	RF-1	CMU	EPT-1	GYP-BD	EPT-1	CMU	EPT-1	CMU	EPT-1	ACT-1		8'-0"	
1005	BREAK/CONF	RWB-1	CONC	GYP-BD	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	ACT-1		9'-0"	
1006	SHOWER	RFB-1	RF-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	ACT-1		8'-0"	
1007	STOR	-	CONC	CMU	PT-1	CMU	PT-1	GYP-BD	PT-1	CMU	PT-1	ACT-1		9'-0"	
1008	TOILET	RFB-1	RF-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	ACT-1		8'-0"	
1009	JAN/MECH	-	CONC	CMU	EPT-1	CMU	EPT-1	GYP-BD	EPT-1/FRP	CMU	EPT-1	ACT-1		8'-0"	PROVIDE FRP AT SINK
1010	GARAGE	-	CONC	MTL	-	MTL	-	MTL	-	MTL	-	EXP		EXP	
11-SLUDGE HANDLING															
1100	EQUIPMENT ROOM	-	CONC	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	EXP	EPT-1	19'-4"	
1101	TRUCK BAY	-	CONC	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	CMU	EPT-1	EXP	EPT-1	19'-4"	
15-SERVICE BUILDING															
1501	OFFICE		EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	9'-0"	PAINT EXISTING EXPOSED MATERIALS
1502	SERVICE		EXIST	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	11'-0"	PAINT EXISTING EXPOSED MATERIALS
1503	BLOWER		EXIST	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	PLYWOOD	PT-1	11'-0"	PAINT EXISTING EXPOSED MATERIALS

DOOR SCHEDULE

TAG / ID	DOOR WIDTH	DOOR HEIGHT	DOOR THICKNESS	DOOR TYPE	DOOR MATERIAL	STRUCTURAL DETAILS HEAD	STRUCTURAL DETAILS JAMB	ARCHITECTURAL DETAILS HEAD	ARCHITECTURAL DETAILS JAMB	ARCHITECTURAL DETAILS THRESHOLD	FRAME TYPE	FRAME MATERIAL	HARDWARE SET	RATING	REMARKS
2-HEADWORKS															
200	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-2	DJ-2	T-1	A	ALUM	6	-	CLEAR ANOD
200A	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-2	DJ-2	T-1	A	ALUM	6	-	CLEAR ANOD
200B	12' - 0"	10' - 4"	1 1/2"	RO	ALUM	DH-S4	DJ-S4	DH-4	DJ-1	T-2	C	STL	-	-	
3-GRIT															
300	3' - 0"	7' - 2"	1 3/4"	F	ALUM	-	-	-	-	T-1	A	ALUM	1	-	CLEAR ANOD
300A	3' - 0"	7' - 2"	1 3/4"	F	ALUM	-	-	-	-	T-1	A	ALUM	8	-	CLEAR ANOD
10-ADMINISTRATION/MAINTENANCE BUILDING															
1000	3' - 0"	7' - 2"	1 3/4"	HL	ALUM	DH-S2	DJ-S2	DH-A2	DJ-A2	T-1	A	ALUM	1	-	CLEAR ANOD
1000A	3' - 0"	7' - 2"	1 3/4"	NL	HM	DH-S1	DJ-S2	DH-A1	DJ-A1	-	A	HM	2	20 MIN	DOOR AND FRAME PT-2
1001	3' - 0"	7' - 2"	1 3/4"	HL	HM	DH-S5	DJ-S5	DH-A5	DJ-A5	-	A	HM	3	20 MIN	DOOR AND FRAME PT-2
1001A	4' - 0"	7' - 0"	1 1/2"	BI	WD	DH-S7	DJ-S7	DH-A7	DJ-A7	-	A	HM	4	-	DOOR AND FRAME PT-2
1002	3' - 0"	7' - 2"	1 3/4"	HL	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	3	20 MIN	DOOR AND FRAME PT-2
1002A	6' - 0"	7' - 0"	1 1/2"	BI	WD	DH-S6	DJ-S6	DH-A6	DJ-A6	-	B	HM	4	-	DOOR AND FRAME PT-2
1003	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	5	20 MIN	DOOR AND FRAME PT-2
1003A	6' - 0"	7' - 10"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-A2	DJ-A2	T-1	D	ALUM	6	-	CLEAR ANOD
1004	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	7	20 MIN	DOOR AND FRAME PT-2
1005	3' - 0"	7' - 2"	1 3/4"	HL	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	8	20 MIN	DOOR AND FRAME PT-2
1005A	3' - 0"	7' - 2"	1 3/4"	HL	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	8	20 MIN	DOOR AND FRAME PT-2
1006	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	8	-	DOOR AND FRAME PT-2
1007	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	9	20 MIN	DOOR AND FRAME PT-2
1008	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	7	-	DOOR AND FRAME PT-2
1009	3' - 0"	7' - 2"	1 3/4"	F	HM	DH-S1	DJ-S1	DH-A1	DJ-A1	-	A	HM	9	-	DOOR AND FRAME PT-2
1010	3' - 0"	7' - 2"	1 3/4"	HL	ALUM	-	-	-	-	T-1	A	ALUM	1	-	CLEAR ANOD, NOTE 1
1010A	12' - 0"	14' - 0"	2"	SO	STL	-	-	-	-	T-2	C	STL	-	-	SECTIONAL DOOR, NOTE 1
1010B	12' - 0"	14' - 0"	2"	SO	STL	-	-	-	-	T-2	C	STL	-	-	SECTIONAL DOOR, NOTE 1
1010C	12' - 0"	14' - 0"	2"	SO	STL	-	-	-	-	T-2	C	STL	-	-	SECTIONAL DOOR, NOTE 1
1010D	12' - 0"	14' - 0"	2"	SO	STL	-	-	-	-	T-2	C	STL	-	-	SECTIONAL DOOR, NOTE 1
1010E	12' - 0"	14' - 0"	2"	SO	STL	-	-	-	-	T-2	C	STL	-	-	SECTIONAL DOOR, NOTE 1
11-SLUDGE HANDLING															
1100	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-2	DJ-2	T-1	A	ALUM	6	-	CLEAR ANOD
1100A	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-2	DJ-2	T-1	A	ALUM	6	-	CLEAR ANOD
1100B	12' - 0"	12' - 4"	1 1/2"	RO	ALUM	DH-S4	DJ-S4	DH-4	DJ-4	T-2	C	STL	-	-	
1101	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH-S2	DJ-S2	DH-2	DJ-2	T-1	A	ALUM	6	-	CLEAR ANOD
1101A	14' - 0"	14' - 0"	1 1/2"	RO	STL	DH-S4	DJ-S4	DH-4	DJ-4	T-2	C	STL	-	-	
1101B	14' - 0"	14' - 0"	1 1/2"	RO	STL	DH-S4	DJ-S4	DH-4	DJ-4	T-2	C	STL	-	-	
15-SERVICE BUILDING															
15-1-1	6' - 0"	8' - 0"	2"	SO	STL	DH-S3	DJ-S3	DH-A3	DJ-A3	T-2	C	STL	-	-	
15-1-2	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH/DJ-S8	DH/DJ-S8	DH/DJ-A8	DH/DJ-A8	T-1	A	ALUM	6	-	NEW DOOR IN EXIST OPENING VERIFY DIMS, CLEAR ANOD
15-1-3	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH/DJ-S8	DH/DJ-S8	DH/DJ-A8	DH/DJ-A8	T-1	A	ALUM	6	-	NEW DOOR IN EXIST OPENING VERIFY DIMS,CLEAR ANOD
15-1-4	3' - 0"	7' - 2"	1 3/4"	F	ALUM	DH/DJ-S8	DH/DJ-S8	DH/DJ-A8	DH/DJ-A8	T-1	A	ALUM	6	-	NEW DOOR IN EXIST OPENING VERIFY DIMS, CLEAR ANOD

NOTES:
1. COORDINATE WITH PEMB MANUFACTURER AND STANDARD DETAILS FOR HEAD AND JAMB DETAILS AND CONDITIONS.

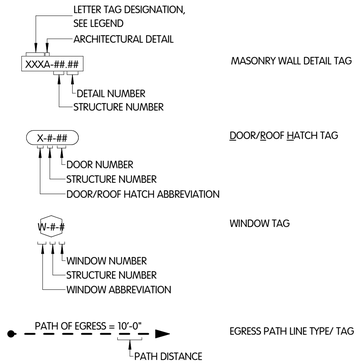
FINISH LEGEND

ACT-1 - ACOUSTICAL CEILING TILE - 09510
CONC - SEALED CONCRETE
EPT-1 - EPOXY PAINT - 09900 4.05 E.1.
PT-1 - PAINT - 09900 4.05 Q.
RF-1 - 09672
RFB-1 - 09672
RWB-1 - 09651

ARCHITECTURAL ABBREVIATIONS

ALUM	ALUMINUM
B	BOTTOM
BLDG	BUILDING
C/C	CENTER TO CENTER
CJ	CONTROL JOINT
DIA	DIAMETER
DEG	DEGREES
DIAG	DIAGONAL
EL	ELEVATION
EMB	EMBEDMENT
EXP.JT	EXPANSION JOINT
EXT	EXTERIOR
EXIST	EXISTING
FRB	FIBERGLASS
GALV	GALVANIZED
HORIZ	HORIZONTAL
INT	INTERIOR
NTS	NOT TO SCALE
O/O	OUT TO OUT
SS	STAINLESS STEEL
STD	STANDARD
T	TOP
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL

ARCHITECTURAL SHEET SYMBOLS

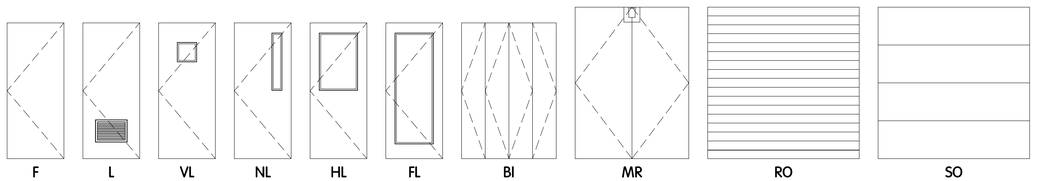


ARCHITECTURAL TAG LEGEND

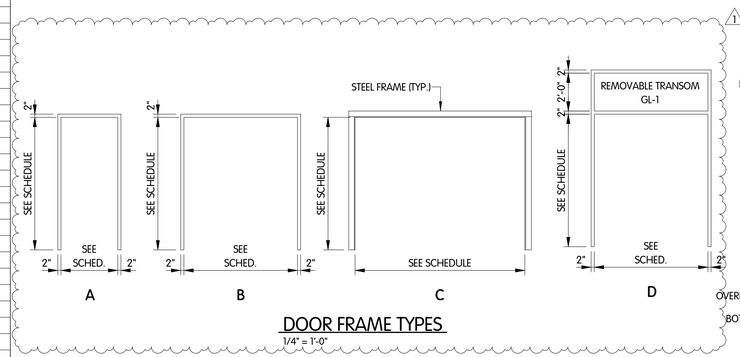
PWTA	-PARAPET WALL TOP, ARCHITECTURAL
WBA	-WALL BASE DETAIL, ARCHITECTURAL
WPCA	-WALL/PLANK CONNECTION DETAIL, ARCHITECTURAL
WTCA	-WALL/TRUSS CONNECTION DETAIL, ARCHITECTURAL

TYPICAL ARCHITECTURAL NOTES

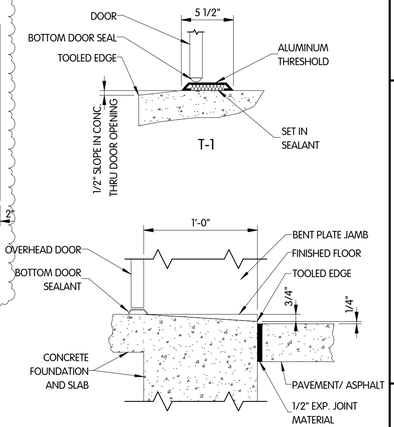
1. THE CONSTRUCTION SHALL CONFORM TO THE TYPICAL ARCHITECTURAL NOTES, DETAIL, AD SCHEDULES, UNLESS NOTED OTHERWISE. TYPICAL NOTES, DETAILS, AND SCHEDULES ARE PREFIXED WITH THE WORD "TYPICAL".



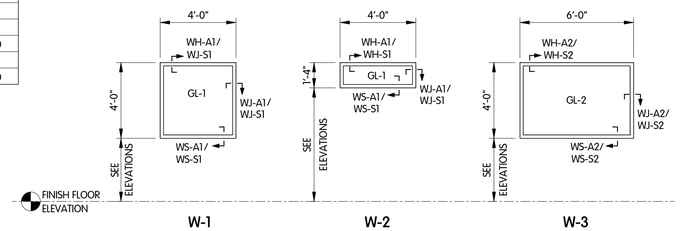
DOOR TYPES
1/4" = 1'-0"



DOOR FRAME TYPES
1/4" = 1'-0"



THRESHOLD TYPES
NTS



WINDOW TYPES
1/4" = 1'-0"

NOTE:
SCHEDULES ARE NOT GUARANTEED TO BE COMPLETE. ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR WHETHER OR NOT LISTED IN THE FOLLOWING SCHEDULE.

STATE OF OHIO
DANIEL EBERT
REGISTERED ARCHITECT
AR12500064
EXPIRATION DATE: 12.31.2027

ARCHITECTURAL LEGENDS, ABBREVIATIONS, SCHEDULES, AND NOTES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26 ADDENDUM 2	JAH

REVISIONS AFTER ISSUED FOR BID

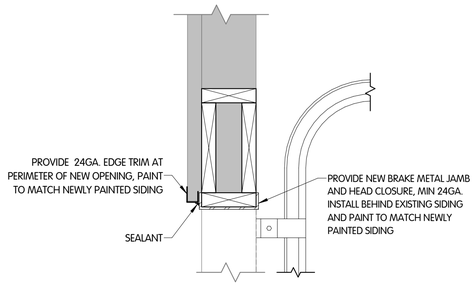
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JOB NO.: 904-8119.002
SCALE: NO SCALE
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

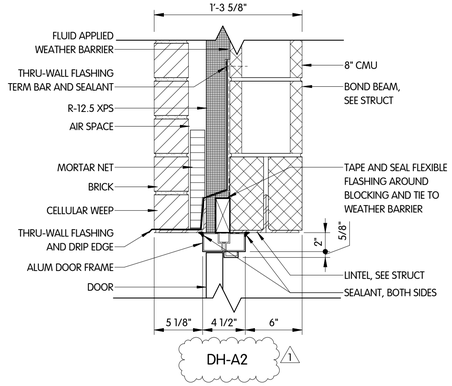
DESIGNED	DRAWN	CHECKED
DCE	RGW	DCE

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
A-0.1
45 OF 309

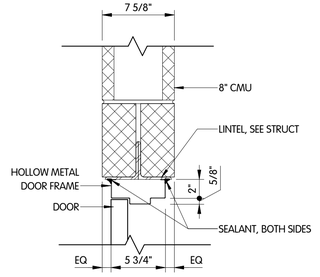
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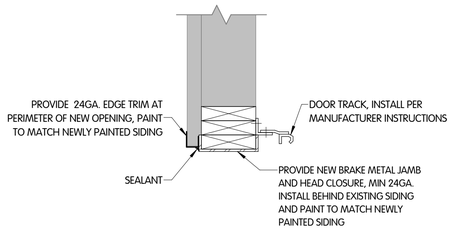
DH-A3



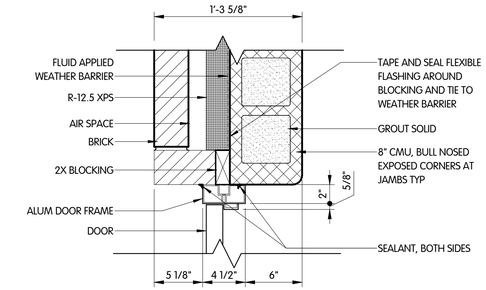
DH-A2



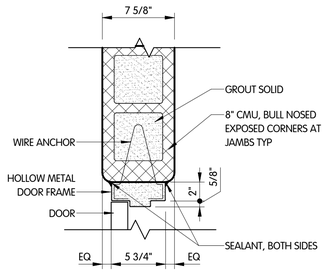
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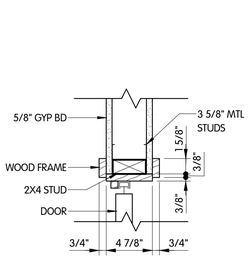
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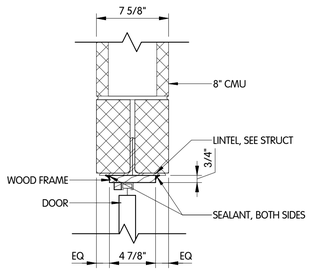
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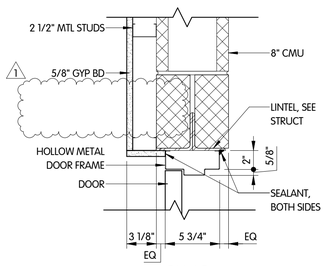
DJ-A1



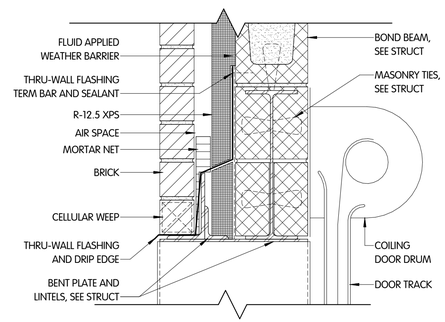
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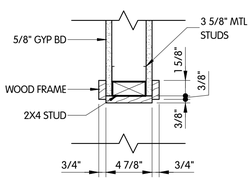
DH-A6



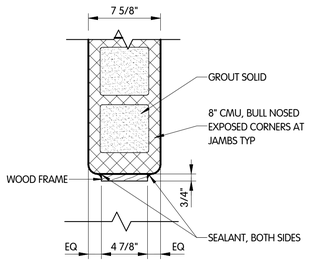
DH-A5



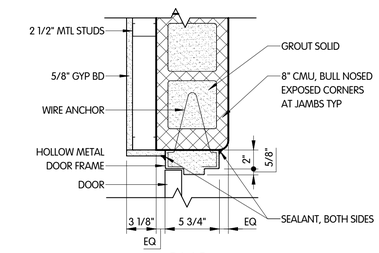
DH-A4



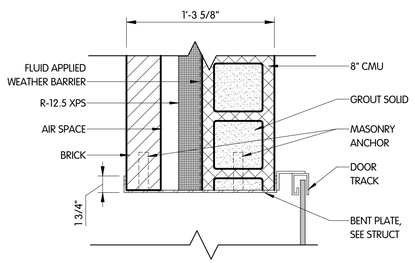
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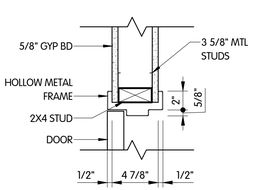
DJ-A6



DJ-A5



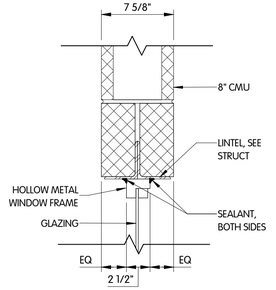
DJ-A4



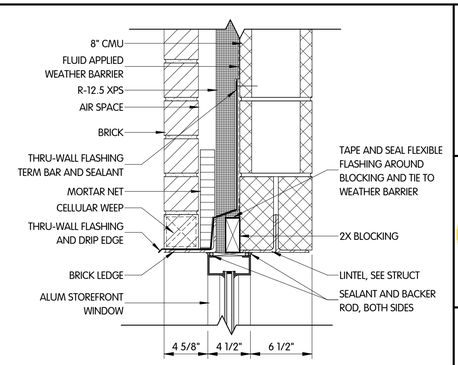
DH/DJ-A8

NOTES:
SEE STRUCTURAL DETAILS FOR MASONRY BOND BEAM AND JAMB REINFORCING.

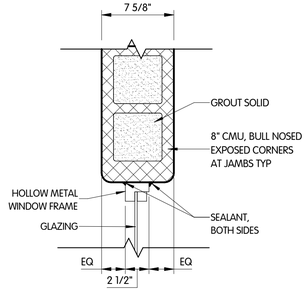
DOOR/MASONRY WALL OPENING DETAILS
1 1/2" = 1'-0"



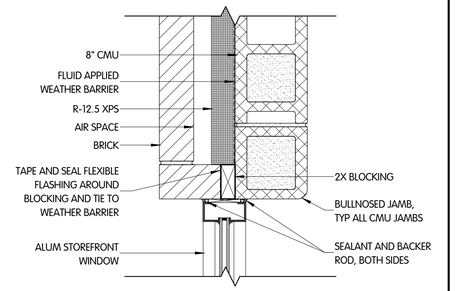
WH-A2



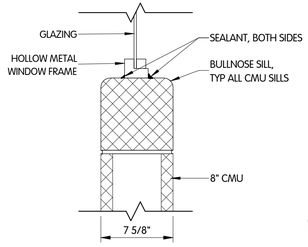
WH-A1



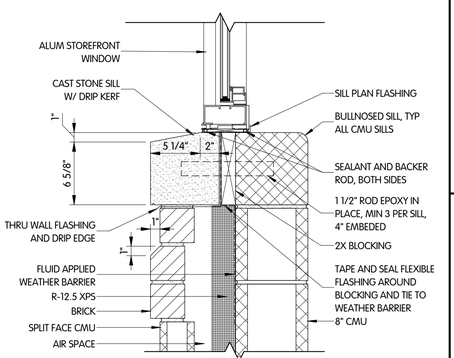
WJ-A2



WJ-A1



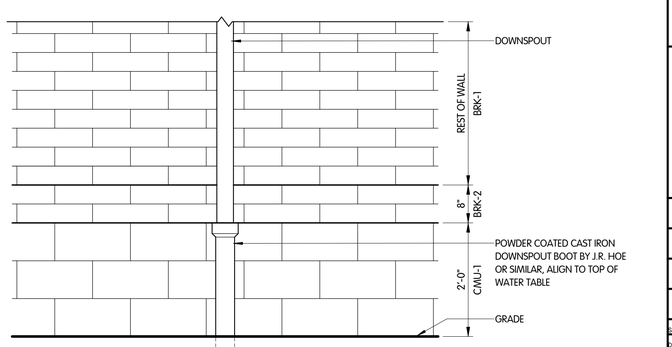
WS-A2



WS-A1

NOTES:
SEE STRUCTURAL DETAILS FOR MASONRY BOND BEAM AND JAMB REINFORCING.

WINDOW/MASONRY WALL OPENING DETAILS
1 1/2" = 1'-0"



TYPICAL DOWNSPOUT BOOT DETAIL
3/4" = 1'-0"

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

ARCHITECTURAL DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.:	904-8119.002
SCALE:	NO SCALE

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
DCE	RGW	DCE

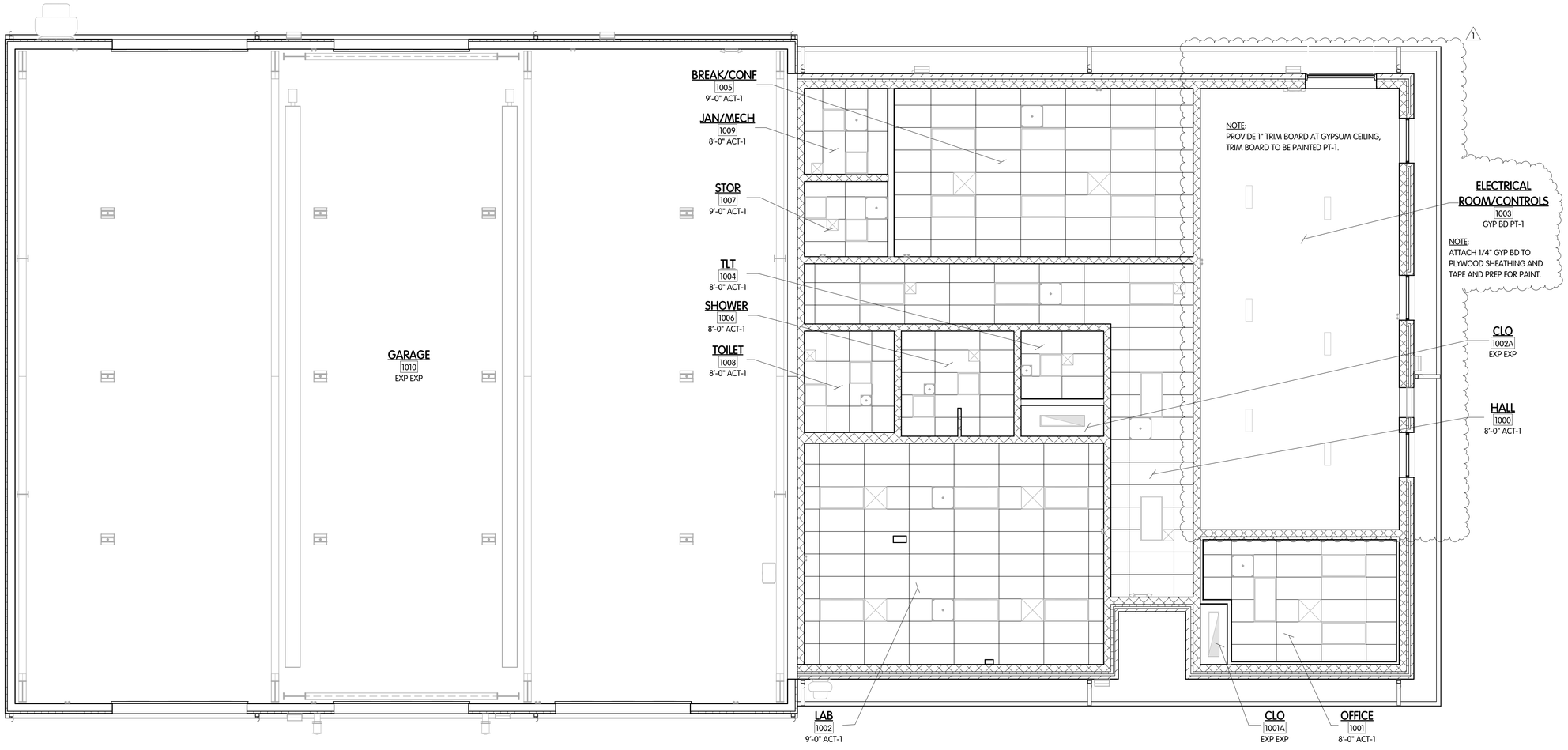
STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
A-0.3
47 OF 309

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5/18/2026 2:26:15 PM

CEILING MATERIAL LEGEND

ACT-1	2'x4' SUSPENDED TILE CEILING
EXP	EXPOSED TO STRUCTURE OR SHEATHING



REFLECTED CEILING PLAN

3/16" = 1'-0"

NORTH

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5/18/2026 2:12:15 PM

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

ADMINISTRATION/MAINTENANCE BUILDING
ARCHITECTURAL
REFLECTED CEILING PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	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	DRAWN	CHECKED
DCE	RGW	DCE

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
A-10.5
64 OF 309

FINISH LEGEND

BRK-1	FOUNDERS BRICK BLEND 4X4X16" 50% STORMY, 25% CHARCOAL, 25% MIDNIGHT
BRK-2	FOUNDERS BRICK 4X4X16: NATURAL GREY
CMU-1	SPLIT FACE 8X8X16 CMU: MIDNIGHT
IWP-1	INSULATED WALL PANEL: MIN R-19 C.I. BY PEMB, COLOR SELECTED FROM MFG FULL STANDARD RANGE
RFG-1	STANDING SEAM METAL ROOF BY PEMB: COLOR SELECTED FROM MFG FULL STANDARD RANGE
SM-1	IWP TO STANDING STANDARD TRIM BY PEMB: MFG COLOR TO MATCH IWP
SM-2	METAL FASCIA BY PEMB: MFG COLOR TO MATCH RFG



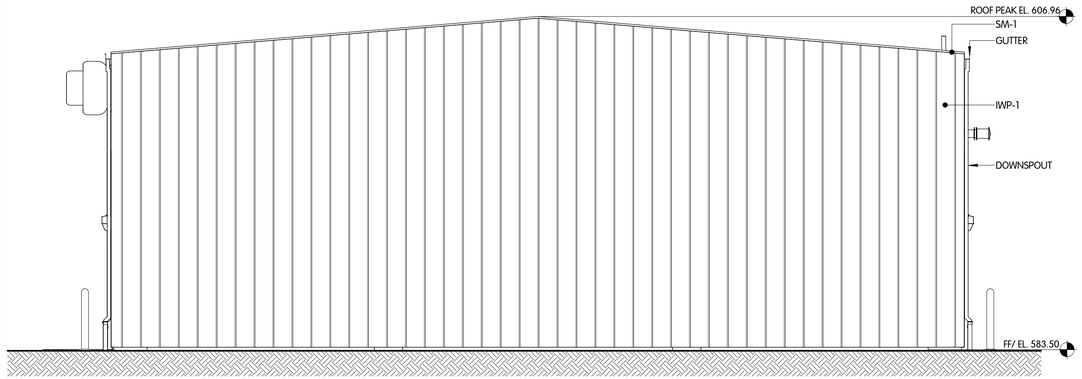
WEST ELEVATION

3/16" = 1'-0"



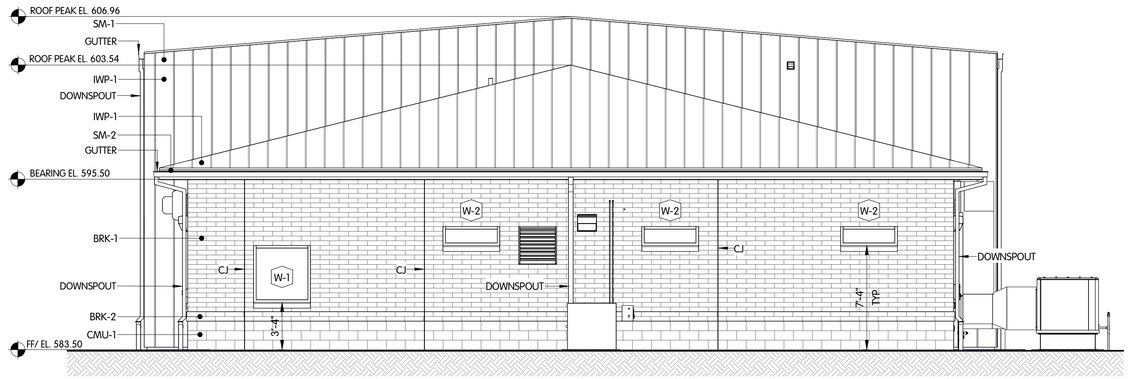
EAST ELEVATION

3/16" = 1'-0"



NORTH ELEVATION

3/16" = 1'-0"



SOUTH ELEVATION

3/16" = 1'-0"

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

ADMINISTRATION/MAINTENANCE BUILDING
ARCHITECTURAL
EXTERIOR ELEVATIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

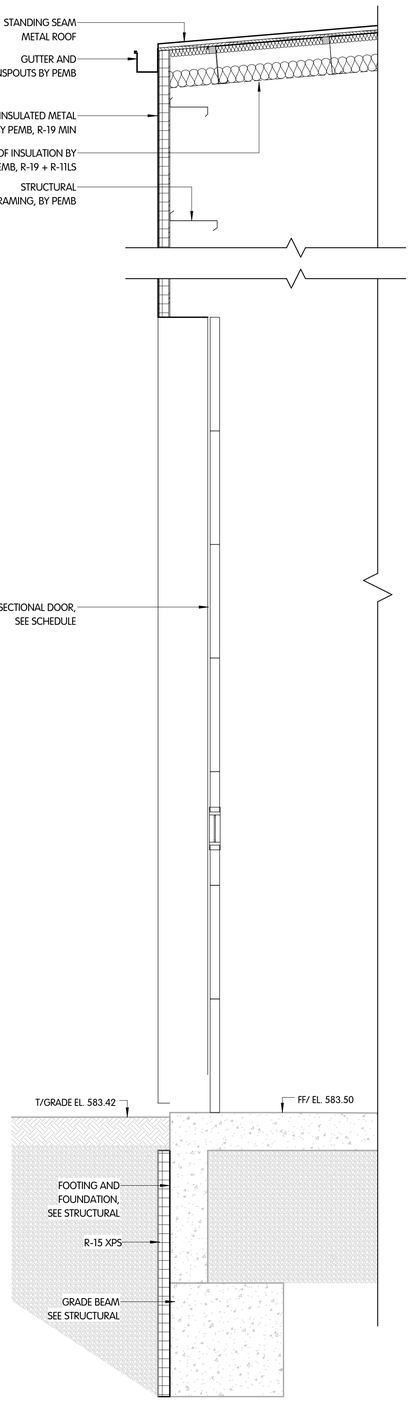
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SCALE: AS INDICATED
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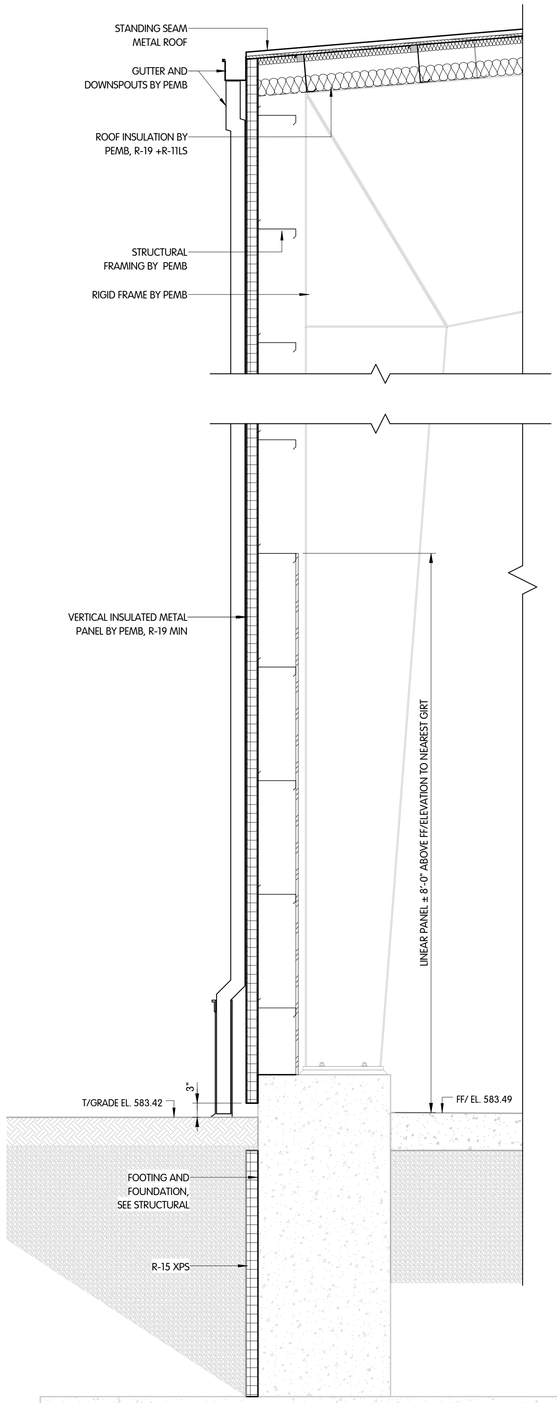
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DCE	RGW	DCE

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DATE: APRIL 2026
SHEET NO.
A-10.7
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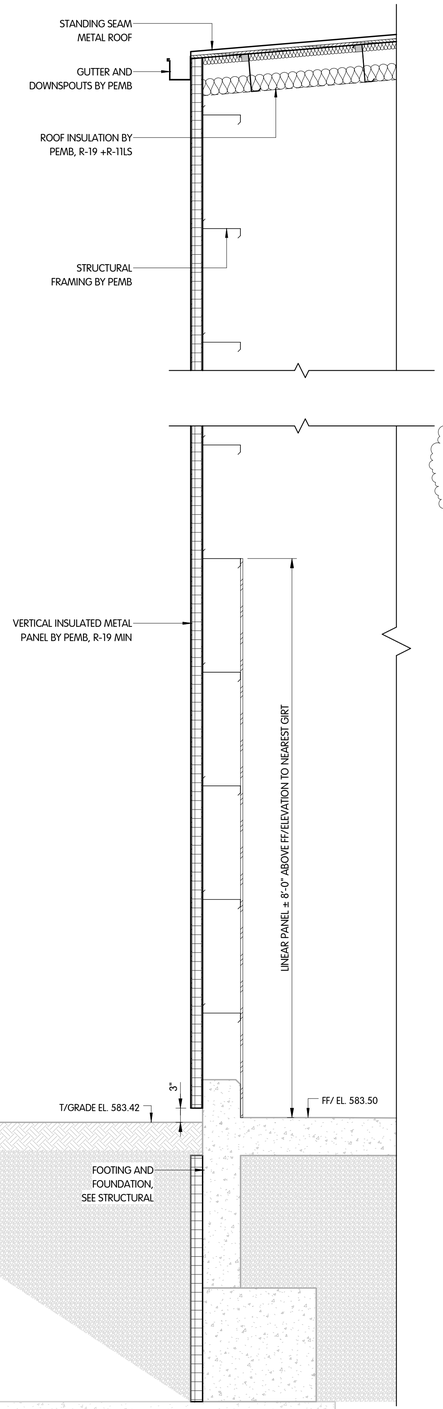
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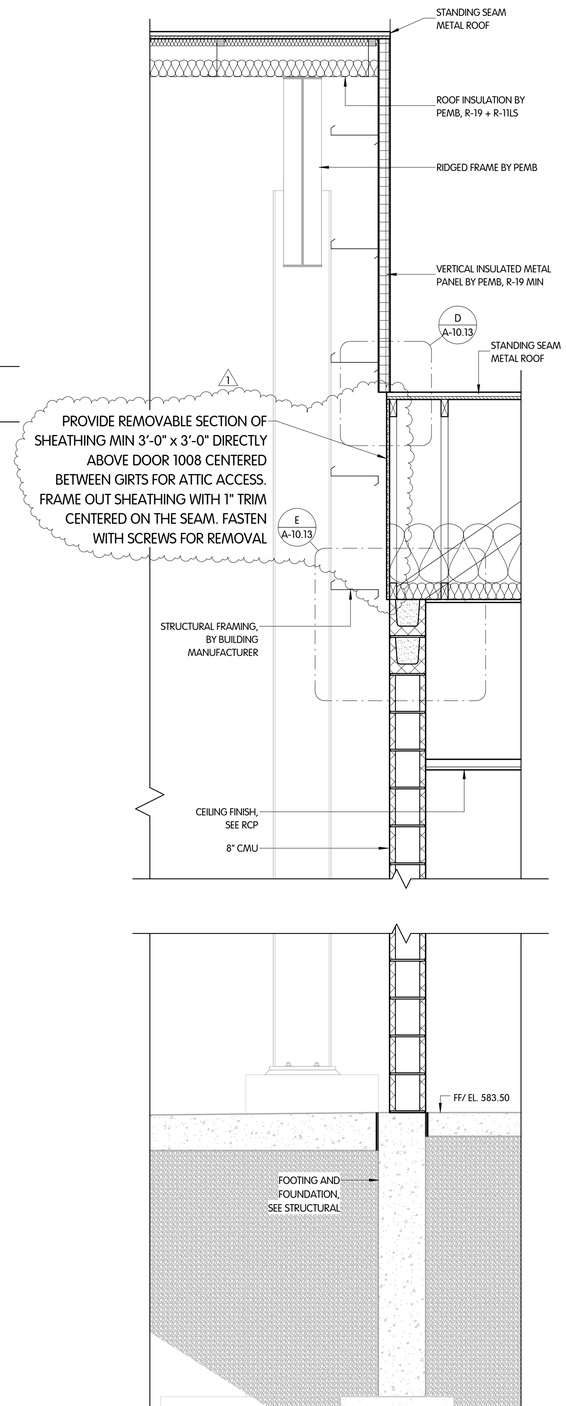
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7 WALL SECTION
3/4" = 1'-0"



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



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

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

ADMINISTRATION/MAINTENANCE BUILDING
ARCHITECTURAL
WALL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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1	5/18/26	ADDENDUM 2	JAH

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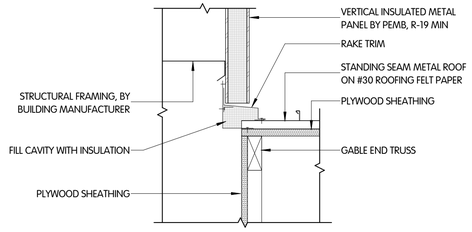
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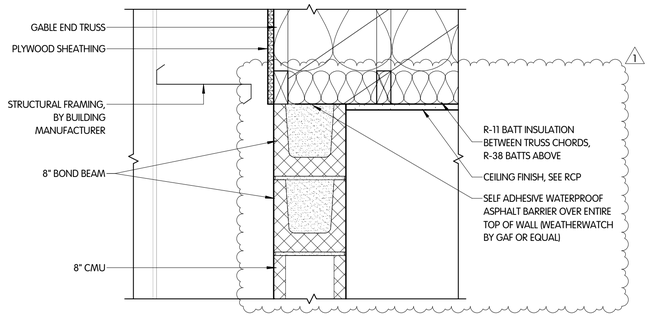
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71 OF 309

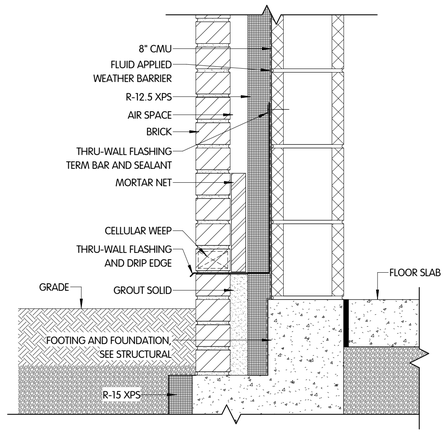
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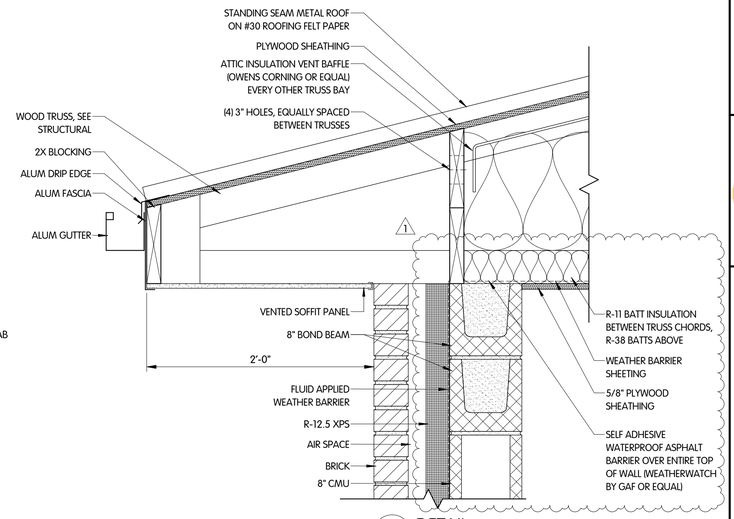
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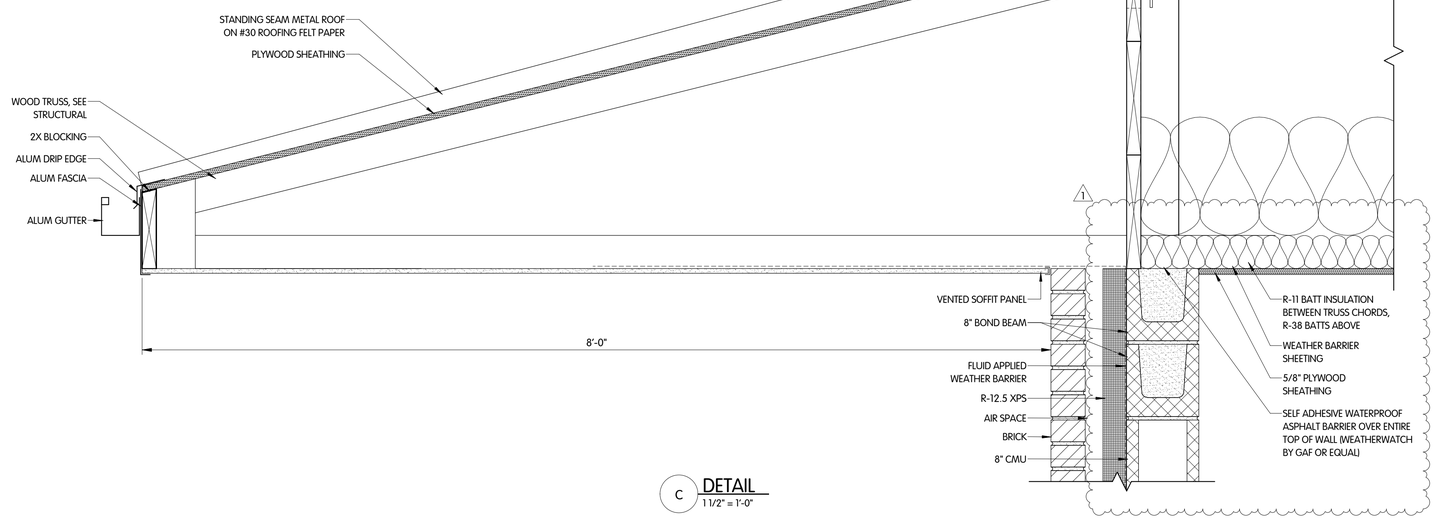
E DETAIL
1 1/2" = 1'-0"



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



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



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

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

ADMINISTRATION/MAINTENANCE BUILDING ARCHITECTURAL DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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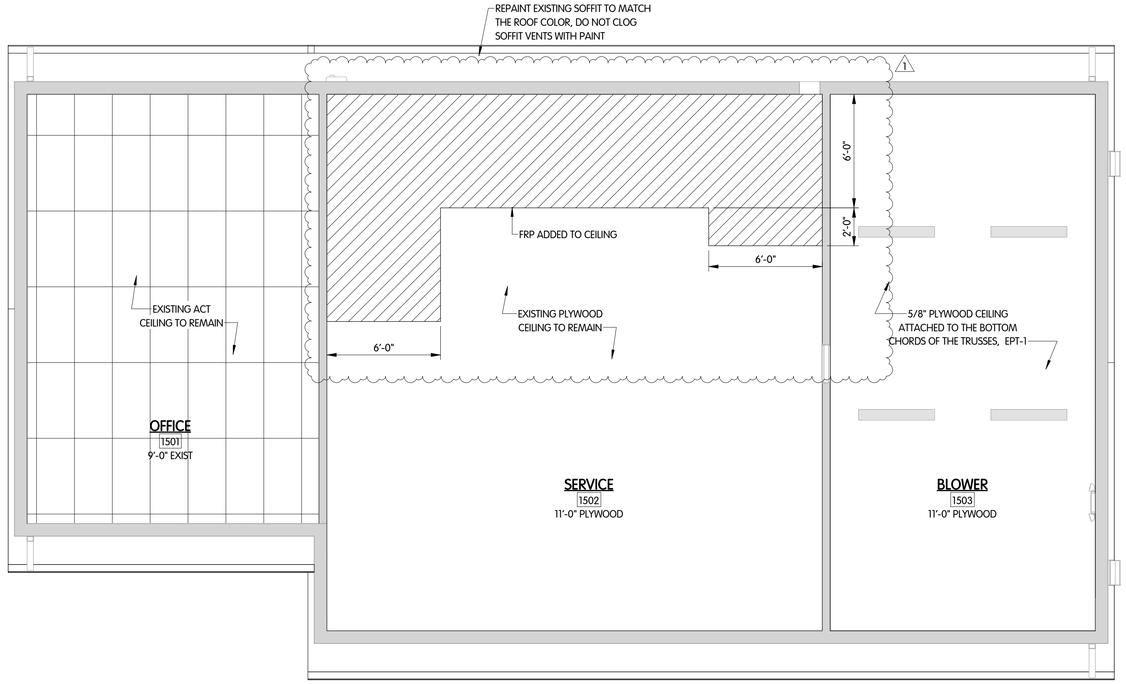
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REFLECTED CEILING PLAN
1/4" = 1'-0"

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

SERVICE BUILDING
ARCHITECTURAL
REFLECTED CEILING PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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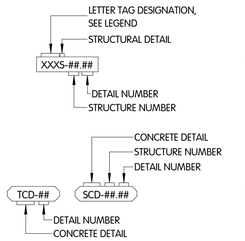
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STRUCTURAL SHEET SYMBOLS



STRUCTURAL TAG LEGEND

TCD	-TYPICAL CONCRETE DETAILS
SCD	-STANDARD CONCRETE DETAILS
GFD	-GRATING FRAME DETAILS
PFD	-FLOOR PLATE FRAMES DETAILS
GSD	-GRATING SUPPORT DETAILS
SBD	-STEEL BEAM CONNECTION DETAILS
STR	-STAIR RAILING DETAILS
RLG	-GUARD RAILING DETAILS
RPB	-RAILING POSE BASE DETAILS
PWTS	-PARAPET WALL TOP DETAILS, STRUCTURAL
WBS	-WALL BASE DETAILS, STRUCTURAL
WPCS	-WALL/PLANK CONNECTION DETAILS, STRUCTURAL
WTCS	-WALL/TRUSS CONNECTION DETAILS, STRUCTURAL

STRUCTURAL ABBREVIATIONS

ALUM	ALUMINUM
B	BOTTOM
BLDG	BUILDING
C/C	CENTER TO CENTER
CJ	CONTROL JOINT
CSJ	CONSTRUCTION JOINT
CONC	CONCRETE
DBR	DOWEL BAR REPLACMENT
DIA	DIAMTER
DEG	DEGREES
DIAG	DIAGONAL
DL	DEAD LOAD
EL	ELEVATION
EMB	EMBEDMENT
EXPJT	EXPANSION JOINT
EXT	EXTERIOR
EXIST	EXISTING
FRP	FIBER REINFORCED PLASTIC
FTG	FOOTING
GALV	GALVANIZED
HORIZ	HORIZONTAL
INT	INTERIOR
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
NTS	NOT TO SCAL E
O/O	OUT TO OUT
REINF	REINFORCING
SL	SNOW LOAD
SS	STAINLESS STEEL
STD	STANDARD
T	TOP
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WL	WIND LOAD
WS	WATERSTOP

TYPICAL STRUCTURAL NOTES

1. THE CONSTRUCTION SHALL CONFORM TO THE TYPICAL STRUCTURAL NOTES, DETAILS AND SCHEDULES, UNLESS NOTED OTHERWISE. TYPICAL NOTES, DETAILS AND SCHEDULES ARE PREFIXED WITH THE WORD "TYPICAL".

2. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SUPERVISION AND CONTROL OF DEWATERING OPERATIONS TO ENSURE THAT STABILITY OF EXCAVATED AND CONSTRUCTED SLOPES ARE NOT ADVERSELY AFFECTED BY INFLOW OF GROUNDWATER AND TO PERMIT PLACEMENT AND CURING OF CONCRETE UNDER CONTROLLED ENVIRONMENTS.

3. BACKFILL SHALL NOT BE PLACED AGAINST CONCRETE TANK OR RETAINING WALLS PRIOR TO PLACEMENT OF TOP SLAB AND ADJACENT WALLS, AND SHALL NOT BE BACKFILLED PRIOR TO 28 DAYS AFTER PLACEMENT, UNLESS IT IS DEMONSTRATED THAT FIELD CURED TEST SPECIMENS HAVE REACHED THE CONCRETE DESIGN STRENGTH, OR CONTRACTOR INSTALLS ADEQUATE SHORING. SHORING SHALL BE THE CONTRACTORS RESPONSIBILITY AND INSTALLED AT NO EXTRA COST TO THE OWNER.

4. BACKFILL UNDERNEATH BASE SLABS AND FOOTINGS SHALL BE SPECIAL BACKFILL, UNLESS OTHERWISE APPROVED. BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE SPECIFICATION 02200 AND SHALL BE WELL COMPACTED TO NOT LESS THAN 100% MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR TEST ASTM D-698.

5. VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE INTERFACE BETWEEN EXISTING & NEW CONSTRUCTION PRIOR TO DETAILING STRUCTURAL STEEL OR REINFORCEMENT. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.

6. THE CONTRACTOR SHALL ENSURE THAT FOUNDATIONS REST ON FIRM SOIL MATERIAL. THE TESTING LAB SHALL VERIFY THAT THE SOIL BEARING CAPACITY LISTED BY THE "STRUCTURAL DESIGN DATA" TABLE IS OBTAINED PRIOR TO FOUNDATION PLACEMENT. THE BEARING CAPACITY VERIFICATION IS REQUIRED AT REGULAR INTERVALS IN EACH DIRECTION. NOTIFY THE ENGINEER OF ANY UNSUITABLE SOIL ENCOUNTERED. SUCH SOIL SHALL BE REMOVED AND REPLACED PER SPECIFICATION 02200.

7. DURING EXCAVATION OPERATIONS THE CONTRACTOR SHALL PREVENT THE UNDERMINING OF, AND DAMAGE TO, NEARBY NEW AND EXISTING STRUCTURES, AND UTILITIES, WITH SOIL SUPPORT METHOD SUCH AS SHEET PILING, SHAFT CONSTRUCTION, SOIL NAILING, UNDERPINNING, SOLIDER PILE & LAGGING, OR OTHER SOIL SUPPORT METHODS. THE NEARBY STRUCTURES SHALL BE MONITORED FOR SETTLEMENT WHILE THE EXCAVATION REMAINS OPEN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF SOIL SUPPORT AND UNDERPINNING METHODS. WHEN SHEET PILING OR OTHER SOIL SUPPORT STRUCTURES RETAIN MORE THAN 20 FEET OF SOIL, THE CONTRACTOR SHALL EMPLOY A PROFESSIONAL ENGINEER TO DESIGN THE SUPPORT. THE CONTRACTOR'S EMPLOYED ENGINEER SHALL SUBMIT SEALED CALCULATIONS AND DRAWINGS TO THE ENGINEER OF RECORD.

8. WHEN TEMPORARY SOIL SUPPORT STRUCTURES ARE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND SHALL EMPLOY A PROFESSIONAL ENGINEER TO DESIGN THE SUPPORT. THE TEMPORARY SUPPORT SHALL BE SHEET PILING OR OTHER TYPE OF SUPPORT STRUCTURE, AS REQUIRED TO SAFELY SUPPORT THE SOIL WHILE ACCOMMODATING THE FACILITY'S CONSTRUCTION. THE NEARBY STRUCTURES SHALL BE MONITORED FOR SETTLEMENT UNTIL THE FOUNDATION IS CONSTRUCTED AND BACKFILLED, AND THE SOIL SUPPORT IS REMOVED. THE CONTRACTOR'S EMPLOYED ENGINEER SHALL SUBMIT SEALED CALCULATIONS AND DRAWINGS TO THE ENGINEER OF RECORD.

STRUCTURAL DESIGN DATA

BUILDING CODE	2024 OHIO BUILDING CODE	
RISK CATEGORY		= III
FLOOR	2-HEADWORKS:	
	10-ADMINISTRATION BUILDING:	= 100 PSF
	10-MAINTENANCE BUILDING:	= 250 PSF
	LIVE LOAD, UNLESS OTHERWISE NOTED:	= 200 PSF
FLAT ROOF	LIVE LOAD	= 20 PSF (MIN.)
	MECHANICAL & ELECTRICAL	= 10 PSF
TRUSS ROOF	2-HEADWORKS:	
	TOP CHORD LIVE LOAD	= 20 PSF (MIN.)
	TOP CHORD DEAD LOAD	= 5 PSF
	BOTTOM CHORD LIVE LOAD	= 10 PSF
	BOTTOM CHORD DEAD LOAD	= 10 PSF
	10-ADMINISTRATION BUILDING:	
	TOP CHORD LIVE LOAD	= 20 PSF (MIN.)
	TOP CHORD DEAD LOAD	= 5 PSF
	BOTTOM CHORD LIVE LOAD	= 10 PSF
	BOTTOM CHORD DEAD LOAD	= 5 PSF
	11-SLUDGE HANDLING:	
	TOP CHORD LIVE LOAD	= 20 PSF (MIN.)
	TOP CHORD DEAD LOAD	= 5 PSF
	BOTTOM CHORD LIVE LOAD	= 10 PSF
	BOTTOM CHORD DEAD LOAD	= 2 PSF
SNOW	GROUND SNOW LOAD	= P_G = 20 PSF
	MIN. SNOW LOAD	= P_M = 22 PSF
	FLAT ROOF	= P_F = 16 PSF
	SLOPED ROOF	= P_S = 14 PSF
	SNOW EXPOSURE FACTOR	= C_E = 1.0
	SNOW LOAD IMPORTANCE FACTOR	= I_S = 1.1
	THERMAL FACTOR	= C_T = 1.0
WIND	BASIC WIND SPEED	= 115 MPH
	WIND EXPOSURE	= C
SEISMIC	SEISMIC IMPORTANCE FACTOR	= IE = 1.25
	SITE CLASS	= D
	SEISMIC DESIGN CATEGORY	= B
	DESIGN SPECTRAL RESPONSE ACCELERATIONS	= S_{DS} = 0.141
		= S_{D1} = 0.084
	ANALYSIS PROCEDURE	= EQUIVALENT LATERAL FORCE
STAIRS	LIVE LOAD, UNLESS OTHERWISE NOTED	= 100 PSF
GRATING	LIVE LOAD, UNLESS OTHERWISE NOTED	= 100 PSF
PLATFORM	LIVE LOAD, UNLESS OTHERWISE NOTED	= 100 PSF
SOILS	GROSS DESIGN BEARING CAPACITY	
	2-HEADWORKS	= 1500 PSF @ EL. 577.00 = 4500 PSF @ EL. 552.50 = 4800 PSF @ EL. 545.50
	3-GRIT	= 2500 PSF @ EL. 571.00
	4-OXIDATION DITCH	= 1500 PSF @ EL. 572.00
	5-SPLITTER	= 1400 PSF @ EL. 576.50
	6-CLARIFIER	= 2200 PSF @ EL. 561.00 = 2200 PSF @ EL. 565.66
	7-RAS PUMP STATION	= 1000 PSF @ EL. 575.38 = 3500 PSF @ EL. 559.74
	8-UV	= 1300 PSF @ EL. 572.00 = 2300 PSF @ EL. 568.33
	10-ADMINISTRATION/MAINTENACE BLDG	= 2000 PSF @ EL. 577.50
	11-SLUDGE HANDLING BLDG	= 1600 PSF @ EL. 577.50
	15-SERVICE BLDG	= 2200 PSF @ EL. 576.00
CONCRETE	DESIGN STRENGTH AT 28 DAY	= 4500 PSI
FLOOD	100 YEAR ELEVATION	= 578.50
DATUM		NAVD 1988

BEAM SCHEDULE

TAG/ID	SIZE WIDTH	SIZE DEPTH	REINFORCEMENT TOP CONT.	TOP ADDITIONAL	BOTTOM CONT.	BOTTOM ADDITIONAL	REMARKS	STIRRUPS SIZE	STIRRUPS SPACING EACH END
3-GRIT									
CB-3-1	12"	12"	(4) #6		(4) #6			#3 TIES	10" C/C
4-OXIDATION DITCH									
CB-4-1	18"	16"	(3) #6		(3) #6			#3 TIES	4" C/C
CB-4-2	18"	16"	(3) #6		(3) #6			#3 TIES	4" C/C
8-UV									
CB-8-1	12"	12"	(2) #5		(2) #5			#3 TIES	10" C/C
10-ADMINISTRATION/MAINTENACE BUILDING									
GB-10-1	24"	24"	(3) #7	---	(3) #7	---	ALL STIRUPS TO BE CLOSED STIRUPS	#3	20" O.C. FOR FULL LENGTH OF BEAM

TAG/ID
CB = CONCRETE BEAM
GB = GRADE BEAM

FOOTING AND PIER SCHEDULE

TAG/ID	FOOTING SIZE (DxWxL)	FOOTING T/FOOTING	FOOTING REINFORCING	PIER SIZE (AxB)	PIER T/ PIER ELEVATION	PIER REINFORCING	PIER TIES	NOTES
2-HEADWORKS								
F-2-1	1'-0" x 3'-0" x 3'-0"	578.50	#5@12 EWTB	1'-4" x 1'-4"	582.00	(8)#5	#3@10, (3) #3@3 AT TOP	
10-ADMINISTRATION BUILDING								
F-10-1	1'-6" x 14'-0" x 7'-0"	578.50	(15)#5x(8)#5T, (23)#6x(11)#6B	2'-4" x 2'-4"	584.17	(8)#5	#4@10, (4)#4@3 AT TOP	PIER IS OFFSET TO EDGE OF FOOTING, SEE PLAN
F-10-2	1'-6" x 30'-0" x 10'-0"	578.50	(31)#5x(11)#5T, (31)#7x(11)#7B	2'-4" x 4'-0"	584.17	(10)#6	#4@10, (4)#4@3 AT TOP	COMBINED FOTING WITH TWO PIERS, SEE PLAN
F-10-3	1'-6" x 9'-0" x 9'-0"	578.50	(10)#5x(10)#5T, (13)#6x(13)#6B	2'-4" x 2'-4"	584.17	(8)#5	#4@10, (4)#4@3 AT TOP	
F-10-4	1'-0" x 4'-6" x 4'-6"	578.50	#5@12 EWTB	2'-0" x 2'-4"	584.17	(8)#5	#4@10, (4)#4@3 AT TOP	
F-10-5	1'-0" x 5'-2" x 5'-0"	578.50	#5@12 EWTB	2'-0" x 2'-4"	584.17	(8)#5	#4@10, (4)#4@3 AT TOP	POUR FOOTING WITH ADMIN. BUILDING STRIP FOOTER

1

FLOOR DOOR SCHEDULE

TAG / ID	SIZE (LXW)	NOTES
2-HEADWORKS		
FD-2-1	48" X 48"	
7-RAS PS		
FD-7-1	36" X 48"	
12-DIGESTER CONTROL BUILDING		
FD-12-1	48" X 72"	

NOTE:
SCHEDULES ARE NOT GUARANTEED TO BE COMPLETE. ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR WHETHER OR NOT LISTED IN THE FOLLOWING SCHEDULE.

STATE OF OHIO
DANIEL EBERT
AR12500064
REGISTERED ARCHITECT
EXPIRATION DATE: 12.31.2027

STRUCTURAL LEGENDS, ABBREVIATIONS, SCHEDULES, AND NOTES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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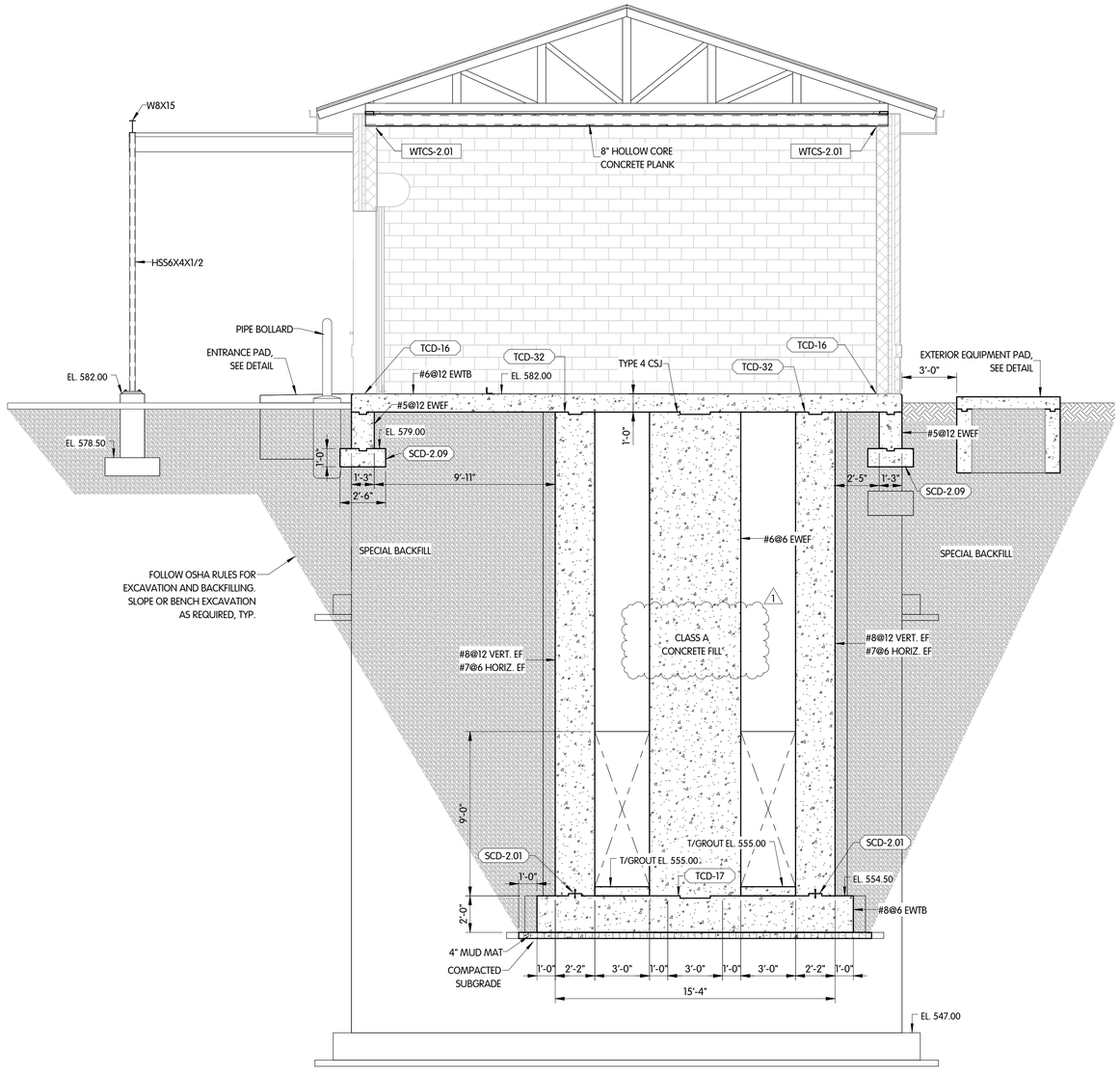
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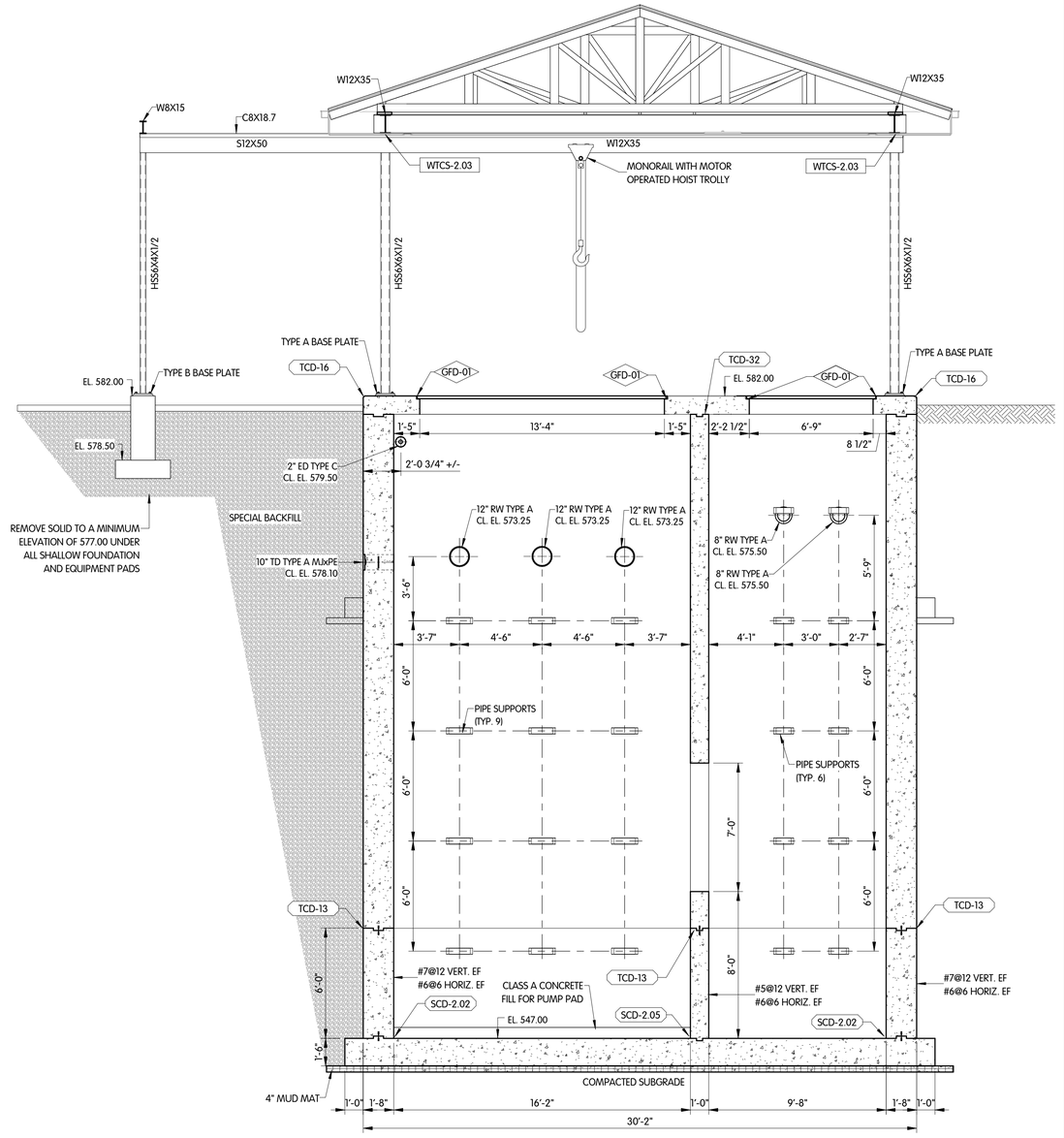
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1 SECTION
1/4" = 1'-0"



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

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
Jean Pierre Nassaux 3/25/2026

HEADWORKS BUILDING STRUCTURAL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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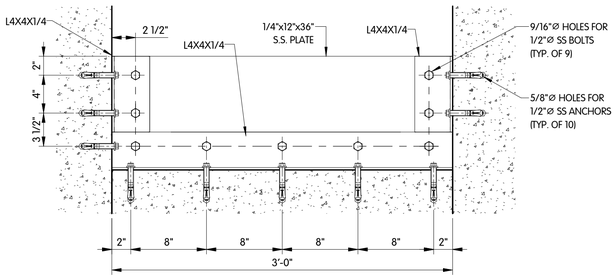
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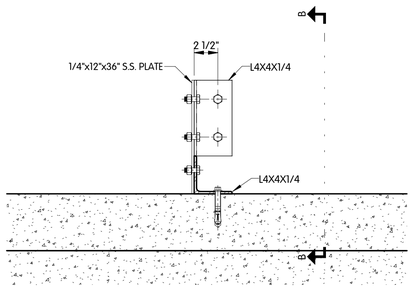
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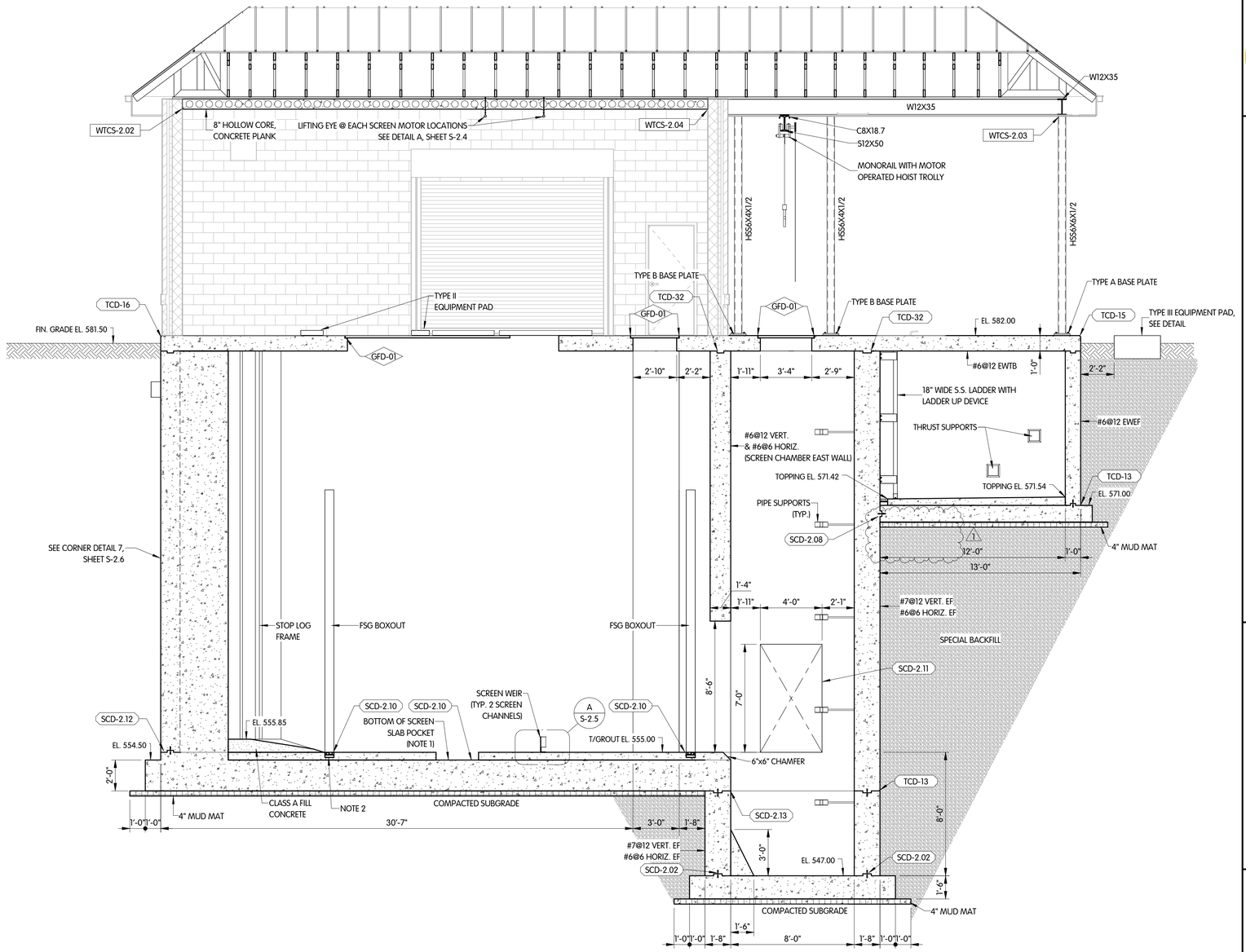


B-B



NOTES:
1. TYPICAL FOR 2 SCREEN CHANNELS.
2. ALL COMPONENTS ARE STAINLESS STEEL.

A SCREEN WEIR DETAIL
1 1/2" = 1'-0"



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

NOTES:
1. PROVIDE SCREEN MECHANISM SLAB POCKET FOR MECHANISM BASE GROUTING IN BOTH CHANNELS. PROVIDE SIZE AND DEPTH PER MANUFACTURER'S REQUIREMENTS. NOTIFY ENGINEER IF DEPTH OF POCKET IS GREATER THAN 4 INCHES.
2. PROVIDE SLAB POCKETS FOR STOP LOG AND GATE BASE GROUTING IN BOTH CHANNELS. PROVIDE SIZE AND DEPTH PER MANUFACTURER'S REQUIREMENTS. NOTIFY ENGINEER IF DEPTH OF POCKET IS GREATER THAN 4 INCHES.
3. WHEN TAGS ARE NOT PROVIDED FOR CONCRETE CONSTRUCTION JOINTS REFER TO THE TYPICAL CONCRETE JOINT DETAILS TCD-## FOR LIQUID/SOIL RETAINING STRUCTURES.

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
3/25/2026

HEADWORKS BUILDING STRUCTURAL SECTION AND DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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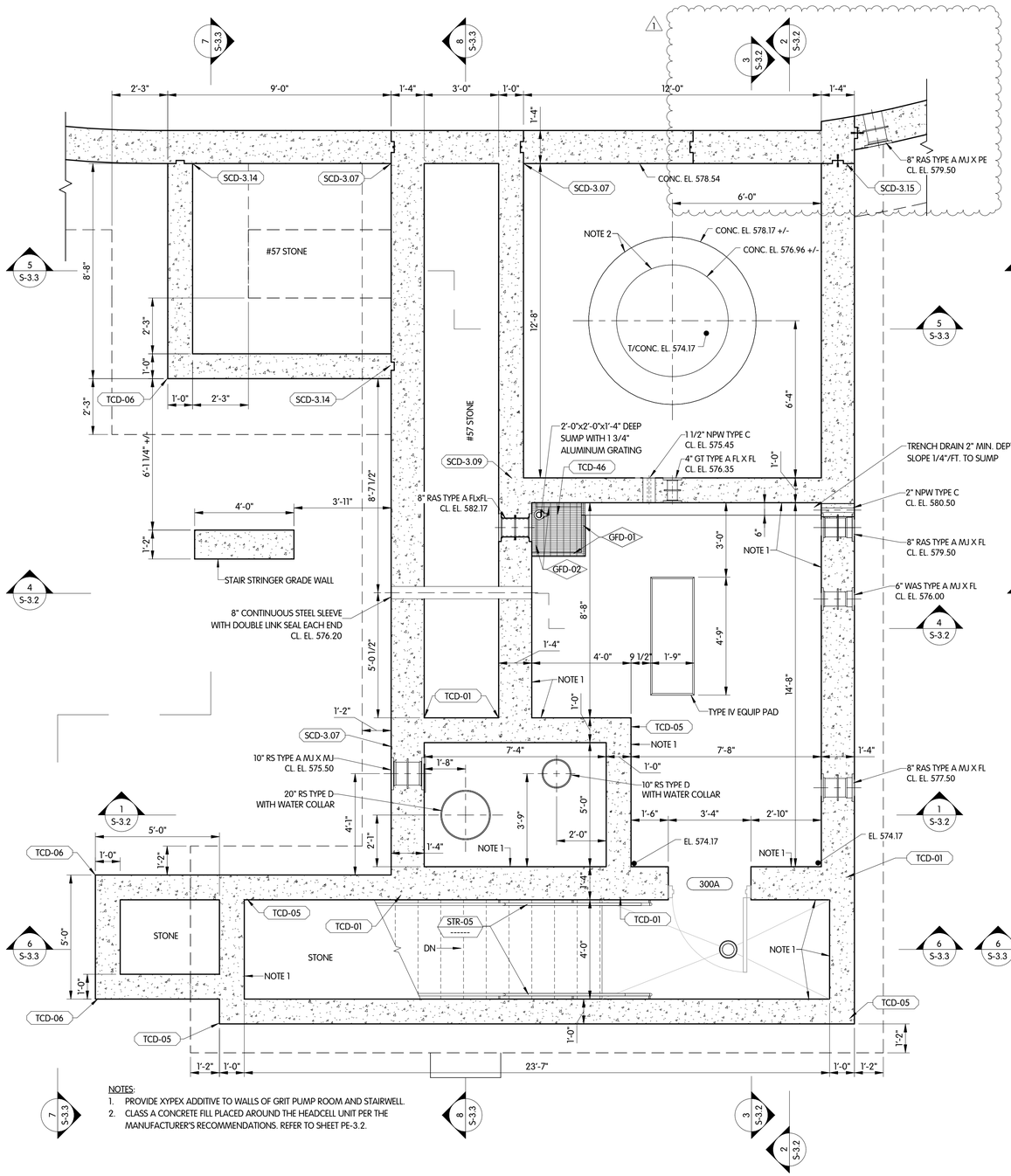
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SCALE: AS INDICATED
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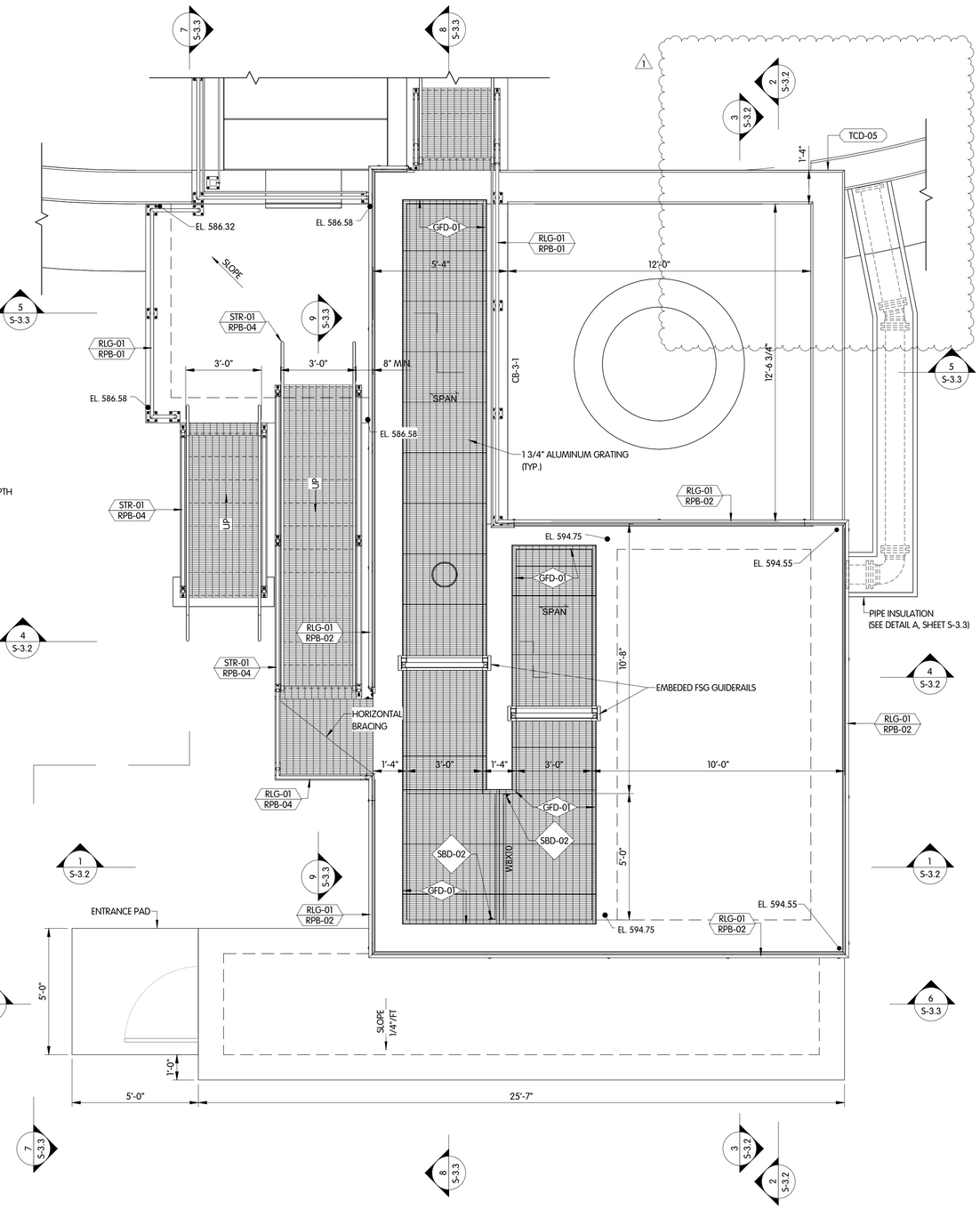
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JDN	RGW	JDN

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
S-2.5
102 OF 309

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5/18/2026 2:15:03 PM



PLAN @ EL. 580.00
3/8" = 1'-0"



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

STATE OF OHIO
DEVYANI CHARLES
E-66973
REGISTERED
PROFESSIONAL ENGINEER
3/15/2026

GRIT
STRUCTURAL
PLANS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26 ADDENDUM 2	JAH

REVISIONS AFTER ISSUED FOR BID

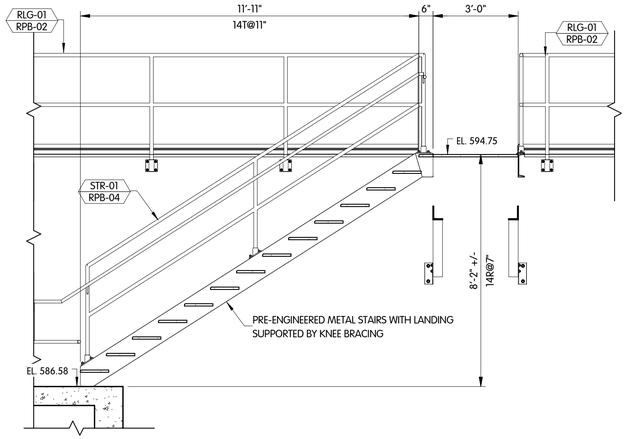
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JOB NO.: 904-8119.002
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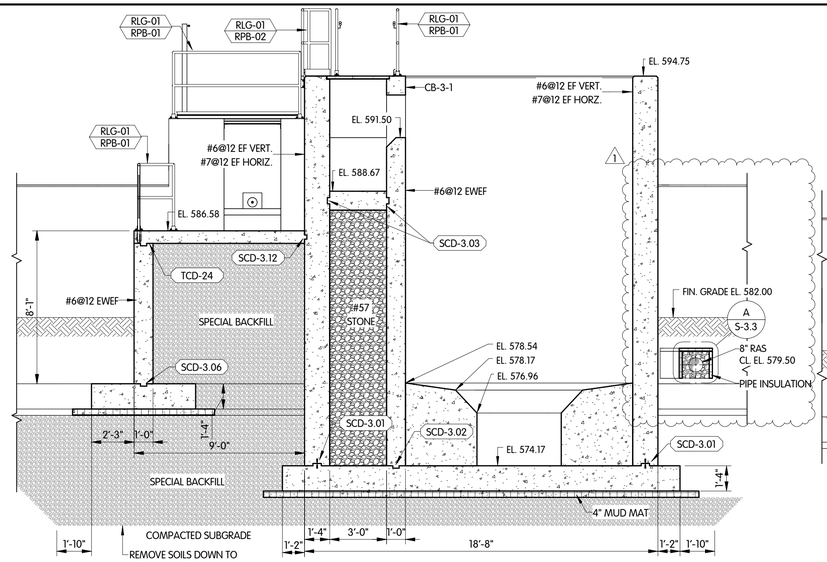
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DATE: APRIL 2026
SHEET NO.
S-3.1
107 OF 309

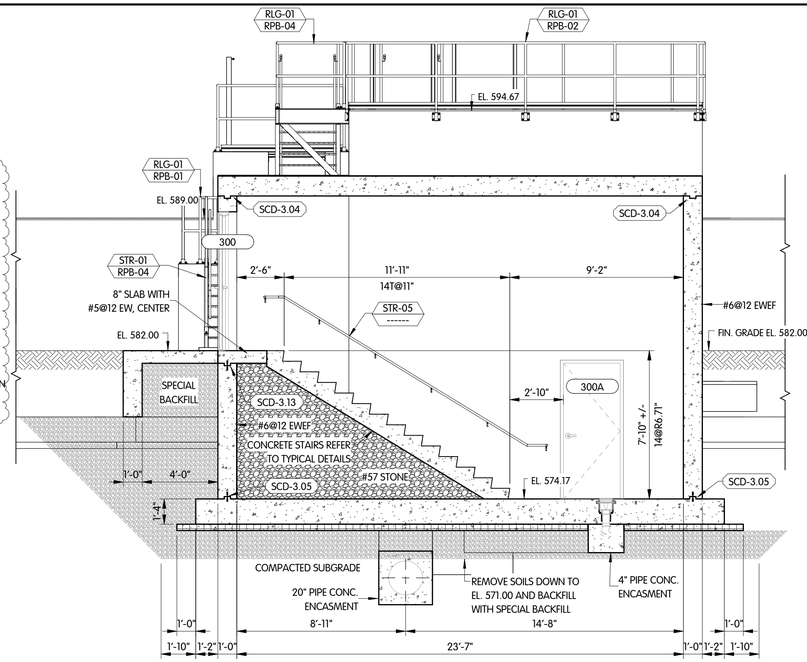
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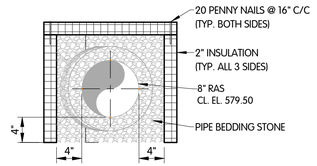
9 SECTION
3/8" = 1'-0"



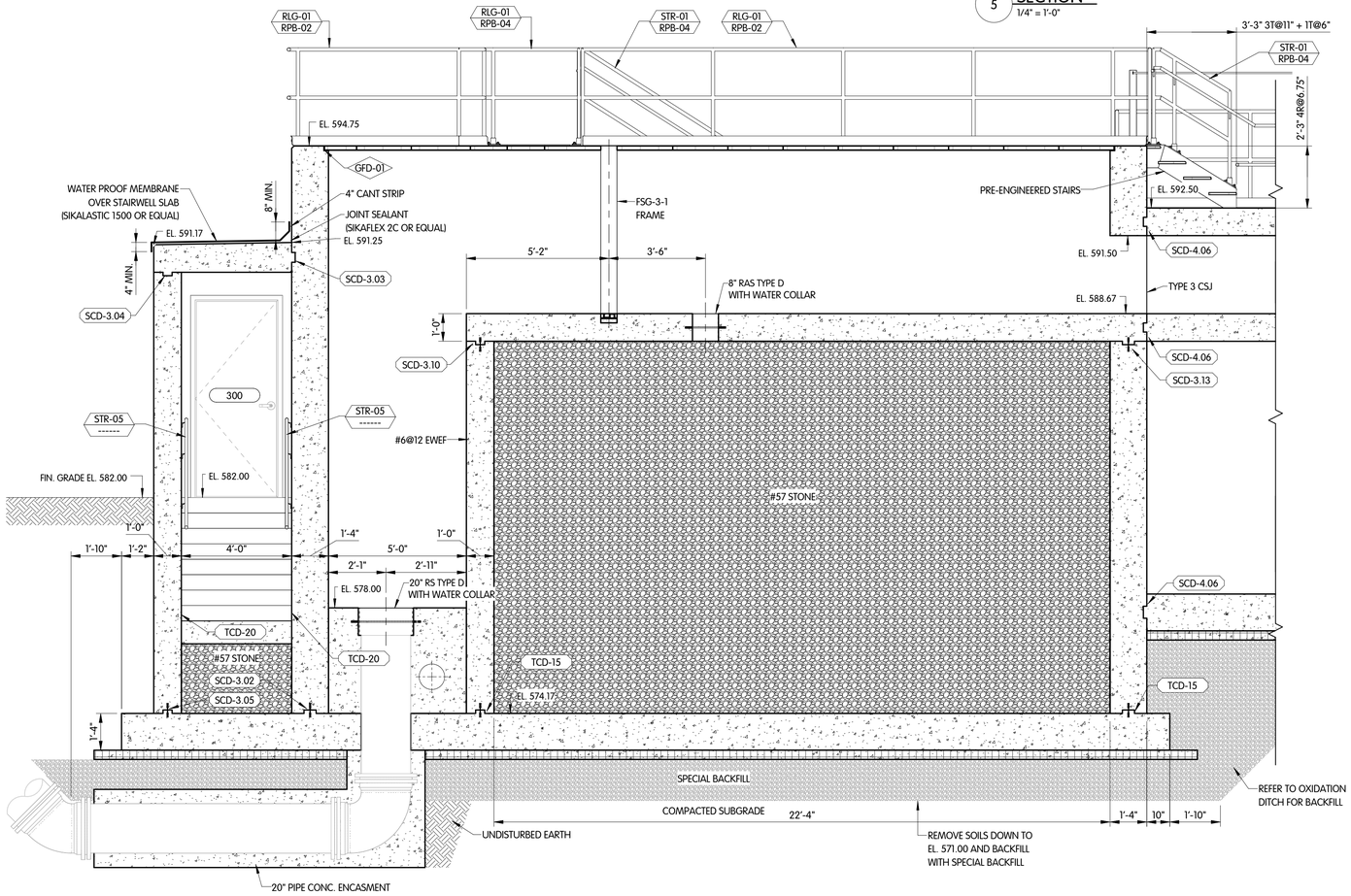
5 SECTION
1/4" = 1'-0"



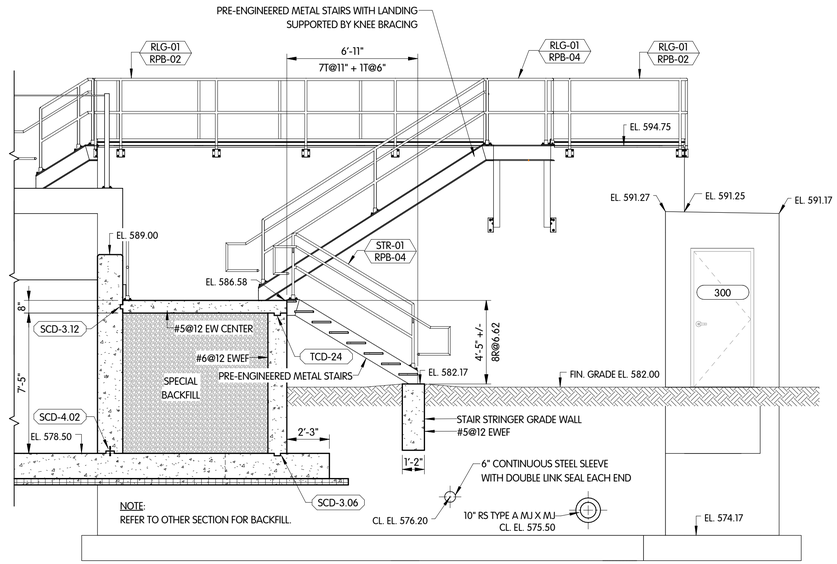
6 SECTION
1/4" = 1'-0"



A DETAIL
1" = 1'-0"



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



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

STATE OF OHIO
DEVYANI
CHARLES
E-66973
REGISTERED
PROFESSIONAL ENGINEER
3/15/2026

GRIT
STRUCTURAL
SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26 ADDENDUM 2	JAH

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JOB NO.:	904-8119.002
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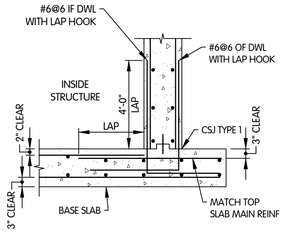
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DESIGNED	DRAWN	CHECKED
DRC	RGW	JDN

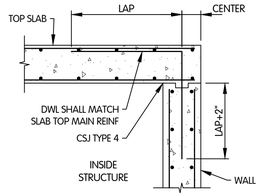
STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
S-3.3
109 OF 309

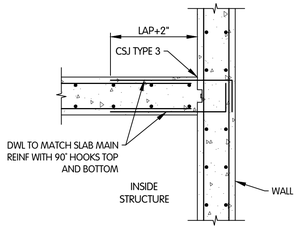
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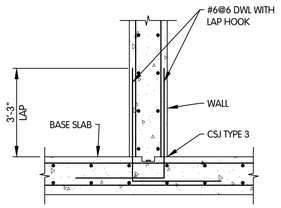
SCD-3.05 WALL ON BASE SLAB ELEVATION, NTS



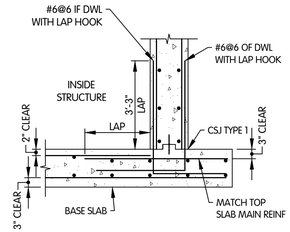
SCD-3.04 TOP SLAB ON WALL ELEVATION, NTS



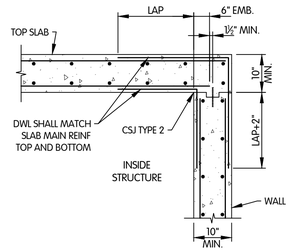
SCD-3.03 INTERMEDIATE SLAB ON WALL ELEVATION, NTS



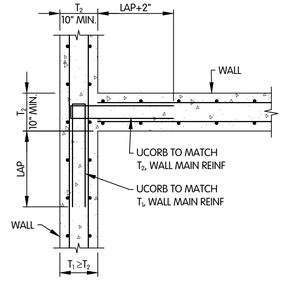
SCD-3.02 INTERIOR WALL AND BASE SLAB ELEVATION, NTS



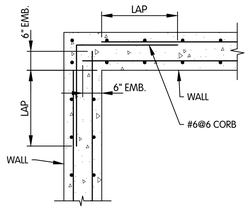
SCD-3.01 WALL ON BASE SLAB ELEVATION, NTS



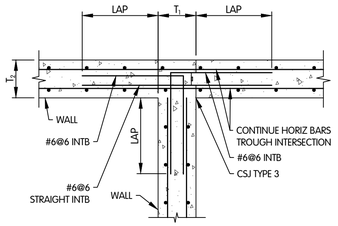
SCD-3.10 TYPICAL TOP SLAB ON WALL ELEVATION FOR LIQUID/SOIL RETAINING STRUCTURES, NTS



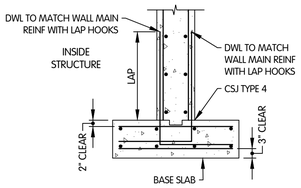
SCD-3.09 WALL CORNER PLAN, NTS



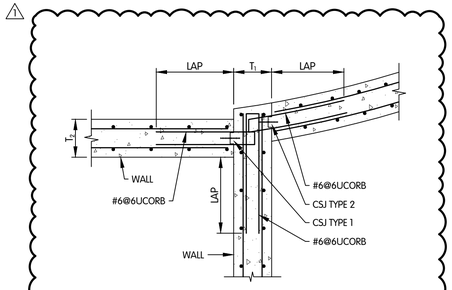
SCD-3.08 WALL CORNER PLAN, NTS



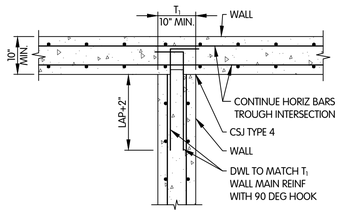
SCD-3.07 WALL INTERSECTION PLAN, NTS



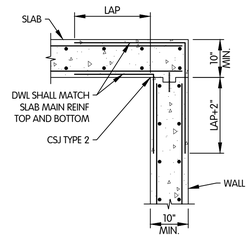
SCD-3.06 WALL FOOTING ELEVATION, NTS



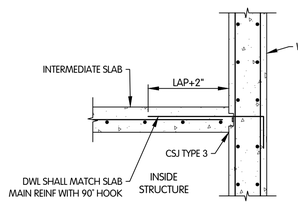
SCD-3.15 WALL INTERSECTION PLAN, NTS



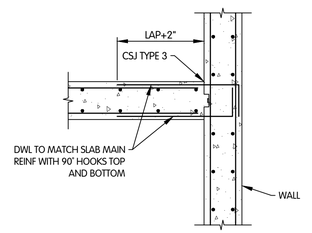
SCD-3.14 WALL INTERSECTION PLAN, NTS



SCD-3.13 SLAB ON EXTERIOR WALL ELEVATION, NTS



SCD-3.12 INTERMEDIATE SLAB TO SIDE OF WALL ELEVATION, NTS



SCD-3.11 INTERMEDIATE SLAB TO SIDE OF WALL ELEVATION, NTS

CONCRETE REINFORCEMENT DETAIL NOTES:

1. SEE THE STRUCTURES PLANS AND SECTIONS FOR MAIN WALL AND SLAB REINFORCEMENT SIZES AND ORIENTATION.
2. THE DETAIL THICKNESS AND REINFORCING SPACING ARE NOT TO SCALE (NTS). SEE THE STRUCTURES PLANS OR BUILDING SECTIONS FOR ELEMENT THICKNESS AND REINFORCEMENT SPACINGS.
3. CONTRACTOR MAY ADD REINFORCING LAPS AS REQUIRED AT CONSTRUCTION JOINTS OR WHEN LENGTH OF WALL EXCEEDS AVAILABLE REINFORCEMENT LENGTHS CONSTRUCTION JOINT LOCATIONS NOT SHOWN ON THE DRAWINGS REQUIRE APPROVAL BY THE ENGINEER.

CONCRETE REINFORCEMENT DETAILS

NTS

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
3/25/2026

GRIT
STRUCTURAL
CONCRETE REINFORCEMENT DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	DRC BY
2	5/18/26	ADDENDUM 2	

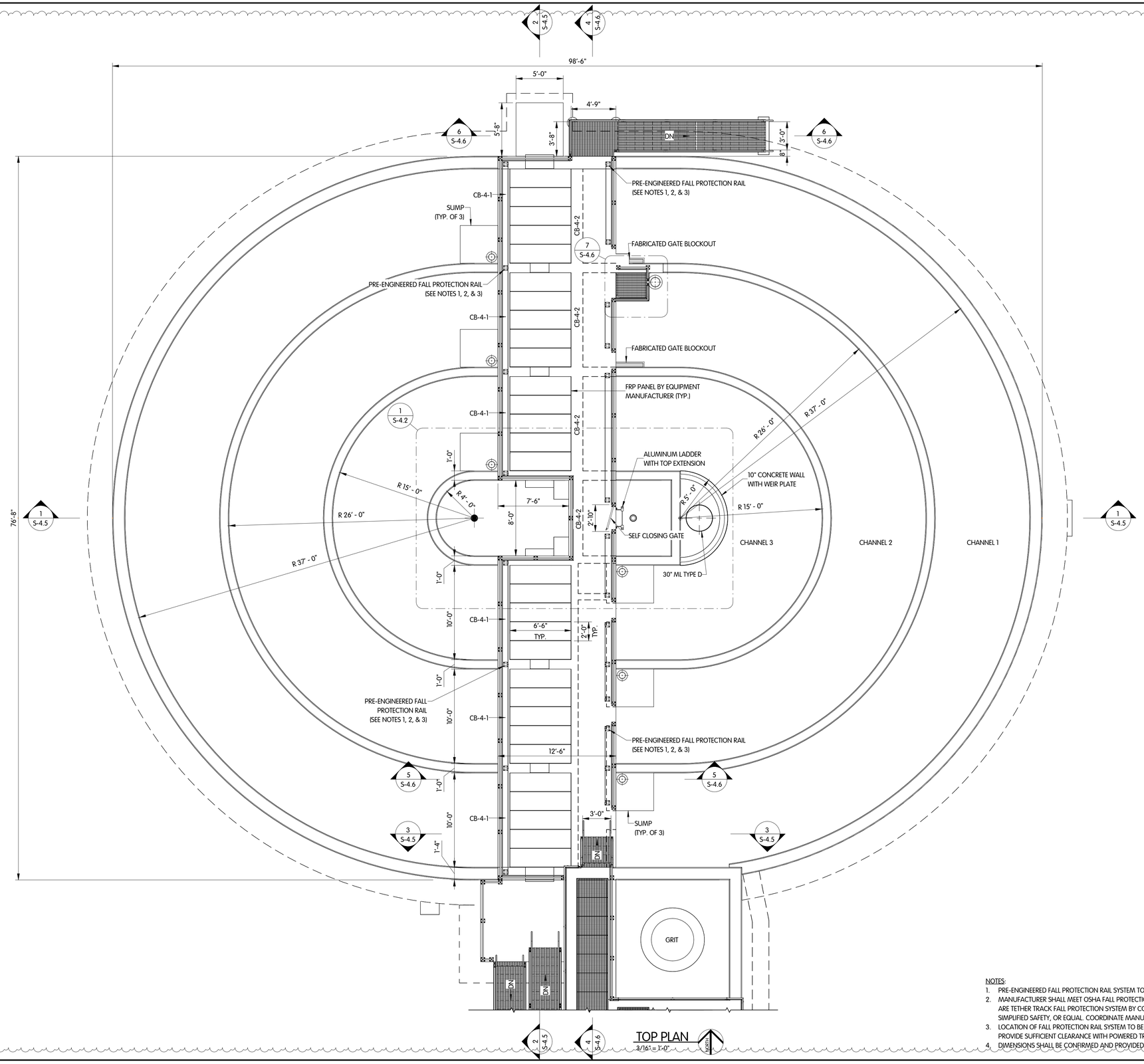
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DRC	RGW	JDN

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SHEET NO.
S-3.4
110 OF 309

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5/18/2026 4:04 PM - RWORLEY
5/18/2026 2:04 PM



TOP PLAN

3/16" = 1'-0"

NOTES:

1. PRE-ENGINEERED FALL PROTECTION RAIL SYSTEM TO BE DESIGNED FOR TWO PERSON USE.
2. MANUFACTURER SHALL MEET OSHA FALL PROTECTION REQUIREMENTS SUGGESTED MANUFACTURERS ARE TETHER TRACK FALL PROTECTION SYSTEM BY CORBEL, RIGID RAIL FALL PROTECTION SYSTEMS BY SIMPLIFIED SAFETY, OR EQUAL. COORDINATE MANUFACTURER SELECTION WITH OWNER.
3. LOCATION OF FALL PROTECTION RAIL SYSTEM TO BE COORDINATED WITH HOIST MONORAIL SYSTEM TO PROVIDE SUFFICIENT CLEARANCE WITH POWERED TROLLEY HOIST.
4. DIMENSIONS SHALL BE CONFIRMED AND PROVIDED BY MANUFACTURER OF EQUIPMENT.

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
Jean Pierre Nassaux 3/25/2026

OXIDATION DITCH STRUCTURAL TOP PLAN AND DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/19/26	ADDENDUM 2	JAH

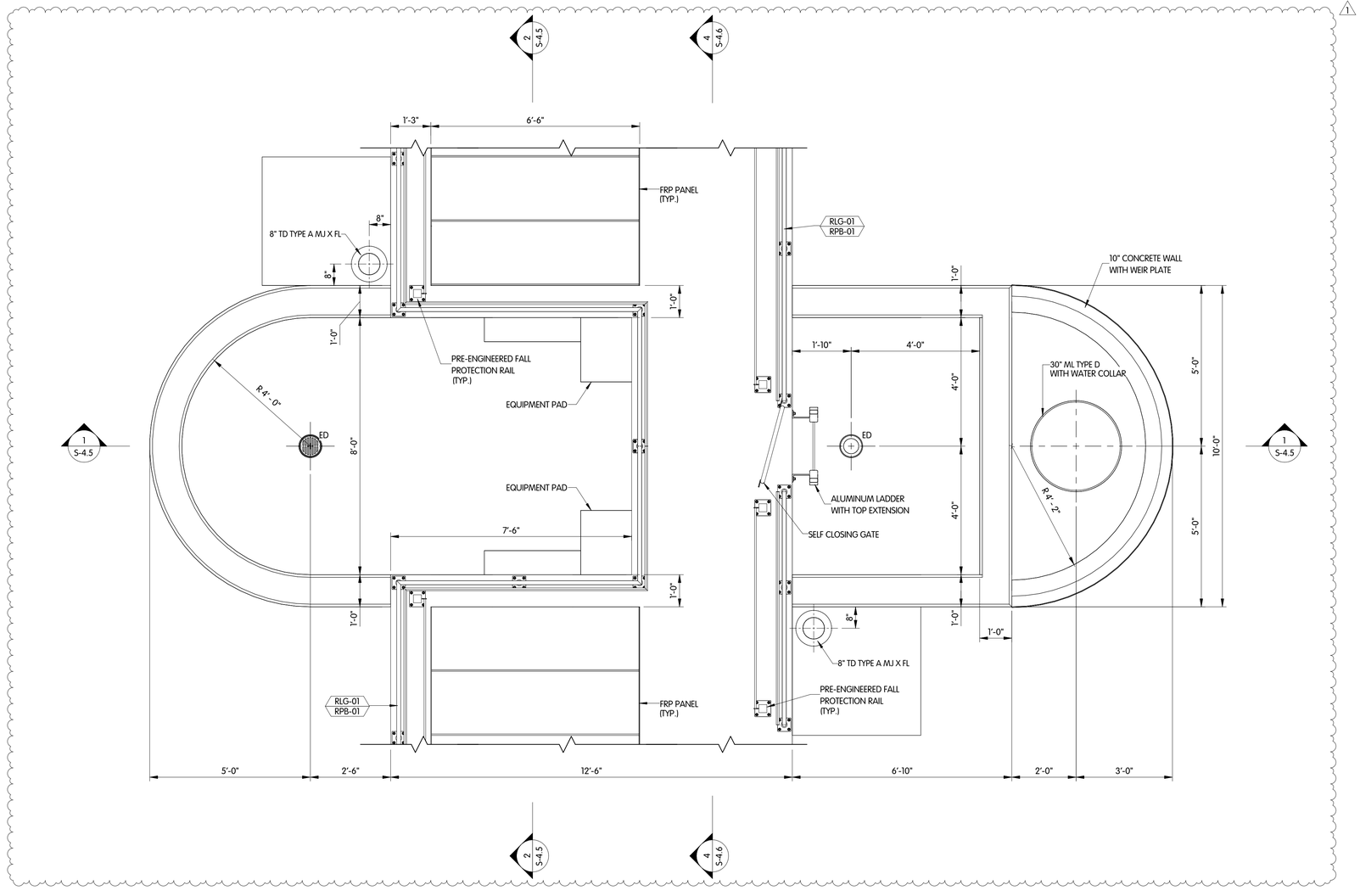
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JOB NO.: 904-8119.002
SCALE: 3/16" = 1'-0"
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DRC	RGW	JDN

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
S-4.1
111 OF 309

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5/18/2026 2:13:28 PM



1 TOP PLAN DETAIL

1/2" = 1'-0"

NORTH

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

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
3/25/2026

OXIDATION DITCH STRUCTURAL TOP PLAN DETAIL

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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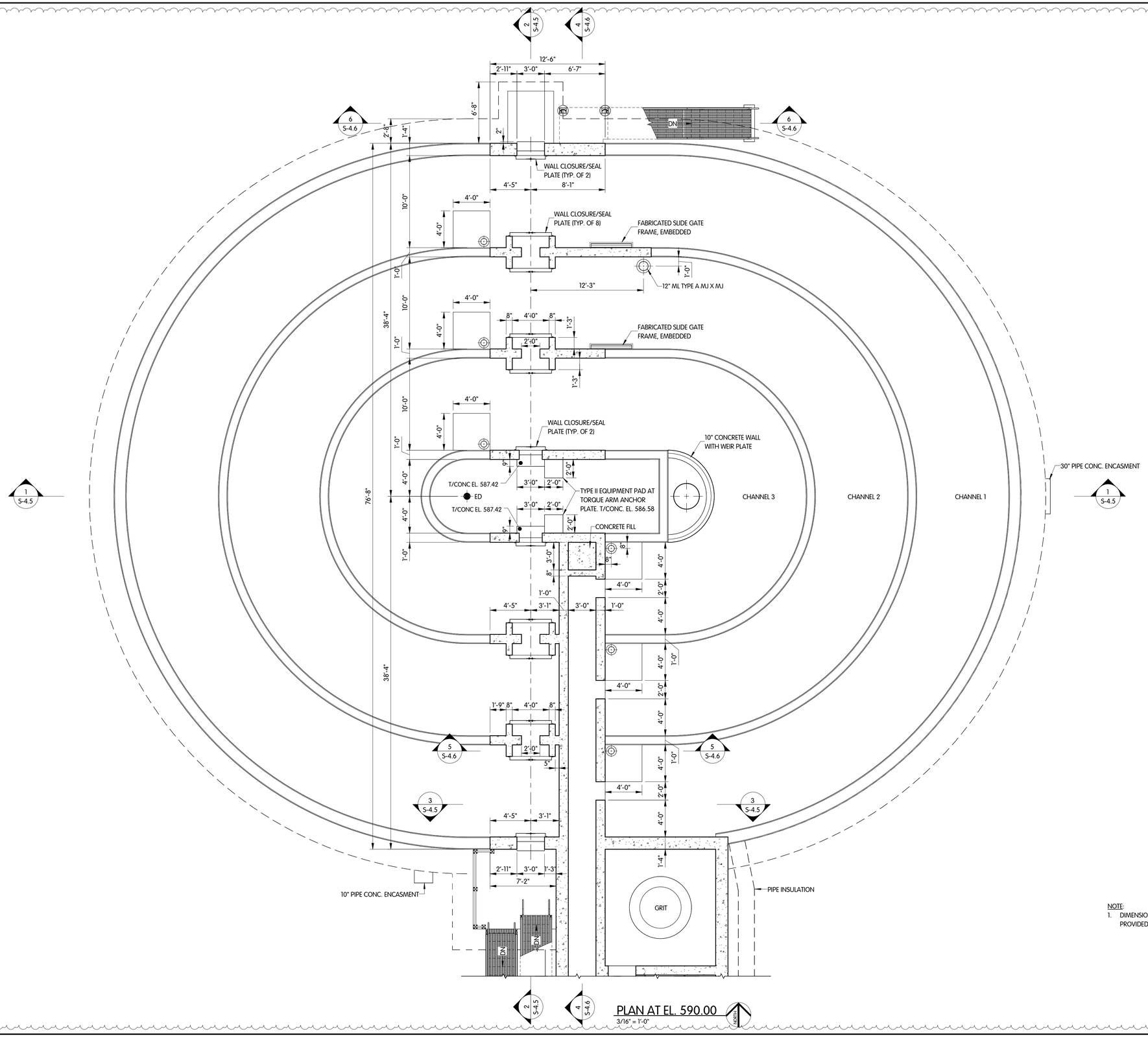
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DESIGNED	DRAWN	CHECKED
DRC	RGW	JDN

STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
S-4.2
112 OF 309

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

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
3/25/2026

OXIDATION DITCH STRUCTURAL PLAN AT EL. 590.00

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/16/26	ADDENDUM 2	JAH

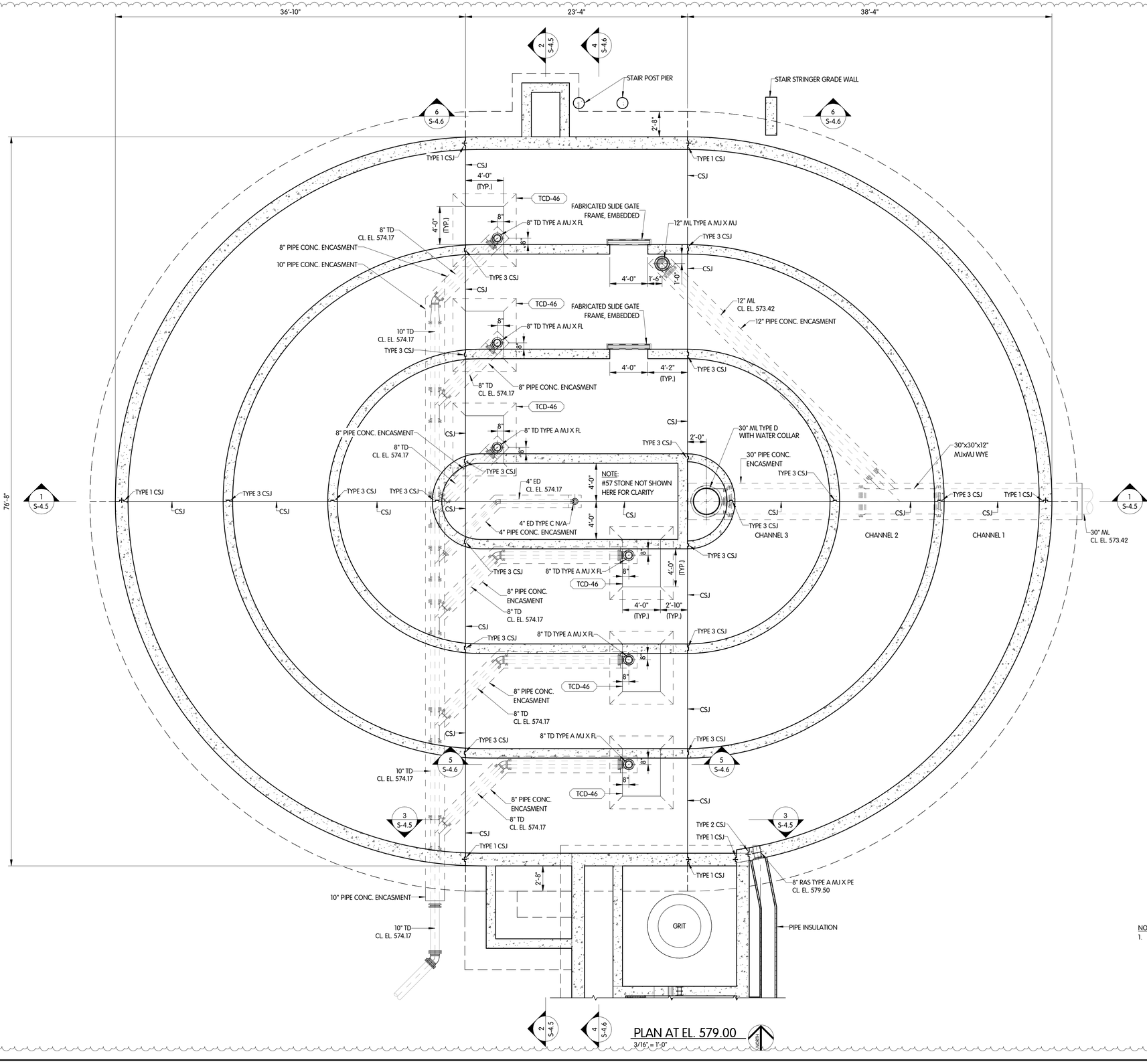
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DRC	RGW	JDN

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
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113 OF 309

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

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
3/25/2026

OXIDATION DITCH
STRUCTURAL
PLAN AT EL. 579.00

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.:	904-8119.002
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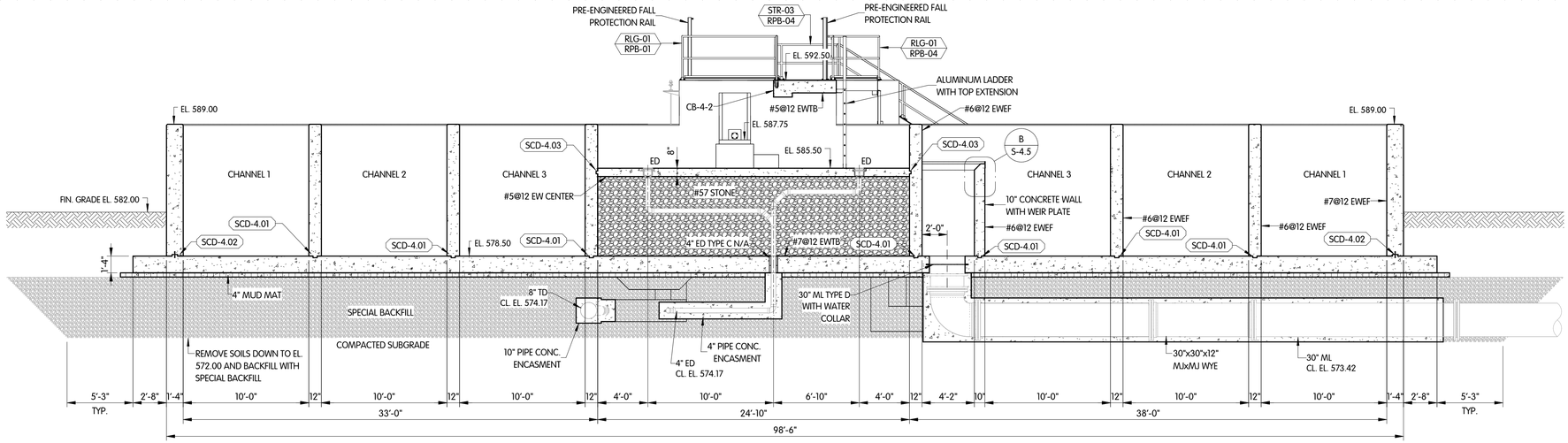
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DRC	RGW	JDN

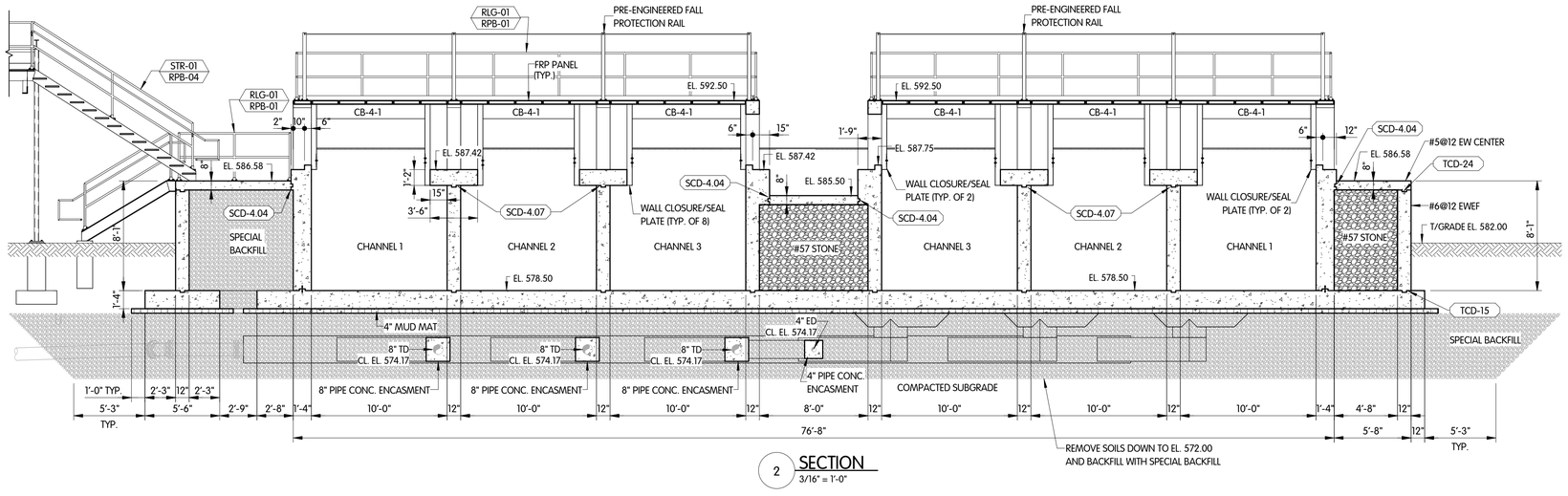
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S-4.4
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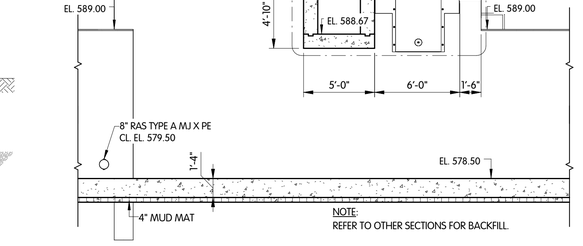
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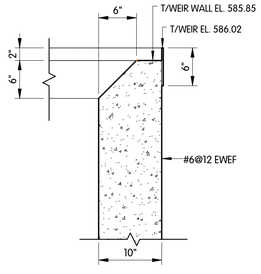
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3/16" = 1'-0"



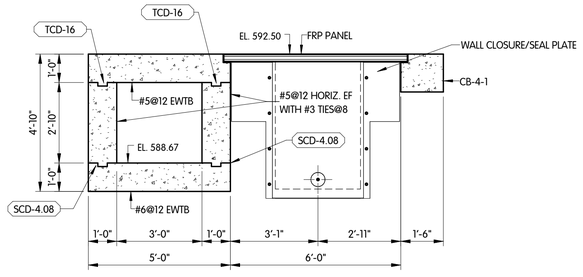
2 SECTION
3/16" = 1'-0"



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.

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED PROFESSIONAL ENGINEER
Jean Pierre Nassaux 3/25/2026

OXIDATION DITCH STRUCTURAL SECTIONS AND DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

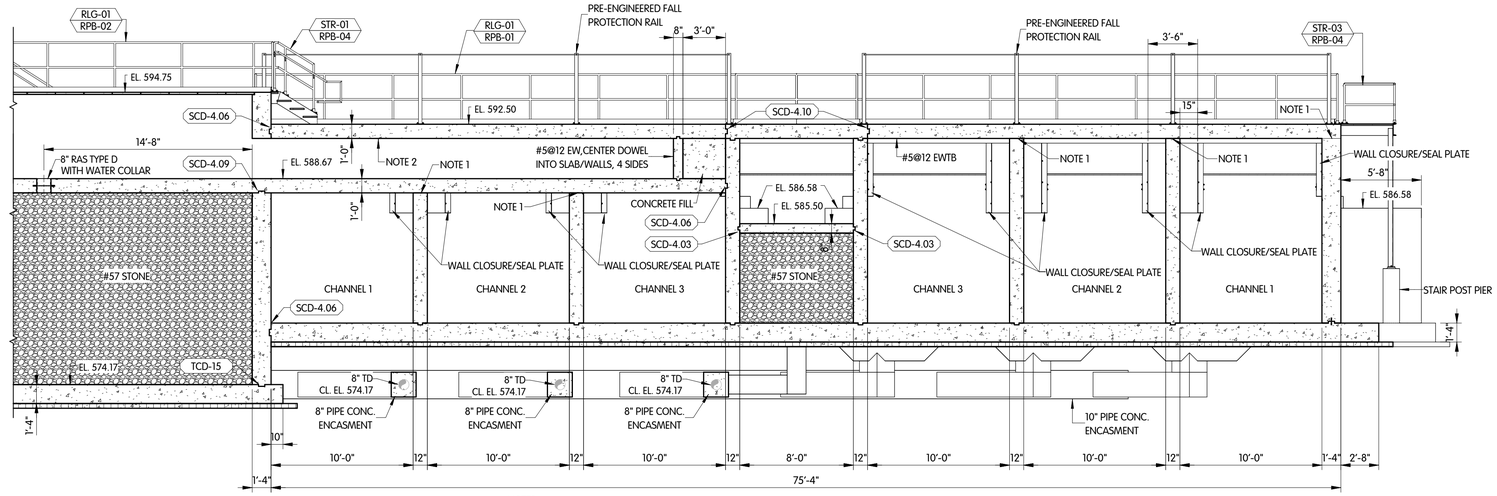
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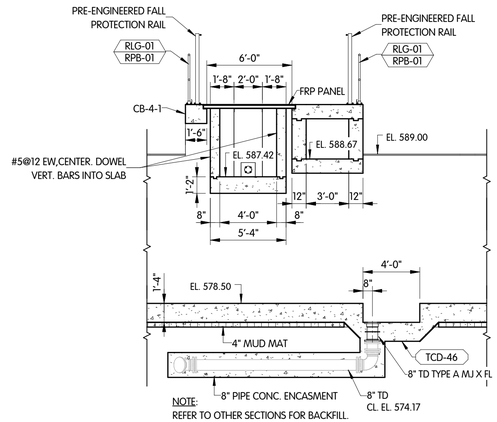
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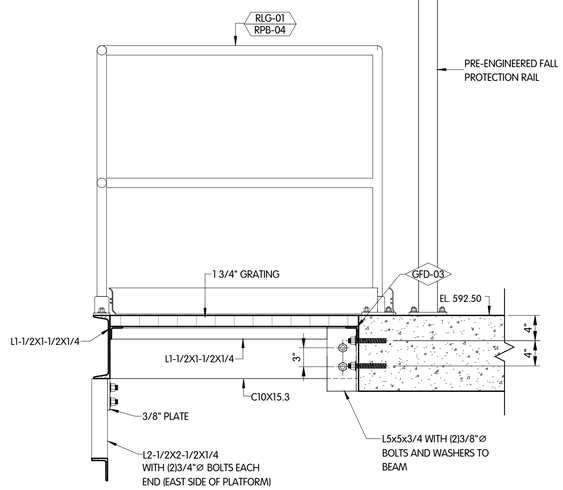
NOTES:
1. TROWEL SMOOTH AND PLACE 10MIL PLASTIC UNDER WALKWAY TO ALLOW WALL TO SLIP (NO KEY OR DOWELS).
2. SACRIFICIAL FORM LINER ON TOP OF FLOW CHANNEL.
3. REFER TO OTHER SECTIONS FOR BACKFILL.

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

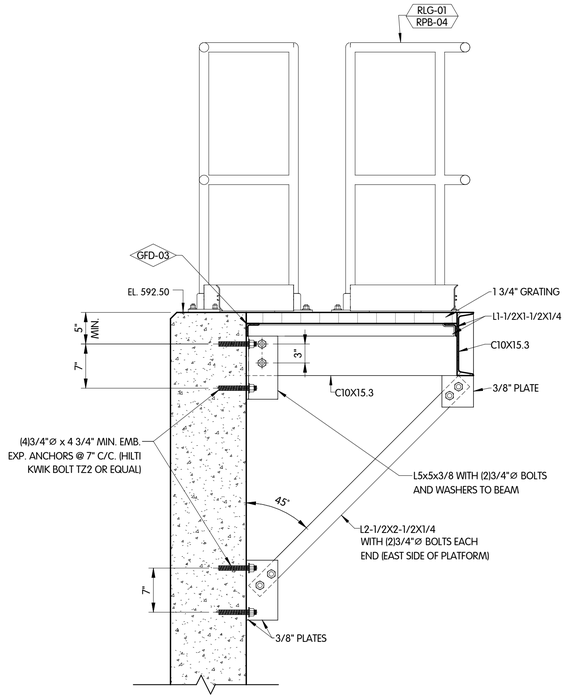


NOTE:
REFER TO OTHER SECTIONS FOR BACKFILL.

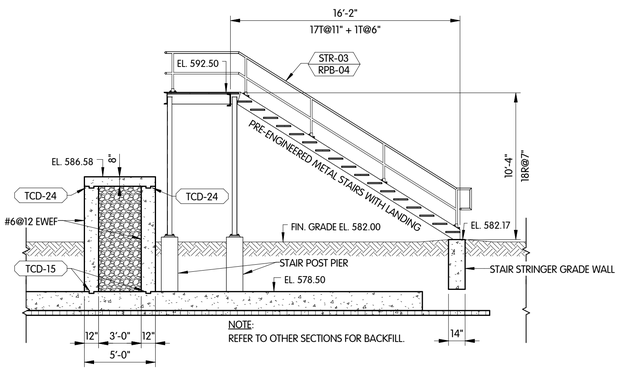
5 SECTION
3/16" = 1'-0"



9 SECTION
1" = 1'-0"

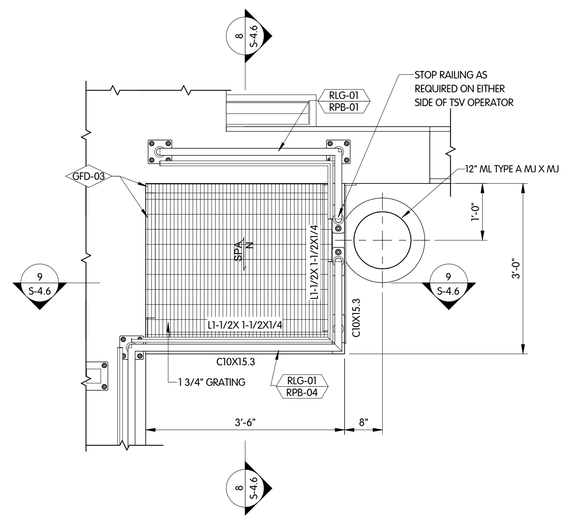


8 SECTION
1" = 1'-0"



NOTE:
REFER TO OTHER SECTIONS FOR BACKFILL.

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



7 PARTIAL PLAN
3/4" = 1'-0"

STATE OF OHIO
JEAN-PIERRE D.
NASSAUX
E-64177
REGISTERED
PROFESSIONAL ENGINEER
Jean Pierre Nassaux
3/25/2026

OXIDATION DITCH STRUCTURAL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

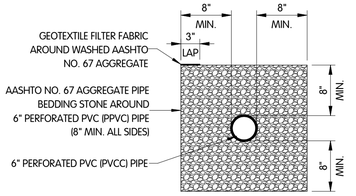
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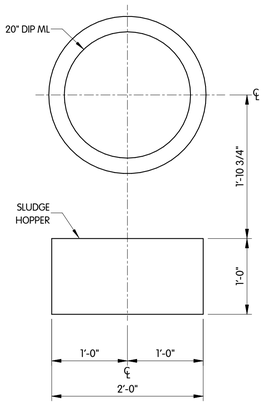
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DRC	RGW	JDN

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S-4.6
116 OF 309

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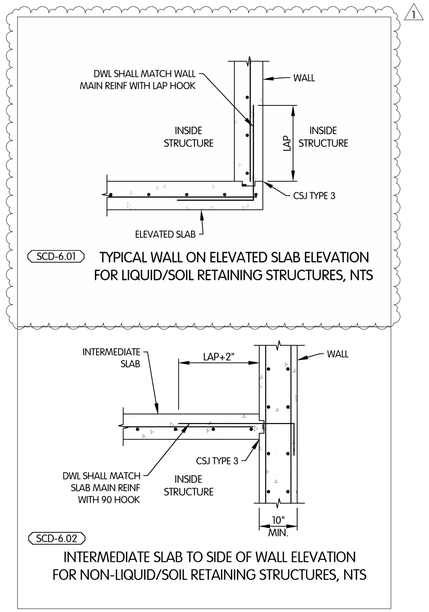


UNDERDRAIN PIPE DETAIL
1" = 1'-0"



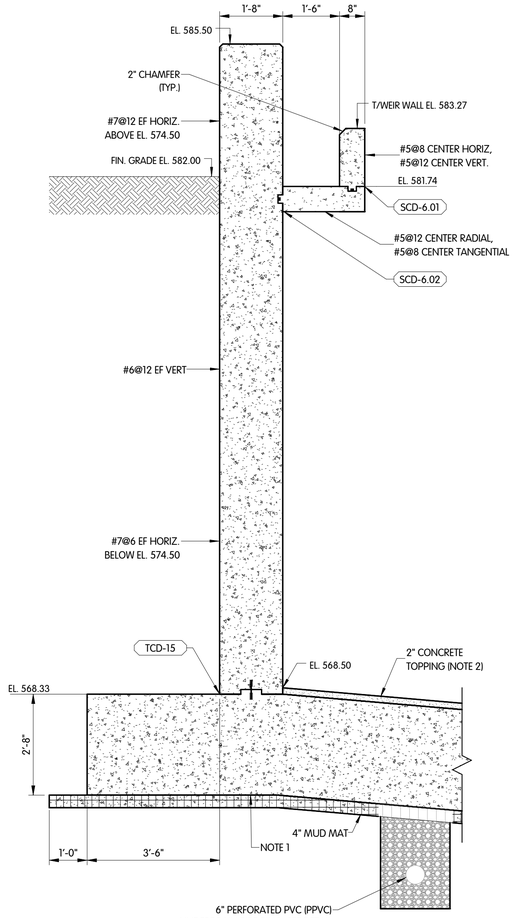
NOTE:
DIMENSIONS SHALL BE CONFIRMED AND PROVIDED BY MANUFACTURER OF EQUIPMENT.

SLUDGE HOPPER DETAIL
1" = 1'-0"

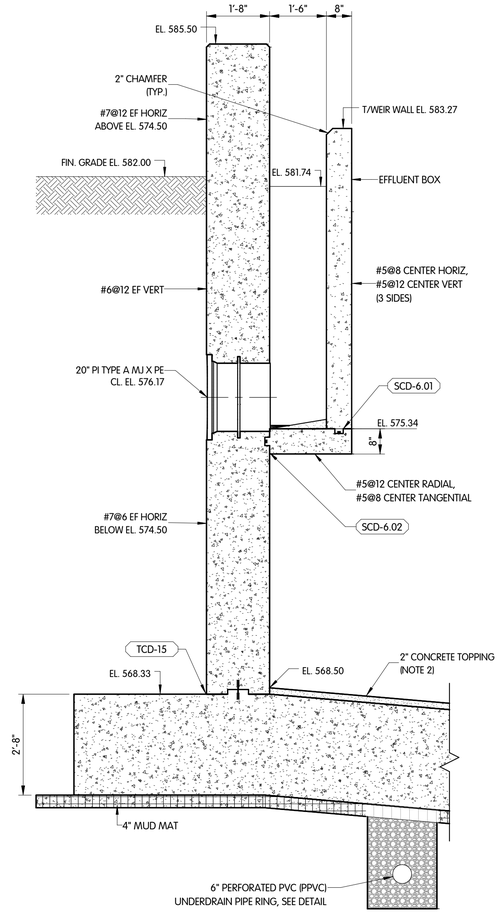


CONCRETE REINFORCEMENT DETAIL NOTES:
SEE THE STRUCTURES PLANS AND SECTIONS FOR MAIN WALL AND SLAB REINFORCEMENT SIZES AND ORIENTATION.
THE DETAIL THICKNESS AND REINFORCING SPACING ARE NOT TO SCALE (NTS).
SEE THE STRUCTURES PLANS OR BUILDING SECTIONS FOR ELEMENT THICKNESS AND REINFORCEMENT SPACINGS.
CONTRACTOR MAY ADD REINFORCING LAPS AS REQUIRED AT CONSTRUCTION JOINTS OR WHEN LENGTH OF WALL EXCEEDS AVAILABLE REINFORCEMENT LENGTHS CONSTRUCTION JOINT LOCATIONS NOT SHOWN ON THE DRAWINGS REQUIRE APPROVAL BY THE ENGINEER.

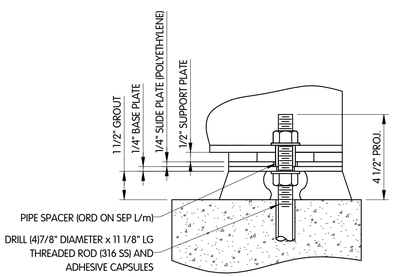
CONCRETE REINFORCEMENT DETAILS
NTS



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

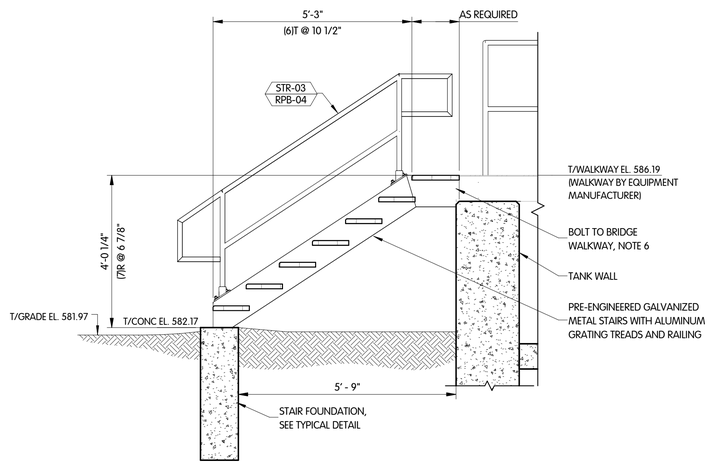


C DETAIL
1/2" = 1'-0"



NOTE:
MINIMUM REQUIREMENTS ARE SHOWN. COORDINATE ANCHOR POINT REQUIREMENTS WITH MANUFACTURER.

WALKWAY SUPPORT DETAIL
3" = 1'-0"



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

NOTES:
1. FOR BASE SLAB REINFORCING, SEE PLAN VIEW.
2. PLACE TOPPING PER SPECIFICATION, TO BE SCREEDED BY MECHANISM FOR PROPER FINAL THICKNESS.
3. SIZE AND LOCATION OF EQUIPMENT ANCHORS PER MANUFACTURERS REQUIREMENTS.
4. SHIFT REINFORCING AS REQUIRED FOR CLEARANCE TO SLUDGE HOPPER.
5. ENCASE PIPES BELOW SLAB IN 6" MIN OF CONCRETE ALL AROUND EXCEPT UNDERDRAIN PIPES.
6. COORDINATE CONNECTION WITH EQUIPMENT MANUFACTURER'S WALKWAY BRIDGE FRAMING.
7. COMPACT EXISTING SUBGRADE UNDERNEATH A STRUCTURES.

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED
PROFESSIONAL ENGINEER
3/25/2026

CLARIFIERS 1 AND 2 STRUCTURAL DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26	ADDENDUM 2

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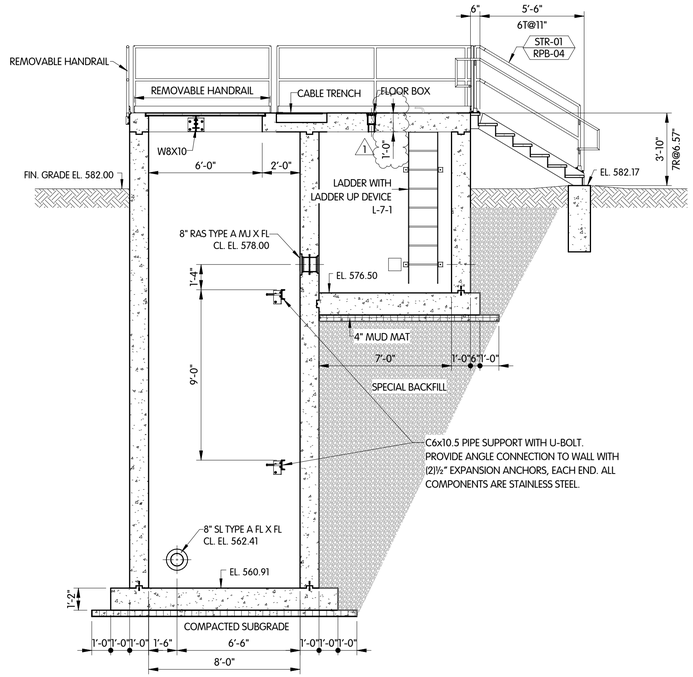
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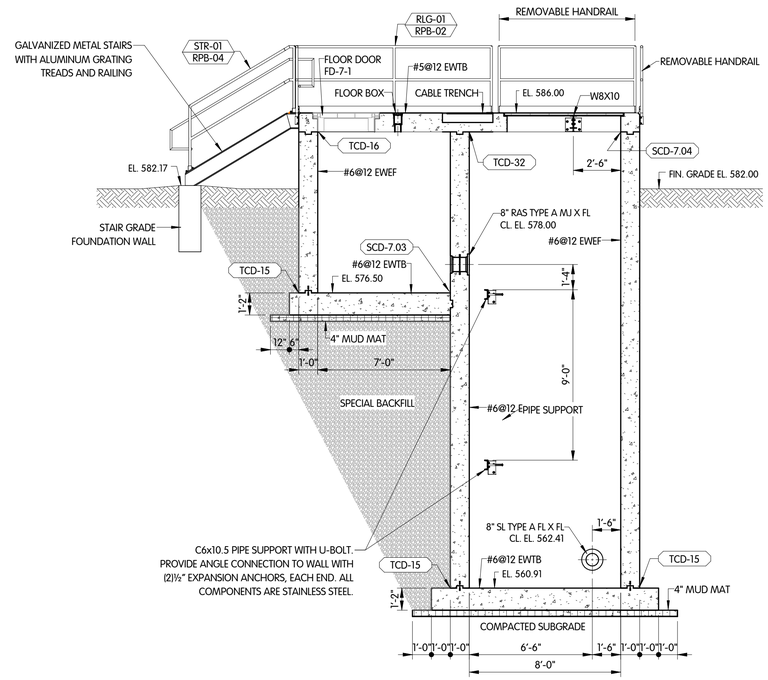
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RRP	RGW	JDN

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S-6.9
129 OF 309

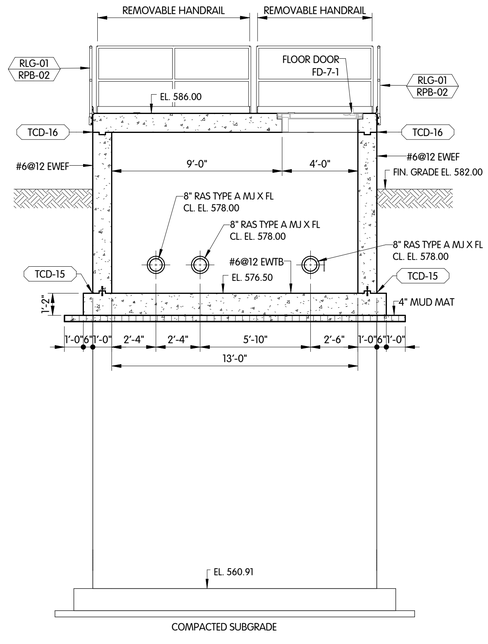
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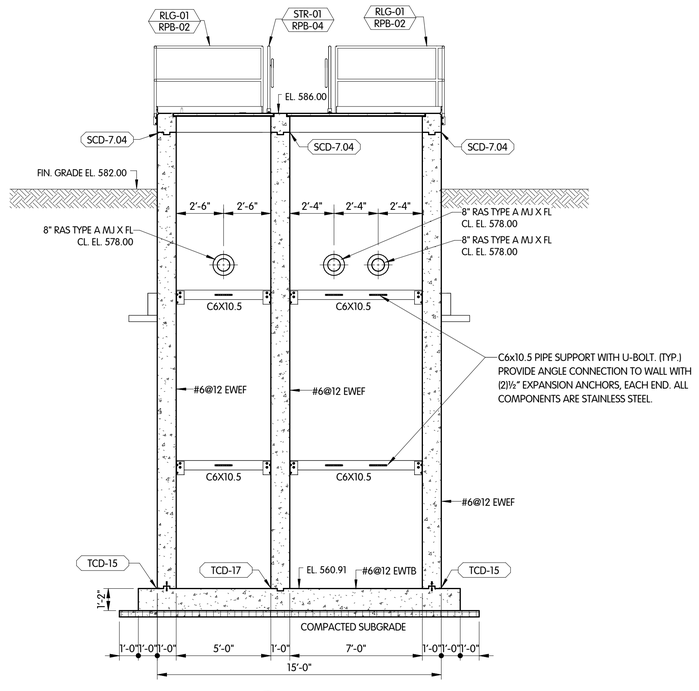
2 SECTION
1/4" = 1'-0"



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



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



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

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED
PROFESSIONAL ENGINEER
Jean Pierre Nassaux 3/25/2026

RAS PUMP STATION STRUCTURAL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/19/26 ADDENDUM 2	JAH

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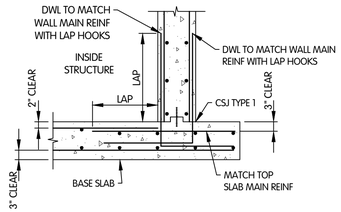
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JDN	RGW	JDN

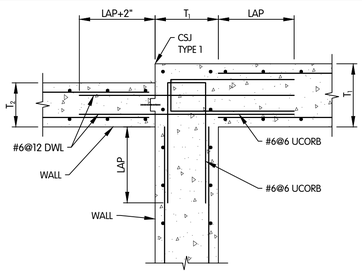
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SHEET NO.
S-7.2
131 OF 309

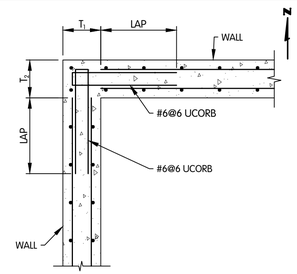
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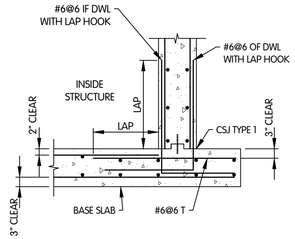
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SCD-8.03 WALL INTERSECTION PLAN, NTS

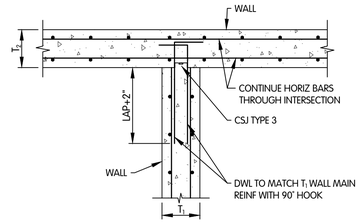


SCD-8.02 WALL CORNER PLAN, NTS

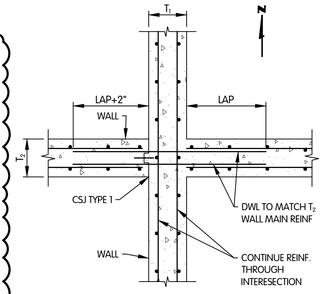


SCD-8.01 WALL ON BASE SLAB ELEVATION, NTS

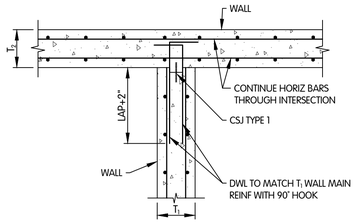
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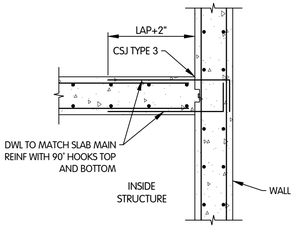
SCD-8.08 WALL INTERSECTION PLAN, NTS



SCD-8.07 WALL CROSS-INTERSECTION PLAN, NTS



SCD-8.06 WALL INTERSECTION PLAN, NTS



SCD-8.05 INTERMEDIATE SLAB ON WALL ELEVATION, NTS

CONCRETE REINFORCEMENT DETAIL NOTES:

1. SEE THE STRUCTURES PLANS AND SECTIONS FOR MAIN WALL AND SLAB REINFORCEMENT SIZES AND ORIENTATION.
2. THE DETAIL THICKNESS AND REINFORCING SPACING ARE NOT TO SCALE (NTS). SEE THE STRUCTURES PLANS OR BUILDING SECTIONS FOR ELEMENT THICKNESS AND REINFORCEMENT SPACINGS.
3. CONTRACTOR MAY ADD REINFORCING LAPS AS REQUIRED AT CONSTRUCTION JOINTS OR WHEN LENGTH OF WALL EXCEEDS AVAILABLE REINFORCEMENT LENGTHS CONSTRUCTION JOINT LOCATIONS NOT SHOWN ON THE DRAWINGS REQUIRE APPROVAL BY THE ENGINEER.

CONCRETE REINFORCEMENT DETAILS

NTS

STATE OF OHIO
JEAN-PIERRE D. NASSAUX
E-64177
REGISTERED
PROFESSIONAL ENGINEER
3/25/2026

U.V.
STRUCTURAL
CONCRETE REINFORCEMENT DETAILS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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2			
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4			
5			

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JDN	RGW	JDN

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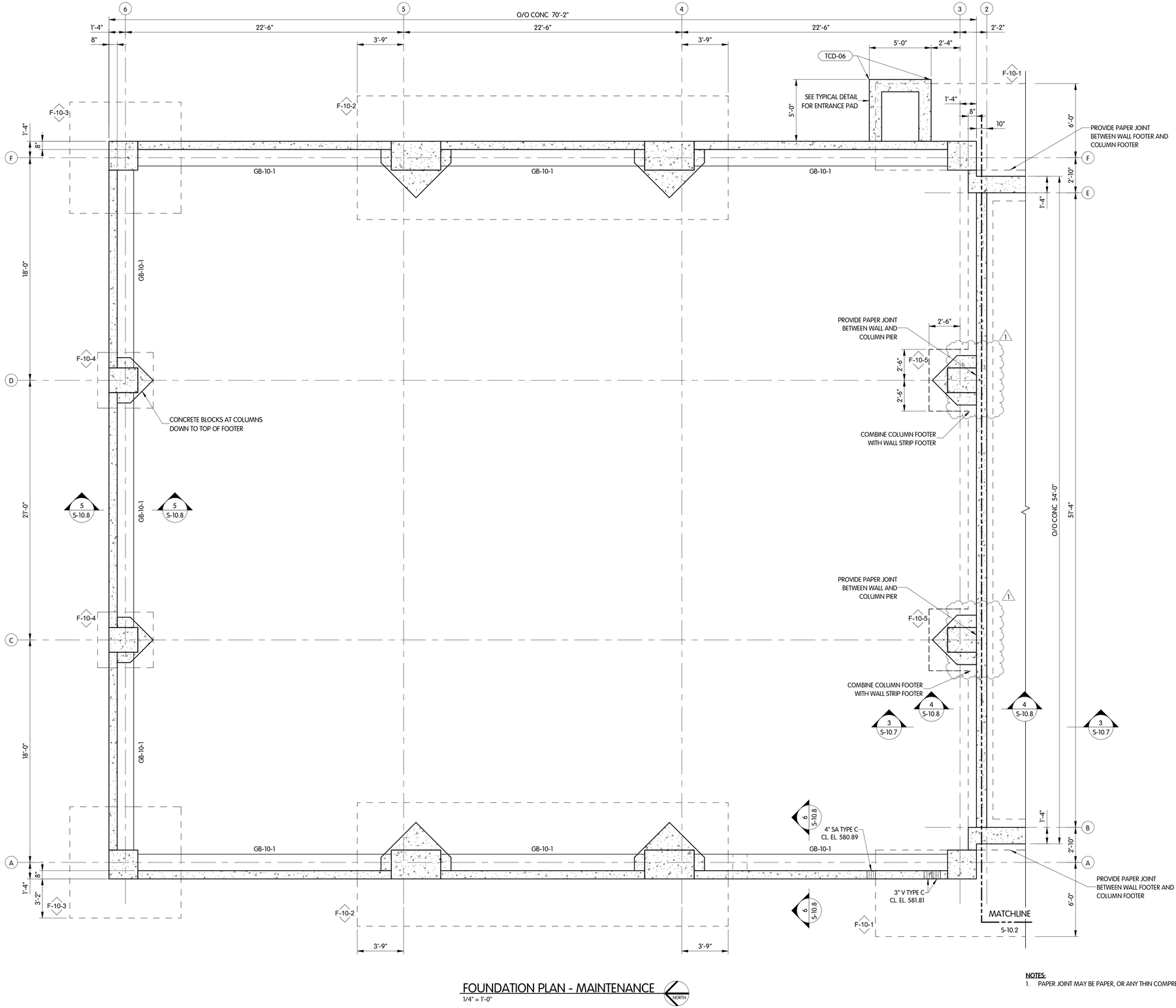
DATE: APRIL 2026

SHEET NO.

S-8.3

135 OF 309

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Last Plotted: 5/18/2026 1:57 PM by RWORLEY
5/18/2026 2:04 PM



FOUNDATION PLAN - MAINTENANCE

1/4" = 1'-0"

NORTH

NOTES:

1. PAPER JOINT MAY BE PAPER, OR ANY THIN COMPRESSIBLE MATERIAL.

STATE OF OHIO
PAUL D MARLOWE
PE.73739
REGISTERED
PROFESSIONAL ENGINEER

ADMINISTRATION/MAINTENANCE BUILDING
STRUCTURAL
FOUNDATION PLAN - MAINTENANCE

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	
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BY: JAH

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

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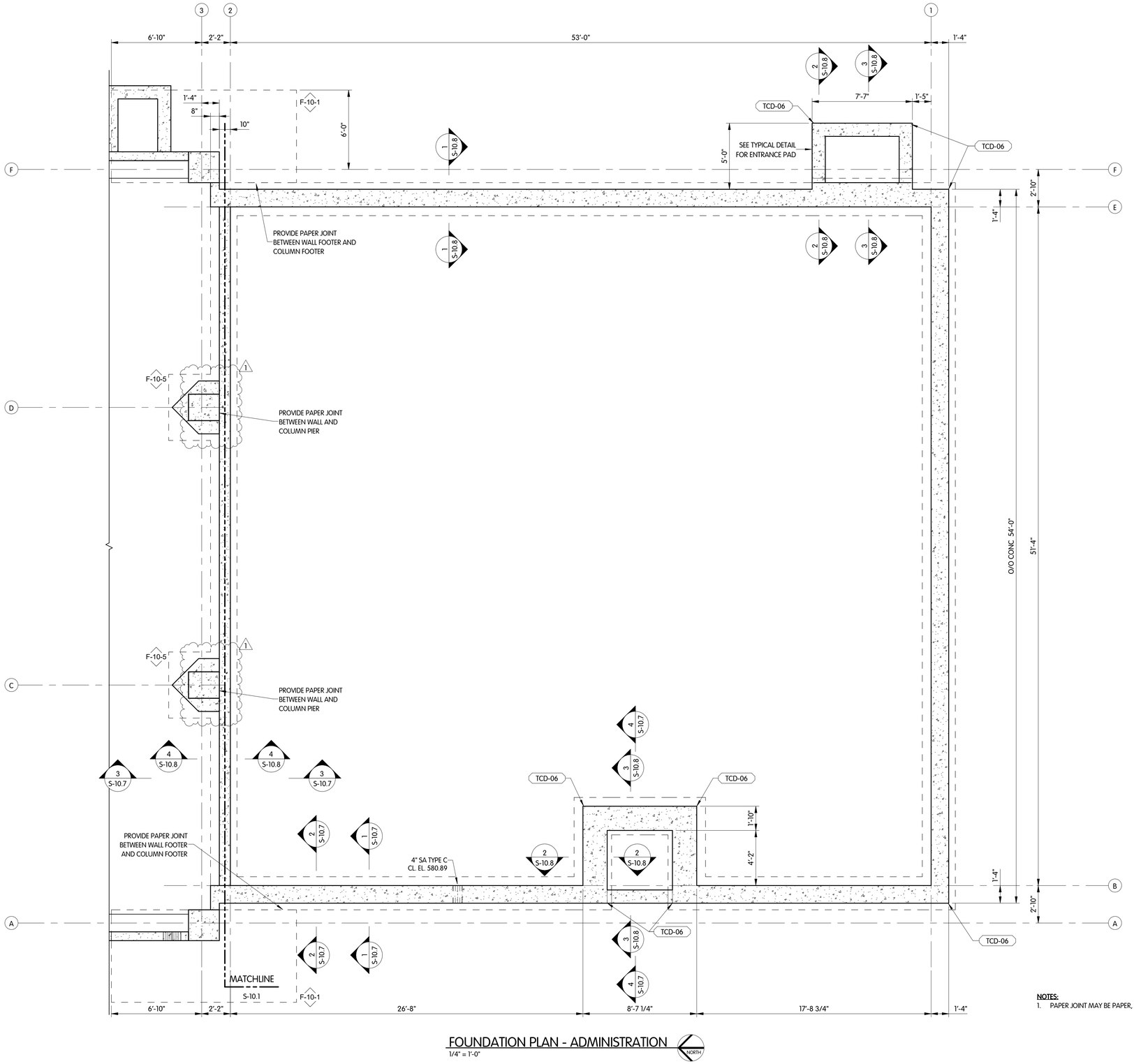
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PDM	RGW	JDN

STATUS: ISSUED FOR BID

DATE: APRIL 2026

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S-10.1
138 OF 309

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NOTES:

1. PAPER JOINT MAY BE PAPER, OR ANY THIS COMPRESSIBLE MATERIAL.

FOUNDATION PLAN - ADMINISTRATION

1/4" = 1'-0"

NORTH

STATE OF OHIO
PAULA D MARLOWE
PE.73739
REGISTERED
PROFESSIONAL ENGINEER

ADMINISTRATION/MAINTENANCE BUILDING
STRUCTURAL
FOUNDATION PLAN - ADMINISTRATION

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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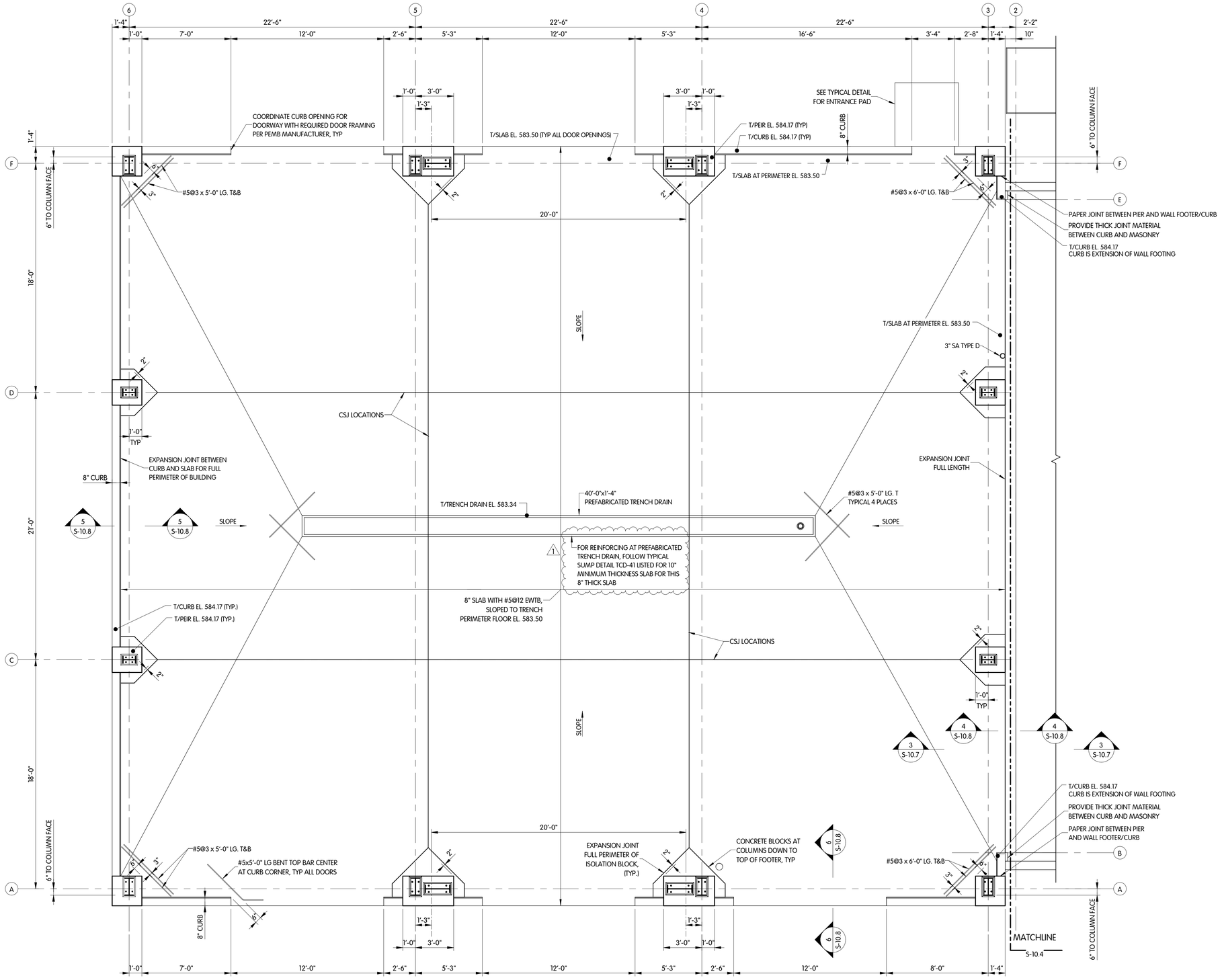
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PDM	RGW	JDN

STATUS: ISSUED FOR BID

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S-10.2
139 OF 309

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NOTES:

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PLAN AT EL. 583.50 - MAINTENANCE

1/4" = 1'-0"

NORTH

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STATE OF OHIO
PAULA D MARLOWE
PE.73739
REGISTERED
PROFESSIONAL ENGINEER

ADMINISTRATION/MAINTENANCE BUILDING STRUCTURAL
PLAN AT EL. 583.50 - MAINTENANCE

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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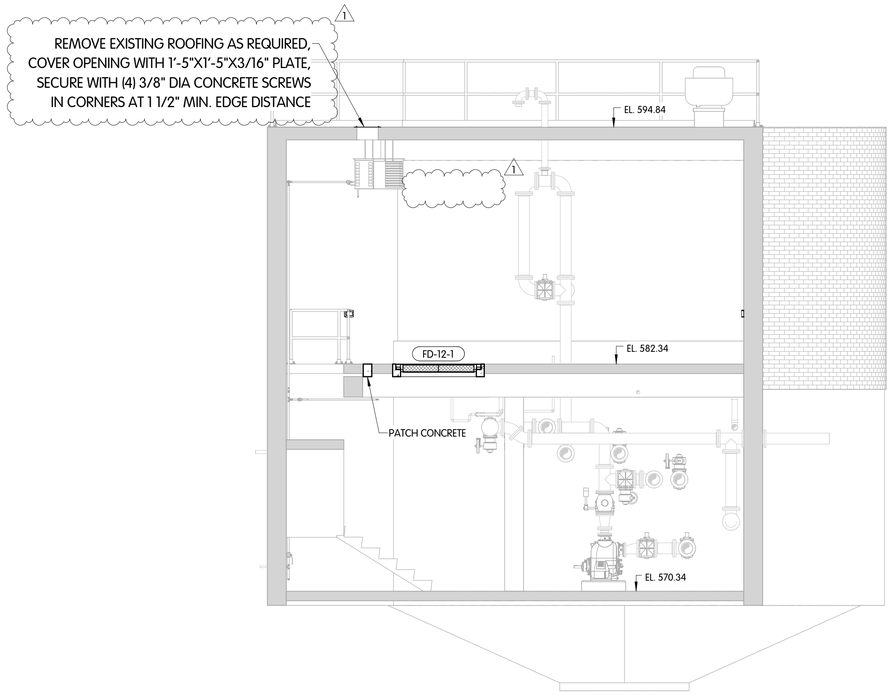
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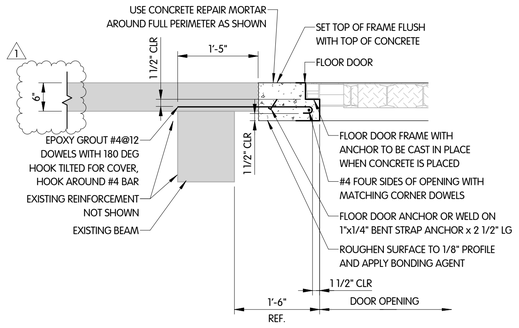
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PDM	RGW	JDN

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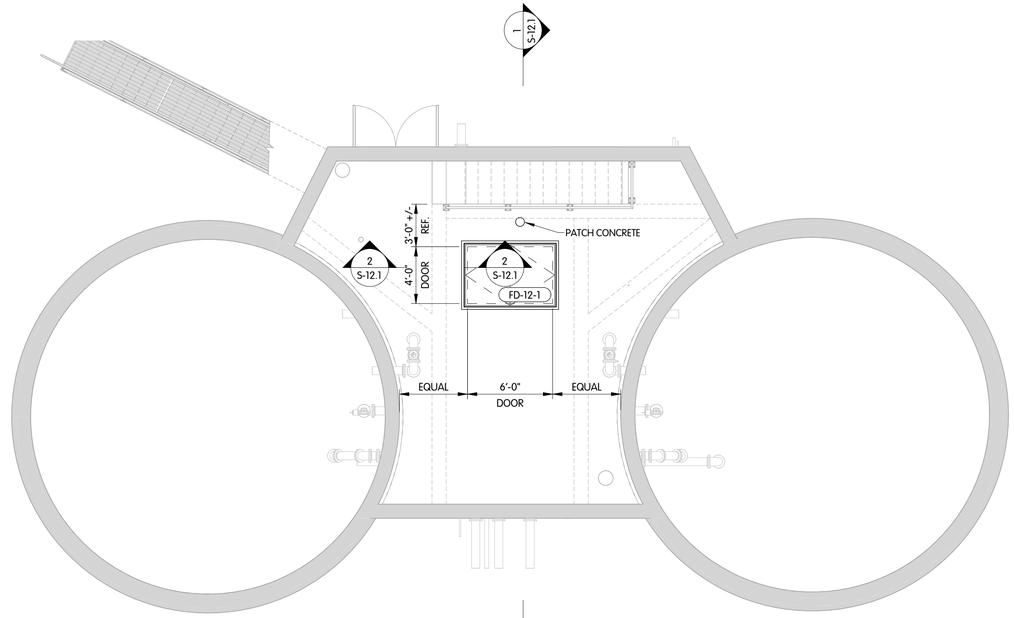
SHEET NO.
S-10.3
140 OF 309



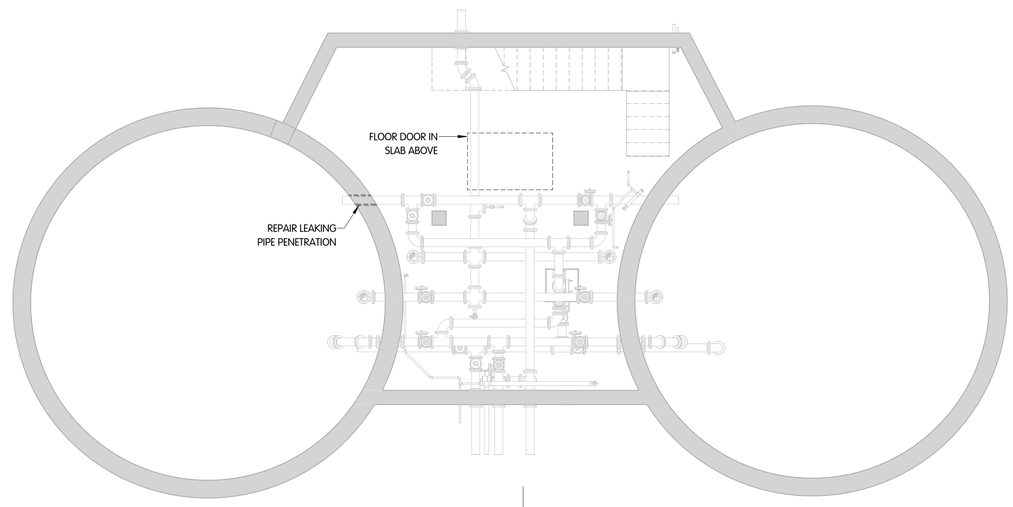
1 SECTION
1/4" = 1'-0"



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



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



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

STATE OF OHIO
PAUL D MARLOWE
PE.73739
REGISTERED
PROFESSIONAL ENGINEER

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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151 OF 309

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5/18/2026 2:14:54 PM

FABRICATED SLIDE GATE SCHEDULE

TAG / ID	NOMINAL WIDTH x GATE HEIGHT (IN.)	FRAME TYPE	MOUNT TYPE	BOTTOM TYPE	TOP SEAL	MATERIAL	OPERATOR TYPE	RIGHT ANGLE GEARBOX	OPERATING STAND	ACTUATION	NORMAL OPERATING SEATING HEAD (FT)	NORMAL OPERATING UNSEATING HEAD (FT)	NOTES
2-HEADWORKS													
FSG-2-1	36" X 102"	NSC	EMB	EMB	NO	SS	MO	YES	FS	MOD	8.5	8.5	
FSG-2-2	36" X 102"	NSC	EMB	EMB	NO	SS	MO	YES	FS	MOD	8.5	8.5	
FSG-2-3	36" X 102"	NSC	EMB	EMB	NO	SS	MO	YES	FS	MOD	8.5	8.5	
FSG-2-4	36" X 102"	NSC	EMB	EMB	NO	SS	MO	YES	FS	MOD	8.5	8.5	
FSG-2-5	36" X 102"	NSC	EMB	EMB	NO	SS	MO	YES	FS	MOD	8.5	8.5	
FSG-2-6	48" X 84"	NSC	WM	WM	YES	SS	FB	YES	N/A	N/A	8.5	8.5	DOWNWARD ACTING
3-GRIT													
FSG-3-1	36" X 40"	SC	EMB	EMB	NO	SS	MO	YES	N/A	O-C	4.0	3.5	
FSG-3-2	36" X 40"	SC	EMB	EMB	NO	SS	MO	YES	N/A	O-C	4.0	3.5	
4-OXIDATION DITCH													
FSG-4-1	24" X 34"	SC	WM	WM	YES	SS	MO	YES	N/A	O-C	0	2.5	
FSG-4-2	24" X 34"	SC	WM	WM	YES	SS	MO	YES	N/A	O-C	0	2.5	
FSG-4-3	24" X 34"	SC	WM	WM	YES	SS	MO	YES	N/A	O-C	0	2.5	
FSG-4-4	48" X 48"	NSC	WM	EMB	YES	SS	MO	YES	FS/WMS	O-C	10	10	
FSG-4-5	48" X 48"	NSC	WM	EMB	YES	SS	MO	YES	FS	O-C	10	10	
5-SPLITTER BOX													
FSG-5-1	38" X 36"	SC	WM	WM	NO	SS	HW	YES	N/A	O-C	0	3.6	
FSG-5-2	38" X 36"	SC	WM	WM	NO	SS	HW	YES	N/A	O-C	0	3.6	
8-UV													
FSG-8-1	24" X 48"	SC	WM	WM	YES	SS	MO	YES	N/A	O-C	8	6	
FSG-8-2	36" X 36"	SC	WM	WM	YES	SS	MO	YES	N/A	O-C	8	9	
18-EQPS													
FSG-18-1	36" X 36"	NSC	WM	EMB	YES	SS	MO	YES	FS/WMS	O-C	4.25	8	
100-MH SA-1													
100-FSG-1	42" X 48"	NSC	WM	EMB	YES	SS	MO	YES	FS	O-C			

1

TAG/ID
FSG - FABRICATED SLIDE GATE

MATERIAL
ALUM - ALUMINUM
SS - STAINLESS STEEL

FRAME TYPE
SC - SELF CONTAINED
NSC - NON SELF CONTAINED

MOUNT TYPE
CM - CHANNEL MOUNT
EMB - EMBEDDED
WM - WALL MOUNT

BOTTOM TYPE
CM - CHANNEL MOUNT
EMB - EMBEDDED
WM - WALL MOUNT

OPERATOR TYPE
CH - CHAIN
HW - HAND WHEEL
MO - MOTOR OPERATED
ON - OPERATING NUT

OPERATING STAND TYPE
FB - FLOOR BOX
FS - FLOOR STAND
N/A - NOT APPLICABLE
OP - OFFSET PEDESTAL
WMS - WALL MOUNT SUPPORT BRACKET

ACTUATION
MOD - MODULATING
N/A - NOT APPLICABLE
O-C - OPEN-CLOSE

SLUICE / TIDE GATE SCHEDULE

TAG / ID	NOMINAL WIDTH x GATE HEIGHT OR GATE DIA. (IN.)	MOUNT TYPE	FRAME TYPE	BOTTOM TYPE	SEAL	MATERIAL	OPERATOR	RIGHT ANGLE GEARBOX	OPERATING STAND	ACTUATOR	NORMAL OPERATING SEATING HEAD (FT)	NORMAL OPERATING UNSEATING HEAD (FT)	NOTES
9-OUTFALL													
TG-9-1	36"	C	N/A	N/A	N/A	CI	N/A	N/A	N/A	N/A	2	0.5	CL. EL. 574.75

TAG/ID
SG - SLUICE GATE
TG - TIDE GATE

MATERIAL
CI - CAST IRON
SS - STAINLESS STEEL

MOUNT TYPE
C - CIRCULAR, FLANGED
CF - CIRCULAR, FLAT
R - RECTANGULAR, FLANGED
RF - RECTANGULAR, FLAT
SC - SELF CONTAINED
NSC - NON SELF CONTAINED

FRAME TYPE
CM - CHANNEL MOUNT
EMB - EMBEDDED
WM - WALL MOUNT

BOTTOM TYPE
CM - CHANNEL MOUNT
EMB - EMBEDDED
WM - WALL MOUNT

OPERATOR TYPE
CH - CHAIN
HW - HAND WHEEL
MO - MOTOR OPERATED
ON - OPERATING NUT

OPERATING STAND TYPE
FB - FLOOR BOX
FS - FLOOR STAND
N/A - NOT APPLICABLE
OP - OFFSET PEDESTAL
WMS - WALL MOUNT SUPPORT BRACKET

ACTUATION
MOD - MODULATING
N/A - NOT APPLICABLE
O-C - OPEN-CLOSE

PIPE SERVICE LEGEND

ABBREVIATION	SYSTEM NAME
AA	AERATION AIR
A	AIR
AL	ALUM
CA	COMPRESSED AIR
CON	CONDENSATE DRAIN
DS	DIGESTER SLUDGE
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DTW	DOMESTIC TEMPERED WATER
SA	DOMESTIC WASTE
ED	EQUIPMENT DRAIN
GT	GRIT
GW	GROUND WATER
HWR	HOT WATER RETURN
ML	MIXED LIQUOR
NG	NATURAL GAS
NPW	NON-POTABLE WATER
P	POLYMER
PE	PRIMARY EFFLUENT
PI	PRIMARY INFLUENT
PS	PRIMARY SLUDGE
RS	RAW SEWAGE
RW	RAW WATER
REF	REFRIGERANT

VALVE SCHEDULE

TAG/ID	SIZE	TYPE	CONNECTION	OPERATOR TYPE	RIGHT ANGLE GEARBOX	OPERATING STAND	ACTUATOR	SERVICE
2-HEADWORKS								
CV-2-1	12"	CV	FL	N/A	N/A	N/A	O-C	RS
CV-2-2	12"	CV	FL	N/A	N/A	N/A	O-C	RS
CV-2-3	12"	CV	FL	N/A	N/A	N/A	O-C	RS
CV-2-4	8"	CV	FL	N/A	N/A	N/A	O-C	RS
CV-2-5	8"	CV	FL	N/A	N/A	N/A	O-C	RS
PV-2-1	12"	PV	FL	ON	N/A	FB	O-C	RS
PV-2-2	12"	PV	FL	ON	N/A	FB	O-C	RS
PV-2-3	12"	PV	FL	ON	N/A	FB	O-C	RS
PV-2-4	8"	PV	FL	ON	N/A	FB	O-C	RS
PV-2-5	8"	PV	FL	ON	N/A	FB	O-C	RS
3-GRIT								
CV-3-1	4"	CV	FL	N/A	N/A	N/A	O-C	GT
PV-3-1	4"	PV	FL	L	NO	N/A	O-C	GT
PV-3-2	4"	PV	FL	HW	YES	N/A	O-C	GT
PV-3-3	8"	PV	FL	MO	NO	N/A	O-C	RAS
PV-3-4	8"	PV	FL	MO	NO	N/A	O-C	RAS
PV-3-5	8"	PV	FL	MO	NO	N/A	O-C	RAS
PV-3-6	6"	PV	FL	MO	NO	N/A	O-C	WAS
4-OXIDATION DITCH								
MV-4-1	8"	MV	FL	ON	NO	N/A	O-C	TD
MV-4-2	8"	MV	FL	ON	NO	N/A	O-C	TD
MV-4-3	8"	MV	FL	ON	NO	N/A	O-C	TD
MV-4-4	8"	MV	FL	ON	NO	N/A	O-C	TD
MV-4-5	8"	MV	FL	ON	NO	N/A	O-C	TD
MV-4-6	8"	MV	FL	ON	NO	N/A	O-C	TD
TSV-4-1	12"	TSV	FL	HW	YES	FS/WMS	O-C	ML
7-RAS PUMP STATION								
CV-7-1	8"	CV	FL	N/A	N/A	N/A	N/A	RAS
CV-7-2	8"	CV	FL	N/A	N/A	N/A	N/A	RAS
CV-7-3	8"	CV	FL	N/A	N/A	N/A	N/A	RAS
PV-7-1	8"	PV	FL	ON	NO	FB	O-C	RAS
PV-7-2	8"	PV	FL	ON	NO	FB	O-C	RAS
PV-7-3	8"	PV	FL	ON	NO	FB	O-C	RAS
PV-7-4	8"	PV	FL	ON	NO	N/A	O-C	SL
PV-7-5	8"	PV	FL	ON	NO	N/A	O-C	SL
PV-7-6	8"	PV	FL	ON	NO	N/A	O-C	SL
7-UV								
BV-7-1	4"	BV	PVC	L	NO	N/A	O-C	AA
11-SLUDGE HANDLING BUILDING								
PV-11-1	4"	PV	FL	L	NO	N/A	O-C	SL
14-BLOWER BUILDING								
PV-14-1	4"	PV	FL	HW	YES	N/A	O-C	DS

NOTES:
1. 4" AND LARGER VALVES SCHEDULED ONLY. VALVES SMALLER THAN 4" NOT SCHEDULED.

TAG/ID
BV - BALL VALVE
BFV - BUTTERFLY VALVE
CV - CHECK VALVE
GV - GATE VALVE
GLV - GLOBE VALVE
KV - KNIFE VALVE
MV - MUD VALVE
NV - NEEDLE VALVE
PNV - PINCH VALVE
PV - PLUG VALVE
TSV - TELESCOPING VALVE

OPERATOR TYPE
CH - CHAIN
HW - HANDWHEEL
L - LEVER
MO - MOTOR OPERATED
ON - OPERATING NUT

OPERATING STAND TYPE
FB - FLOOR BOX
FS - FLOOR STAND
N/A - NOT APPLICABLE
OP - OFFSET PEDESTAL
WMS - WALL MOUNT SUPPORT
VB - VALVE BOX

ACTUATION
MOD - MODULATING
N/A - NOT APPLICABLE
O-C - OPEN-CLOSE

SIGNS

A — DANGER — HAZARDOUS CHEMICALS

B — CAUTION — Non-potable water. Do not drink.

C — CAUTION — CLEARANCE _____FT. _____IN.

D — CAUTION — THIS EQUIPMENT STARTS AND STOPS AUTOMATICALLY

E — FIRE

F — NOTICE — NO TRESPASSING

G — NOTICE — ALL VISITORS MUST REGISTER AT OFFICE

H — DANGER — 480 VOLTS

I — DANGER — CONFINED SPACE AUTHORIZED PERSONNEL ONLY

J — DANGER — HIGH VOLTAGE KEEP OUT

K — DANGER — MEN WORKING ABOVE

L — CAUTION — SLIPPERY WHEN WET

M — DANGER — FALL HAZARD

N — NOTICE — PERSONAL PROTECTION REQUIRED IN THIS AREA

O — CAUTION — LOCK OUT EQUIPMENT WHEN WORK IS BEING PERFORMED

P — DANGER — UNAUTHORIZED PERSONNEL KEEP OUT

Q — DANGER — NO SMOKING WITHIN 25 FEET

R — DANGER — UV LIGHT HAZARD AVOID LOOKING DIRECTLY AT LIGHT

S — Maximum Floor Loading _____psf

T — WARNING MAXIMUM BEAM LOAD CAPACITY LBS DO NOT EXCEED RATING

U — EMERGENCY SHOWER EMERGENCY EYE WASH

SIGN TAG DESCRIPTION

E — LOCATED AT ALL FIRE HYDRANTS

F — QUANTITY AS DIRECTED BY OWNER (PERIMETER FENCE)

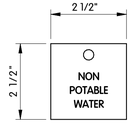
G — LOCATED AT MAIN GATE

H — LOCATED AT GENERATORS AND TRANSFORMERS

J — LOCATED AT MAIN TRANSFORMER AND AT GENERATOR

Q — LOCATED AT GENERATOR

TAG DETAIL - NON POTABLE WATER



LOCATED AT ALL HOSE BIBS AND HYDRANTS INSIDE AND OUTSIDE OF STRUCTURES

NOTE:
SCHEDULES ARE NOT GUARANTEED TO BE COMPLETE. ALL ITEMS SHOWN ON THE DRAWINGS OR SPECIFIED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR WHETHER OR NOT LISTED IN THE FOLLOWING SCHEDULE.

STATE OF OHIO JOSEPH A. HENRY E-43606 REGISTERED PROFESSIONAL ENGINEER

PIPING & EQUIPMENT
LEGENDS, ABBREVIATIONS, SCHEDULES, AND NOTES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26	JAH

ADDENDUM 2
REVISIONS AFTER ISSUED FOR BID

Jones & Henry Engineers, Ltd.
Fluid thinking®.
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JOB NO.: 904-8119.002
SCALE: NO SCALE
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

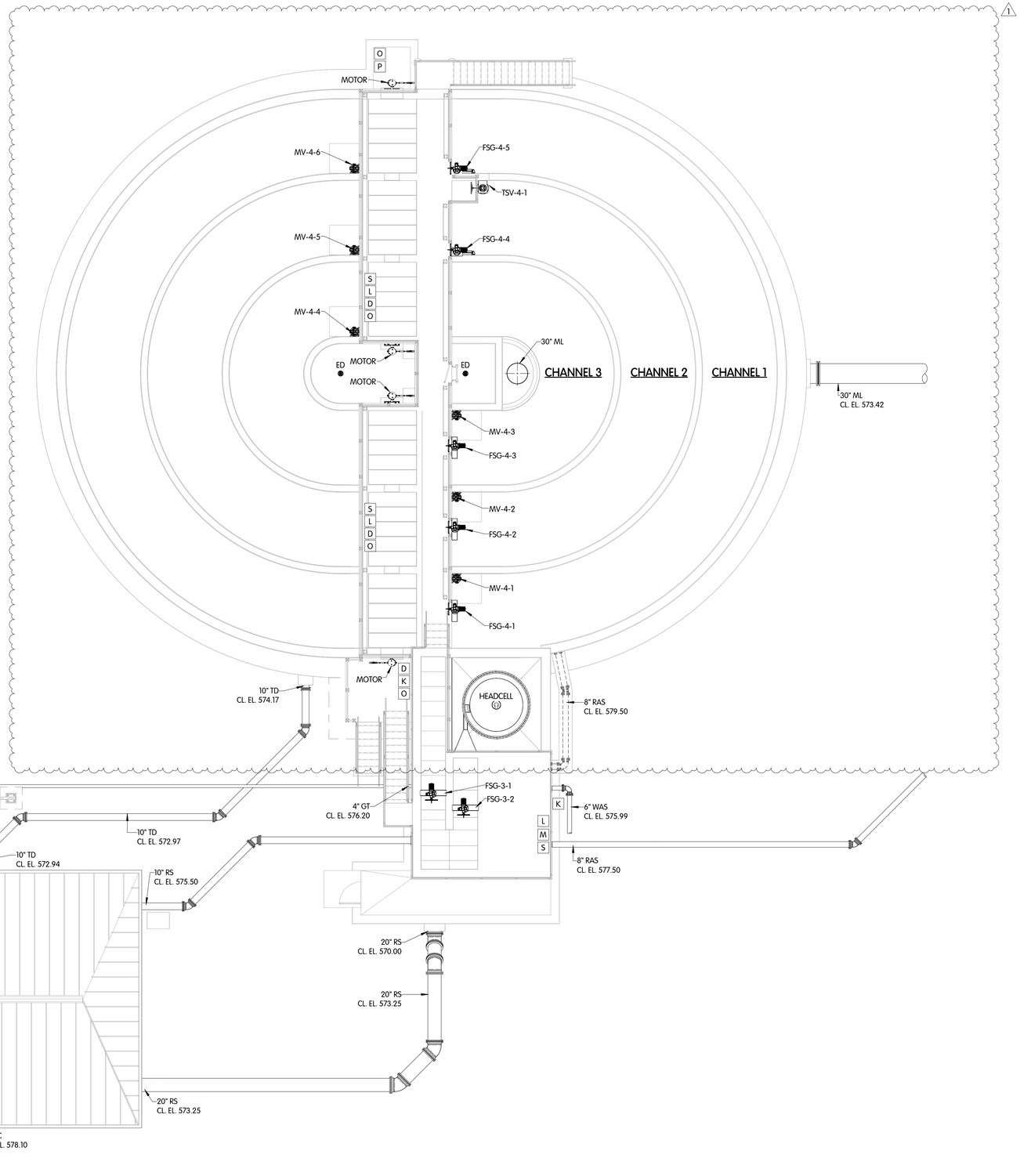
DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
PE-0.1
157 OF 309

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ADMINISTRATION/MAINTAINANCE



OVERALL PLAN
1/8" = 1'-0"

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STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

GRIT/OXIDATION DITCH PIPING & EQUIPMENT OVERALL PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26 ADDENDUM 2	JAH
	REVISIONS AFTER ISSUED FOR BID	

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JOB NO.: 904-8119.002

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

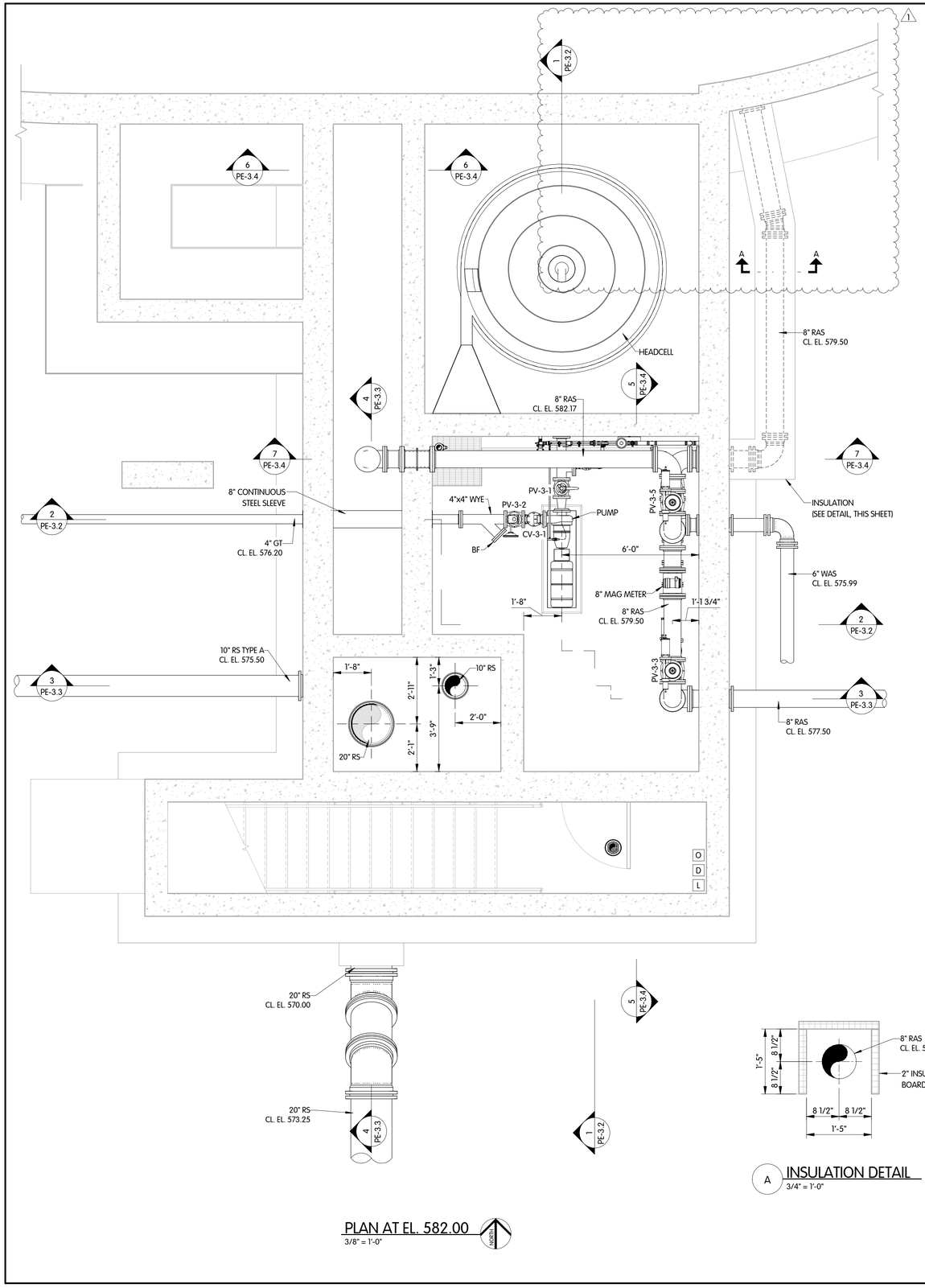
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DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

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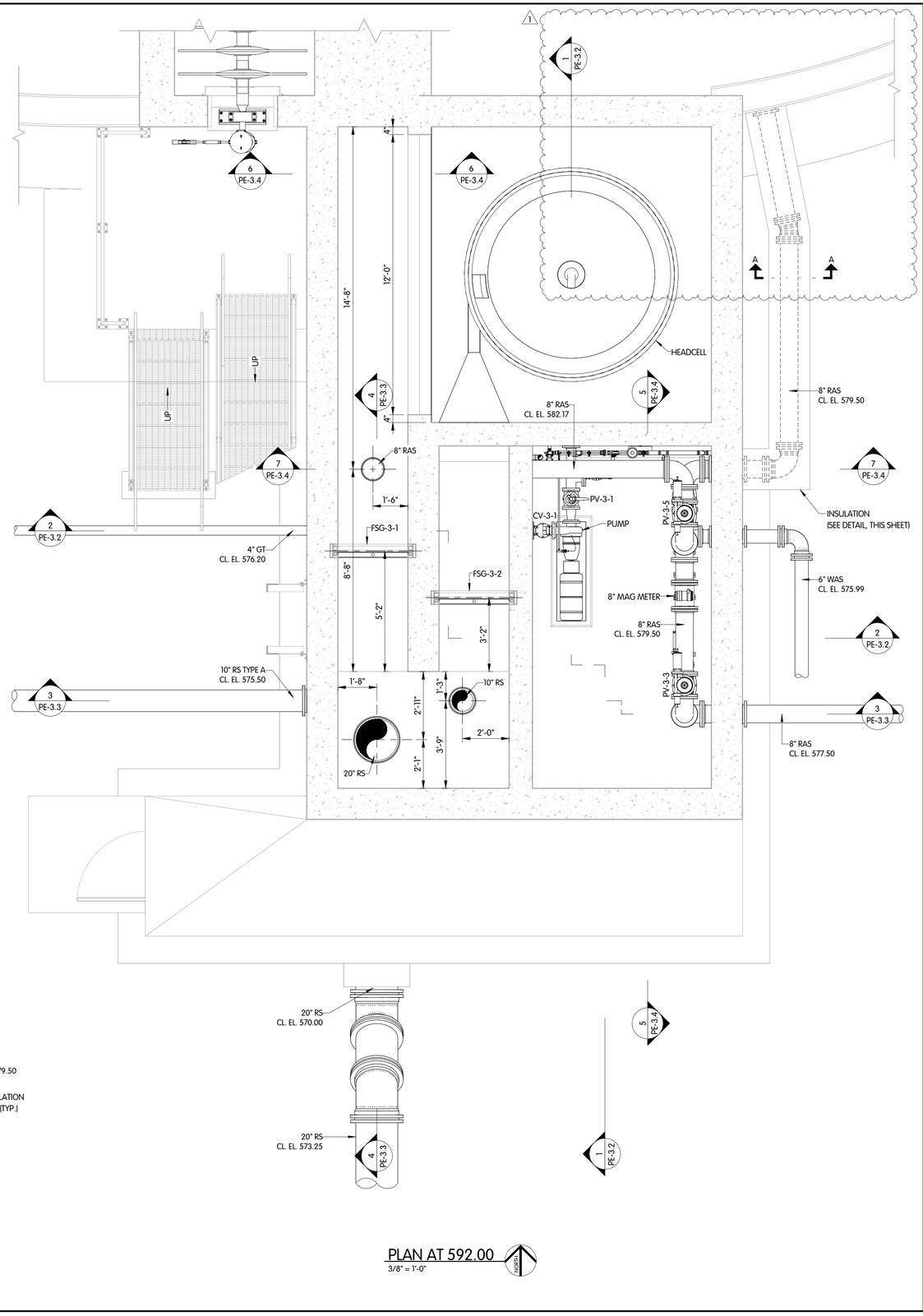
DATE: APRIL 2026

SHEET NO.
PE-3.0
165 OF 309



A INSULATION DETAIL
3/4" = 1'-0"

PLAN AT EL. 582.00
3/8" = 1'-0"
NORTH



PLAN AT 592.00
3/8" = 1'-0"
NORTH

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STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

GRIT
PIPING & EQUIPMENT PLANS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

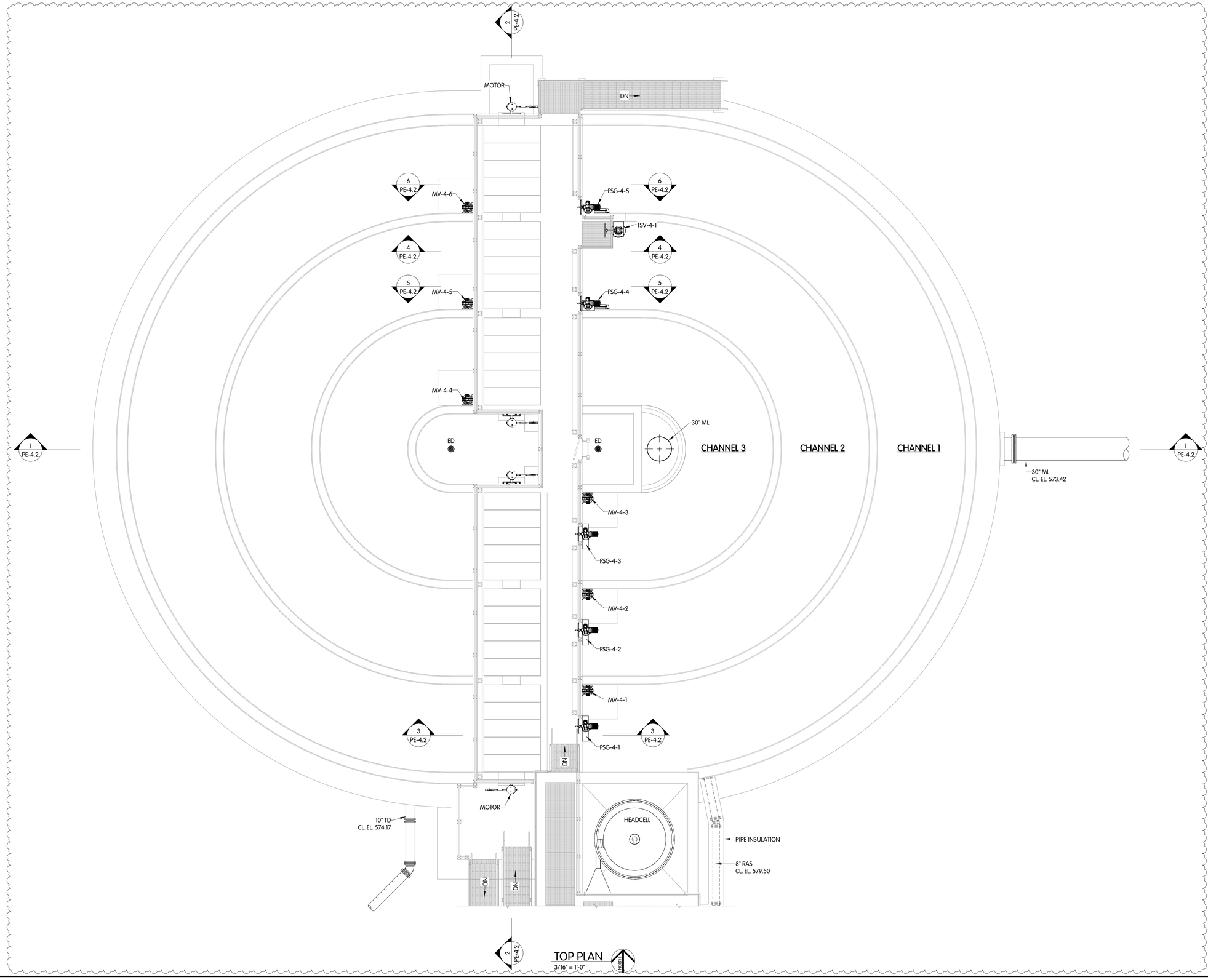
NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.: 904-8119.002
SCALE: AS INDICATED
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DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
PE-3.1
166 OF 309



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STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

OXIDATION DITCH PIPING & EQUIPMENT TOP PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.: 904-8119.002

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

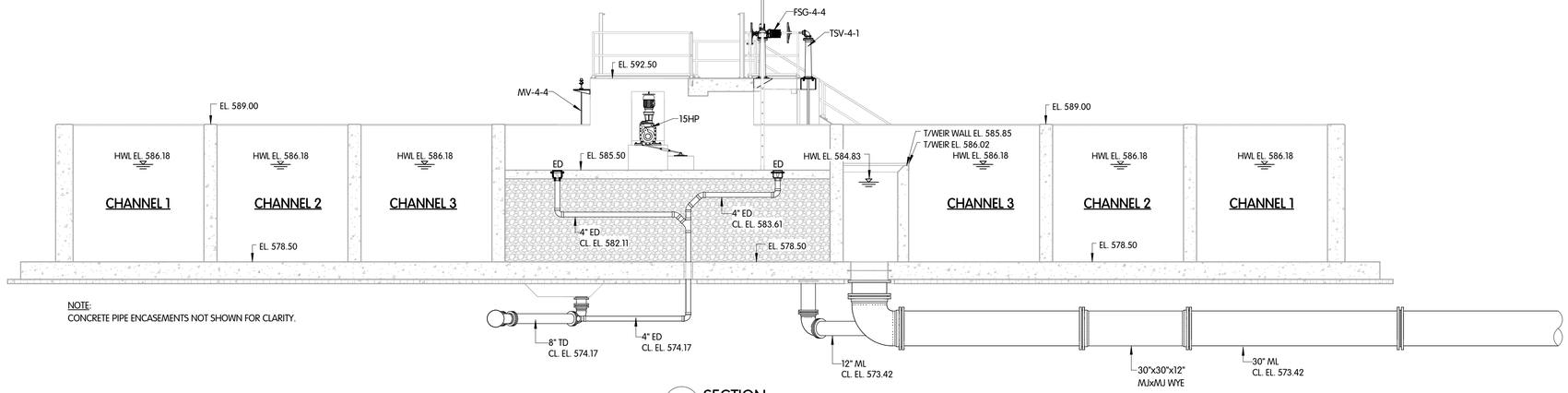
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DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

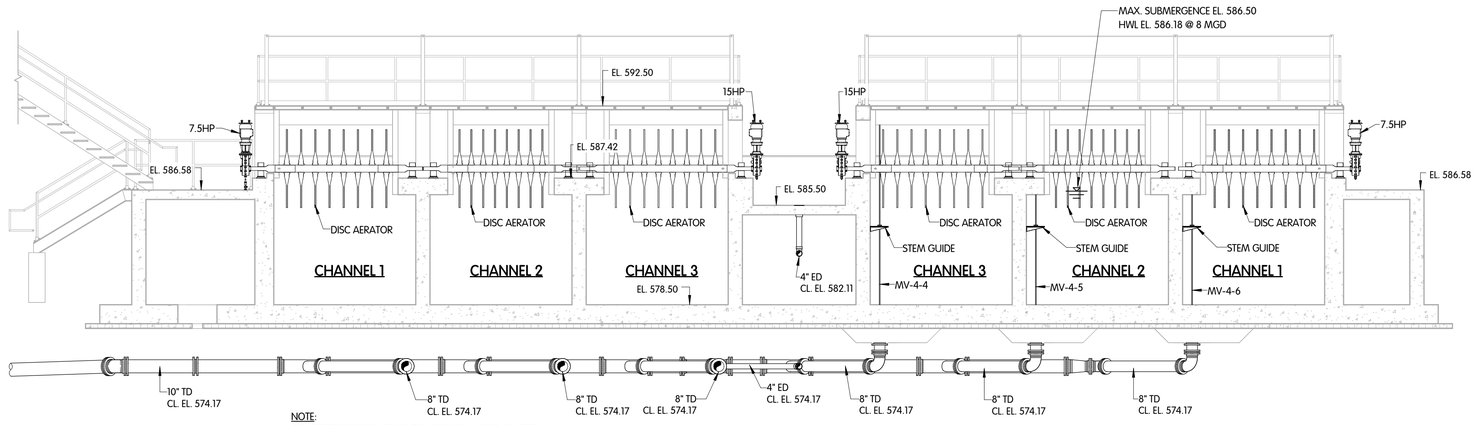
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DATE: APRIL 2026

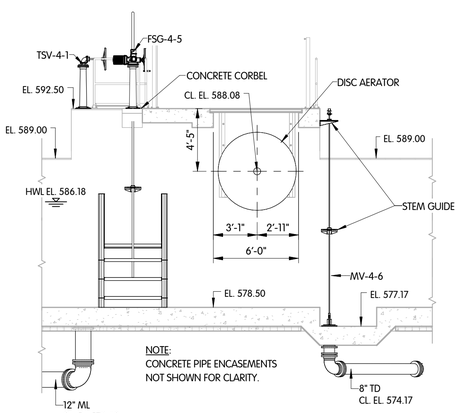
SHEET NO.
PE-4.1
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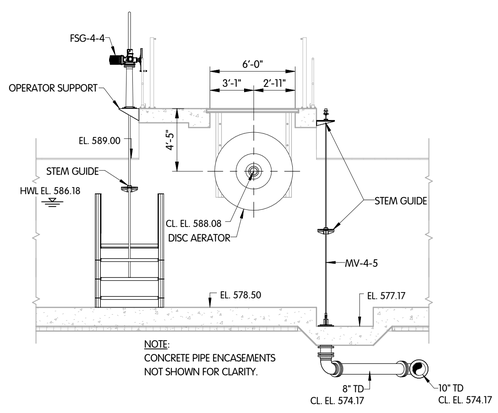
1 SECTION
3/16" = 1'-0"



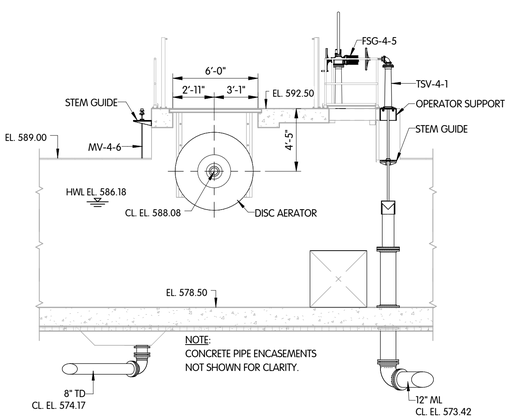
2 SECTION
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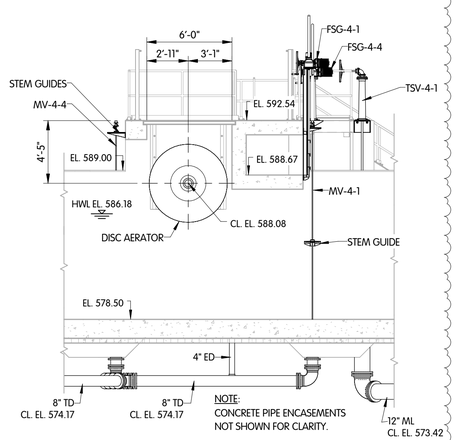
6 SECTION
3/16" = 1'-0"



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



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



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

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STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

OXIDATION DITCH
PIPING & EQUIPMENT
SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

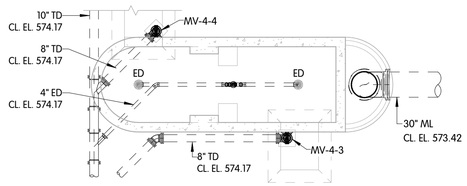
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1	5/18/26	ADDENDUM 2	JAH

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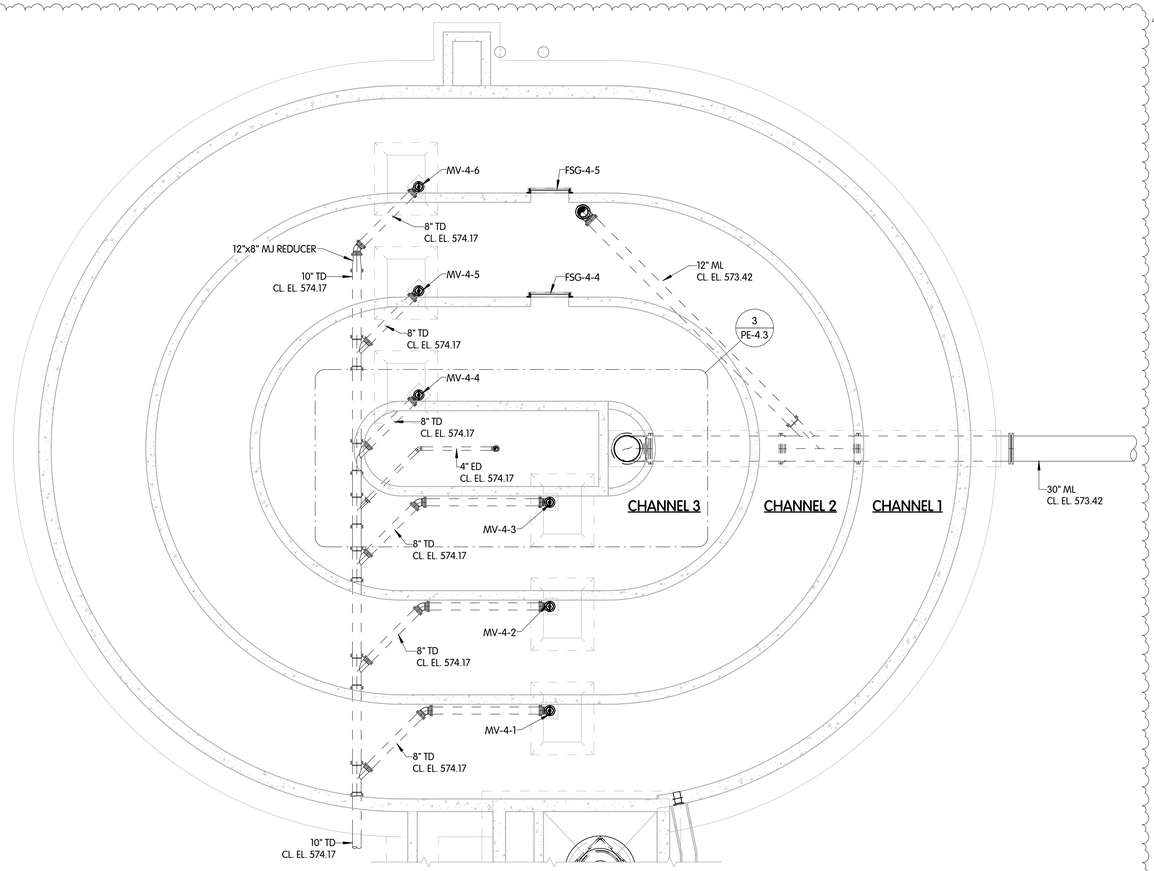
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DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

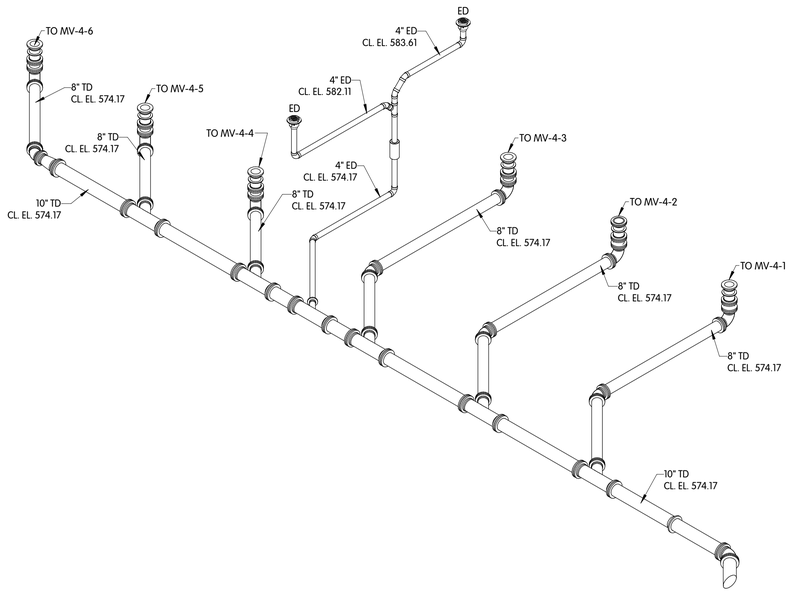
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DATE: APRIL 2026
SHEET NO.
PE-4.2
172 OF 309



3 PARTIAL PLAN @ EL. 587.00
1/8" = 1'-0"



PLAN AT EL. 579.00
1/8" = 1'-0"



TANK DRAIN ISOMETRIC

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STATE OF OHIO
JOSEPH A. HOLT
E-43606
REGISTERED
PROFESSIONAL ENGINEER

OXIDATION DITCH PIPING & EQUIPMENT PLANS AND ISOMETRIC

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26 ADDENDUM 2	JAH

REVISIONS AFTER ISSUED FOR BID

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JOB NO.: 904-8119.002

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

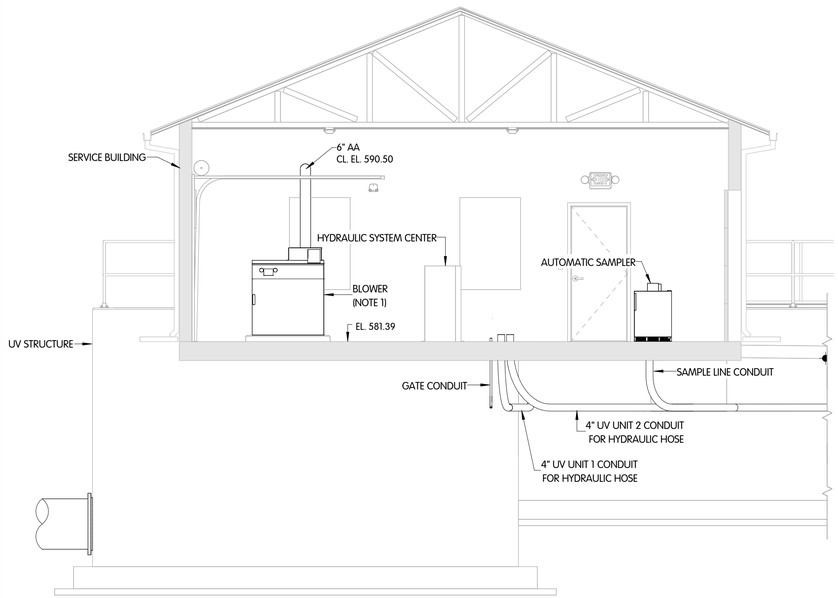
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

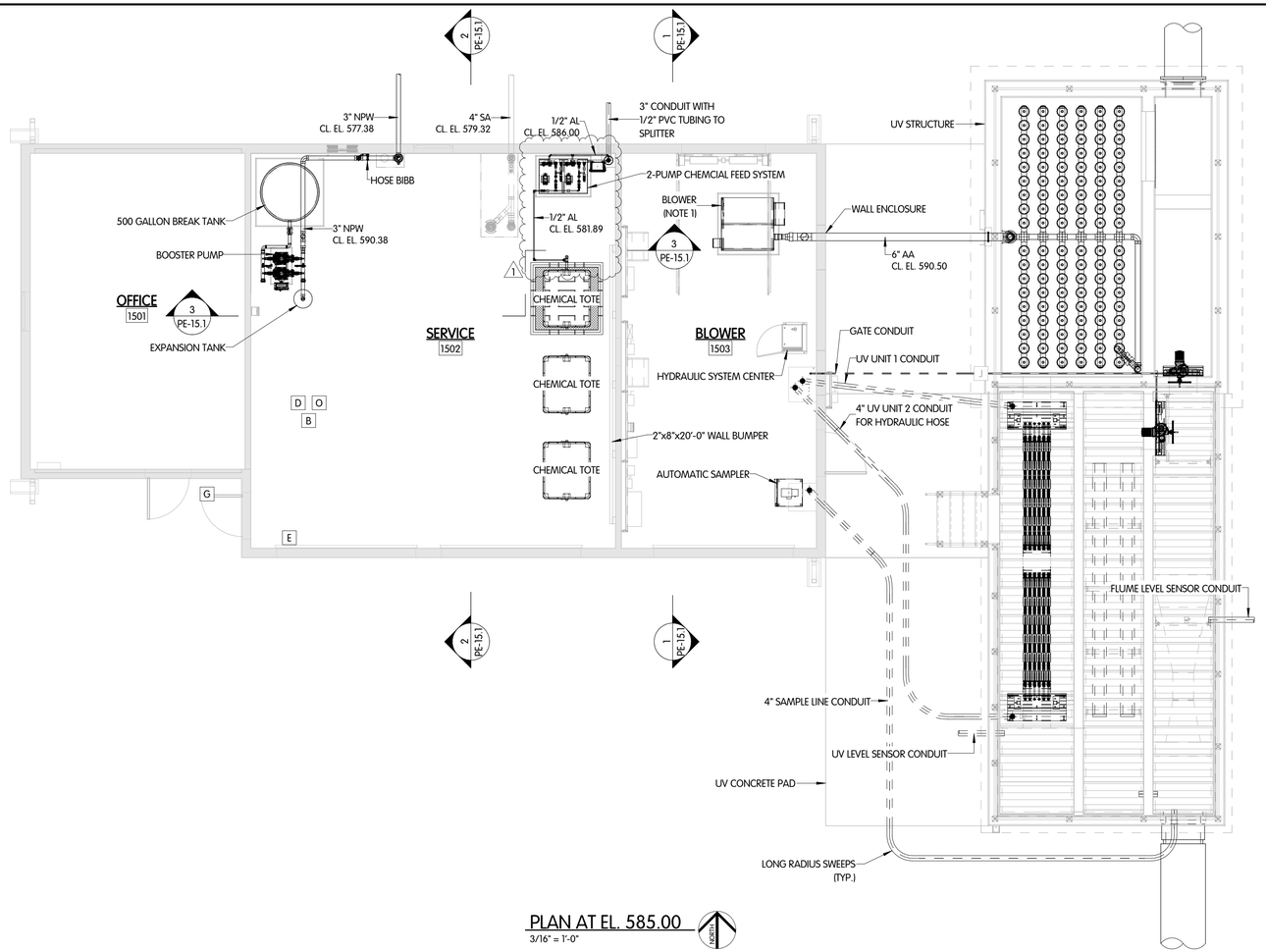
STATUS: ISSUED FOR BID

DATE: APRIL 2026

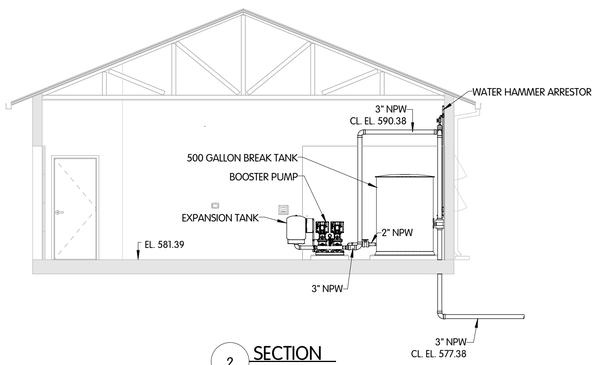
SHEET NO.
PE-4.3
173 OF 309



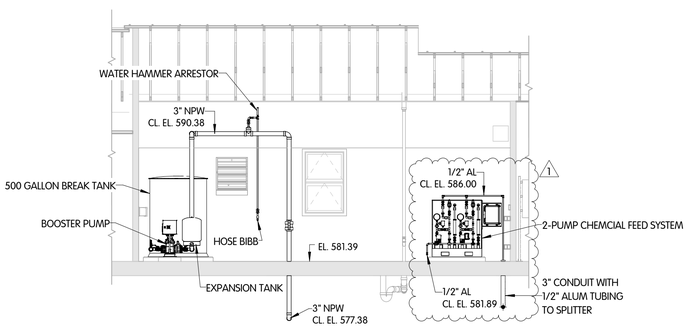
1 SECTION
1/4" = 1'-0"



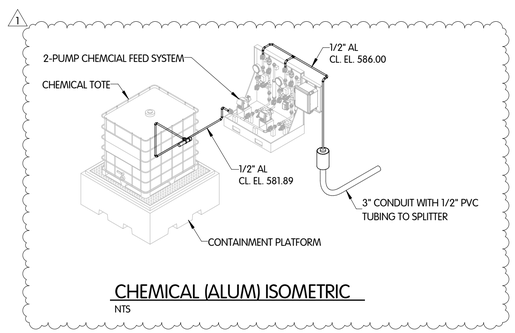
PLAN AT EL. 585.00
3/16" = 1'-0"



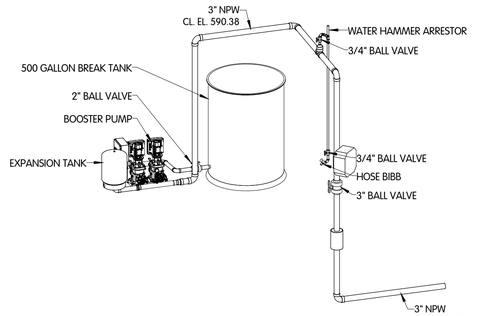
2 SECTION
3/16" = 1'-0"



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



CHEMICAL (ALUM) ISOMETRIC
NTS



NON-POTABLE WATER ISOMETRIC
NTS

NOTE:
1. THE BLOWER IS A RELOCATED PRE-AERATION BLOWER. INSTALL PROPOSED 20HP MOTOR 480V/3-PHASE, INVERTER DUTY.

STATE OF OHIO
JOSEPH A. HENRY
E-43606
REGISTERED
PROFESSIONAL ENGINEER

SERVICE BUILDING
PIPING & EQUIPMENT
PLAN, SECTIONS AND ISOMETRICS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	4/21/26	ADDENDUM 1	JAH

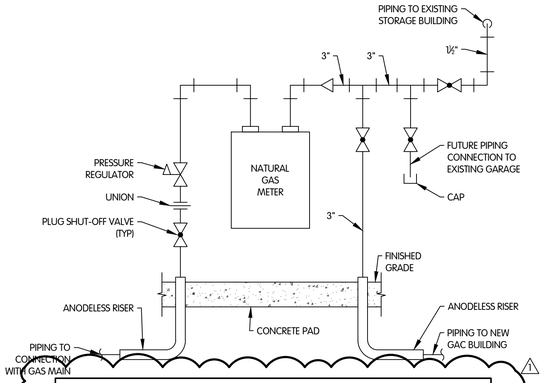
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JOB NO.: 904-8119.002
SCALE: AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
JAH	RGW	PAL

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
PE-15.1
193 OF 309

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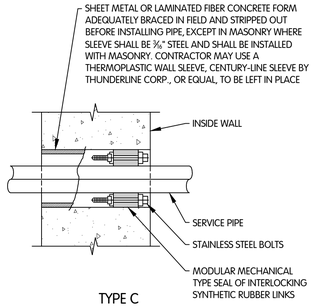


NATURAL GAS METER AND PRESSURE REGULATOR DATA

STRUCTURE	GAS FLOW (CFH)	REGULATOR OUTLET PRESSURE RANGE (INCHES W.C.)
HEADWORKS BUILDING	300	7
ADMINISTRATION/MAINTENANCE BUILDING	744	7
SLUDGE HOLDING BUILDING	474	7
DIGESTER BUILDING	150	7
EXISTING BLOWER BUILDING	100	7

NOTES:
1. NATURAL GAS METER AND PRESSURE REGULATOR SET ASSEMBLY TO BE FURNISHED AND INSTALLED BY OHIO GAS COMPANY.
2. NATURAL GAS METER AND PRESSURE REGULATOR SET ASSEMBLY SHALL BE PROTECTED PER THE REQUIREMENTS OF THE OHIO GAS COMPANY.
3. ALL BURIED NATURAL GAS PIPING SHALL BE POLYETHYLENE SDR-11. ALL ABOVE GRADE OR EXPOSED PIPING SHALL BE SCHEDULE 40 BLACK STEEL.
4. INSTALL BOLLARDS AROUND NATURAL GAS METER AND PIPING FOR PROTECTION. SEE BOLLARD DETAIL.

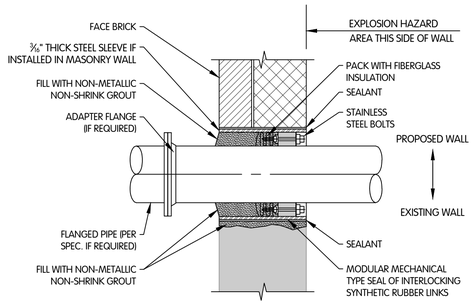
NATURAL GAS METER AND PRESSURE REGULATOR SET ASSEMBLY DETAIL
NTS



TYPE C

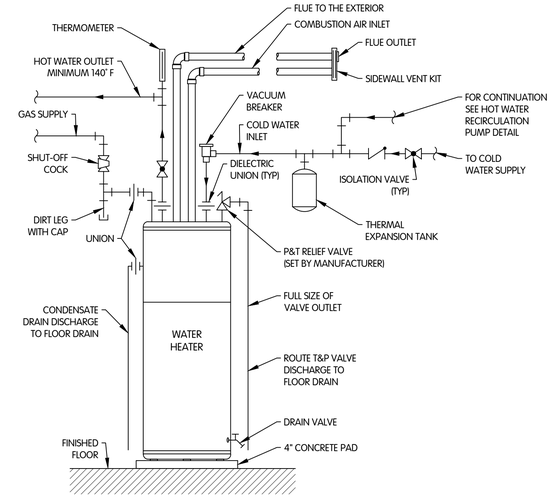
NOTES:
1. EXISTING WALLS SHALL BE CORE DRILLED.
2. CONCRETE SHALL BE WORKED IN AND VIBRATED TO ELIMINATE ALL VOIDS IN CONCRETE - IF VOIDS DO REMAIN, FILL WITH GROUT BEFORE INSTALLING PIPE AND RUBBER SEALS.
3. UNLESS OTHERWISE SHOWN ON THE DRAWINGS ALL INTERIOR WALL PENETRATIONS SHALL USE TYPE C PIPE SLEEVE.
4. CERTAIN TYPE C SLEEVE REQUIRE DOUBLE MODULAR MECHANICAL TYPE SEAL. THEY ARE NOTED SUCH ON THE DRAWING

PIPE SLEEVE
NTS

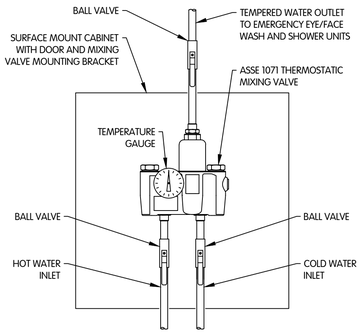


TYPE H (GAS TIGHT)

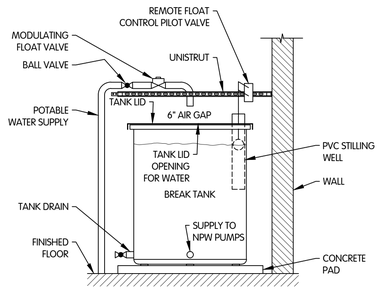
MASONRY WALL SLEEVE
NTS



COMMERCIAL GAS FIRED WATER HEATER DETAIL
NTS

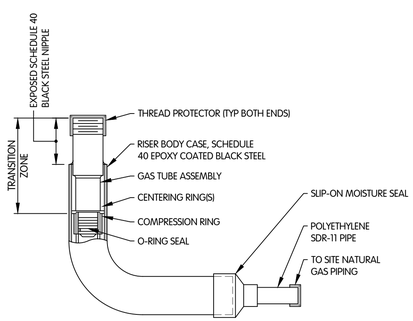


THERMOSTATIC MIXING VALVE DETAIL
NTS

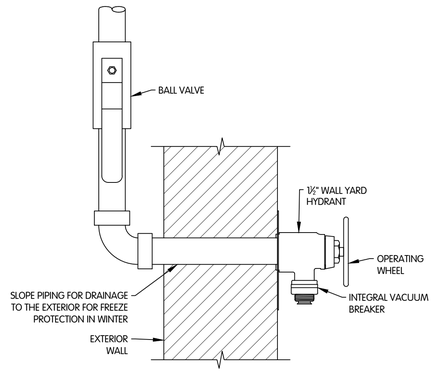


NOTE:
BREAK TANK PROVIDED BY OTHERS.

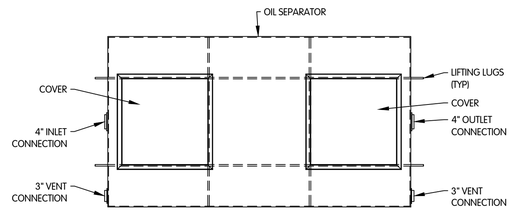
BREAK TANK DETAIL
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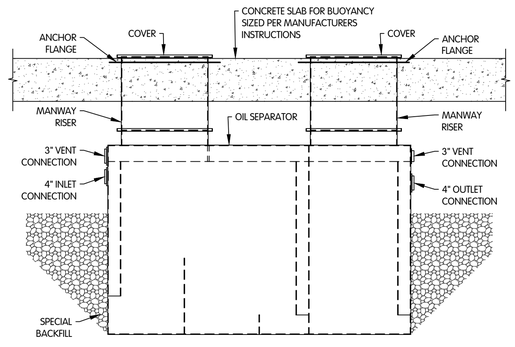
NATURAL GAS PIPE RISER DETAIL
NTS



WALL YARD HYDRANT DETAIL
NTS

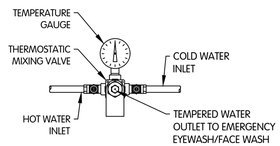


PLAN VIEW

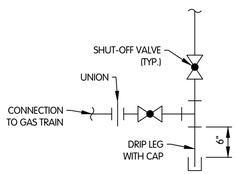


ELEVATION SECTION VIEW

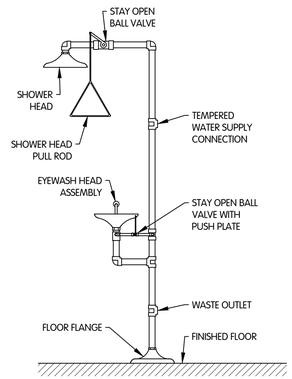
OIL SEPARATOR DETAIL
NTS



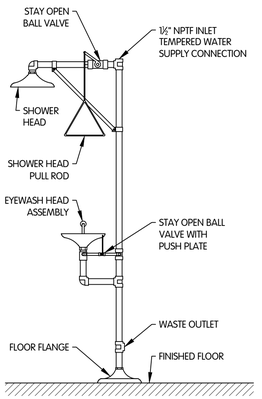
THERMOSTATIC MIXING VALVE DETAIL
NTS



GAS PIPING EQUIPMENT CONNECTION DETAIL
NTS



COMBINATION EMERGENCY EYEWASH AND SHOWER UNIT DETAIL
NTS



CORROSION RESISTANT COMBINATION EMERGENCY EYEWASH AND SHOWER UNIT DETAIL
NTS

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGTON
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

PLUMBING DETAILS

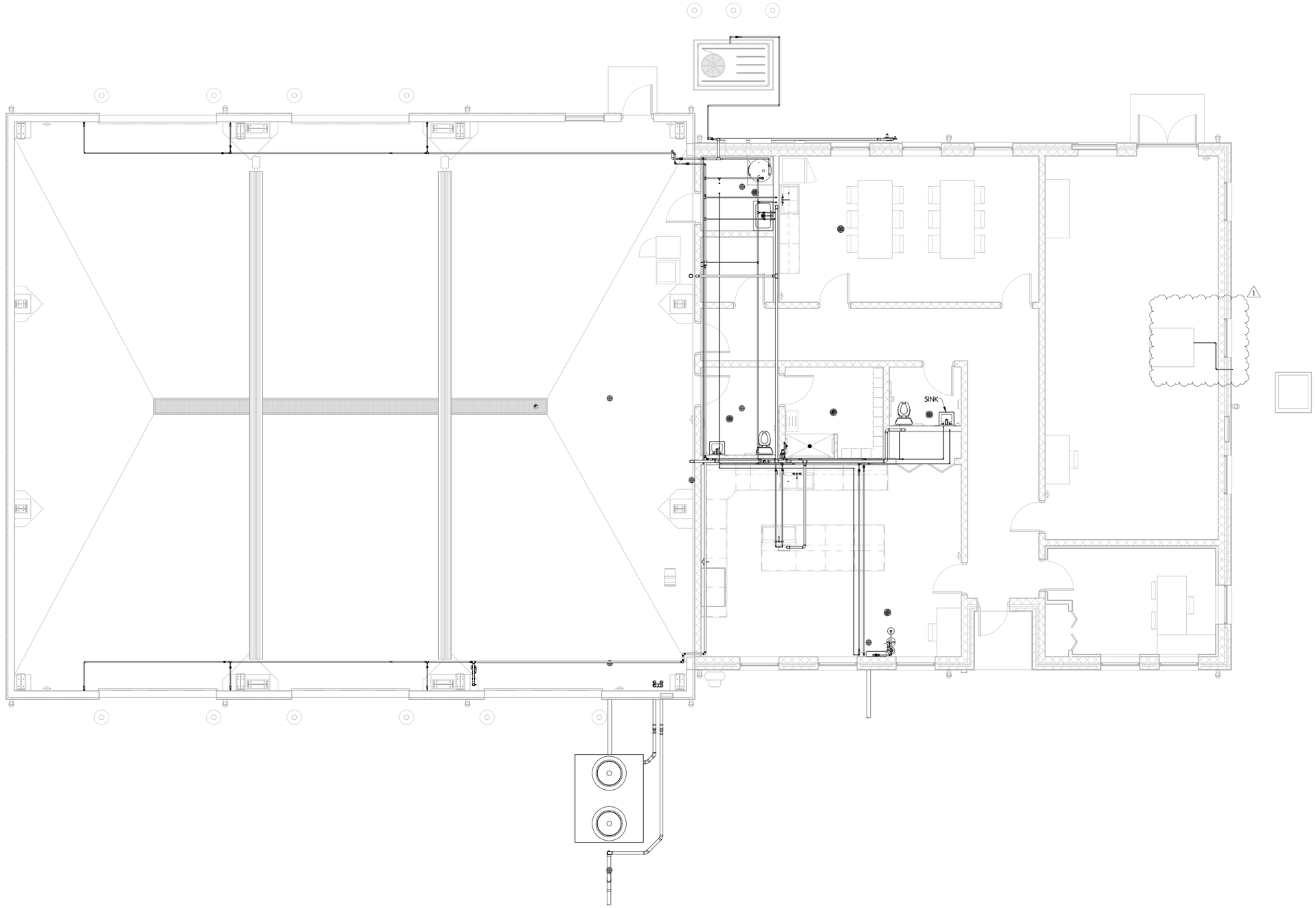
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	ASB

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JOB NO.	904-8119.002
SCALE	AS INDICATED
	THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE
DESIGNED	ASB
DRAWN	RGW
CHECKED	ASB
STATUS:	ISSUED FOR BID
DATE:	APRIL 2026
SHEET NO.	P-0.3
	198 OF 309

TOL-8119002_P02-P-0.3 - DETAILS
ISSUED: 5/18/2026 4:04 PM - KWORLET
5/18/2026 2:04 PM



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

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGTON
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

ADMINISTRATION/MAINTENANCE BUILDING
PLUMBING
OVERALL PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.: 904-8119.002

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

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

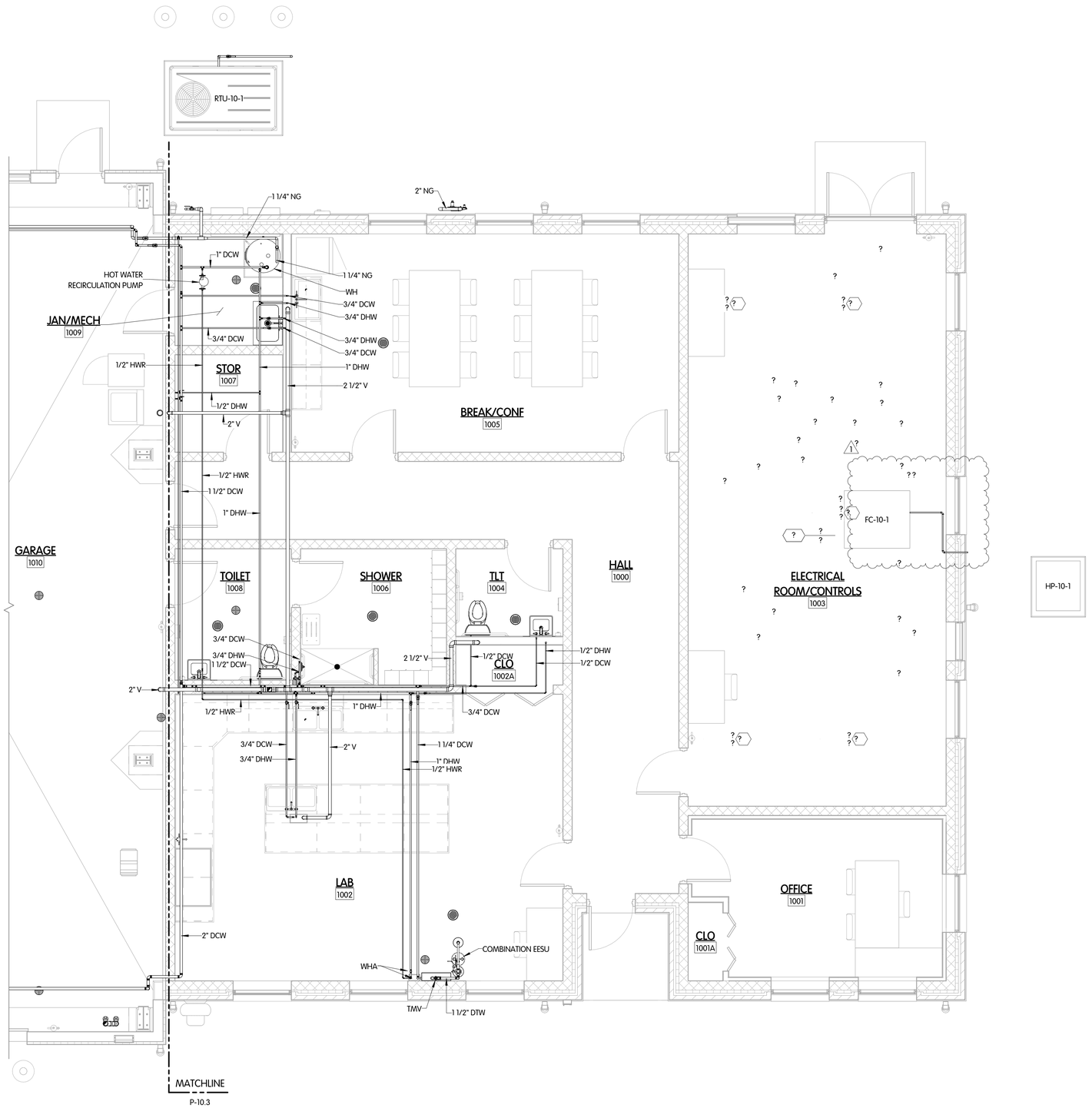
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ASB	RGW	ASB

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
P-10.0
200 OF 309

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PLAN CUT AT EL. 591.50 - ADMINISTRATION

1/4" = 1'-0"

NORTH

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRICK
E-93148
REGISTERED
PROFESSIONAL ENGINEER
03-27-26

ADMINISTRATION/MAINTENANCE BUILDING
PLUMBING
PLAN AT EL. 591.50 - ADMINISTRATION

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.: 904-8119.002

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

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

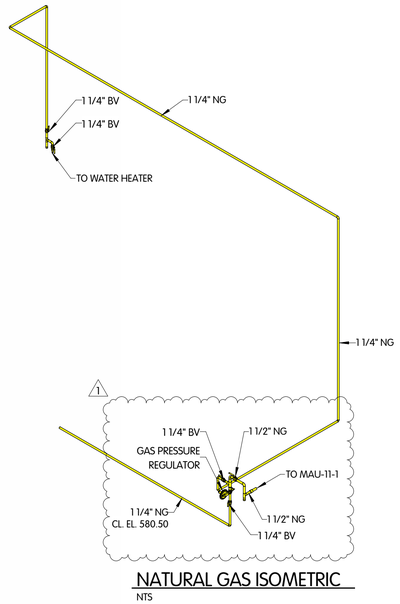
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ASB	RGW	ASB

STATUS: ISSUED FOR BID

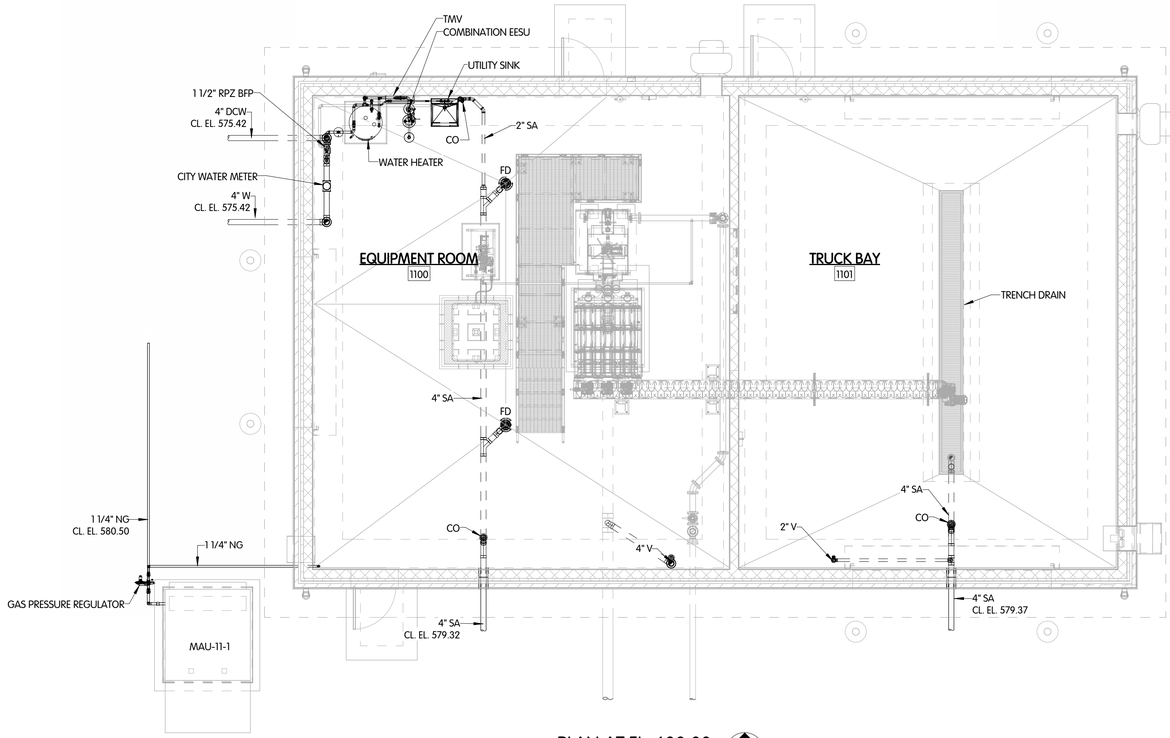
DATE: APRIL 2026

SHEET NO.
P-10.4
204 OF 309

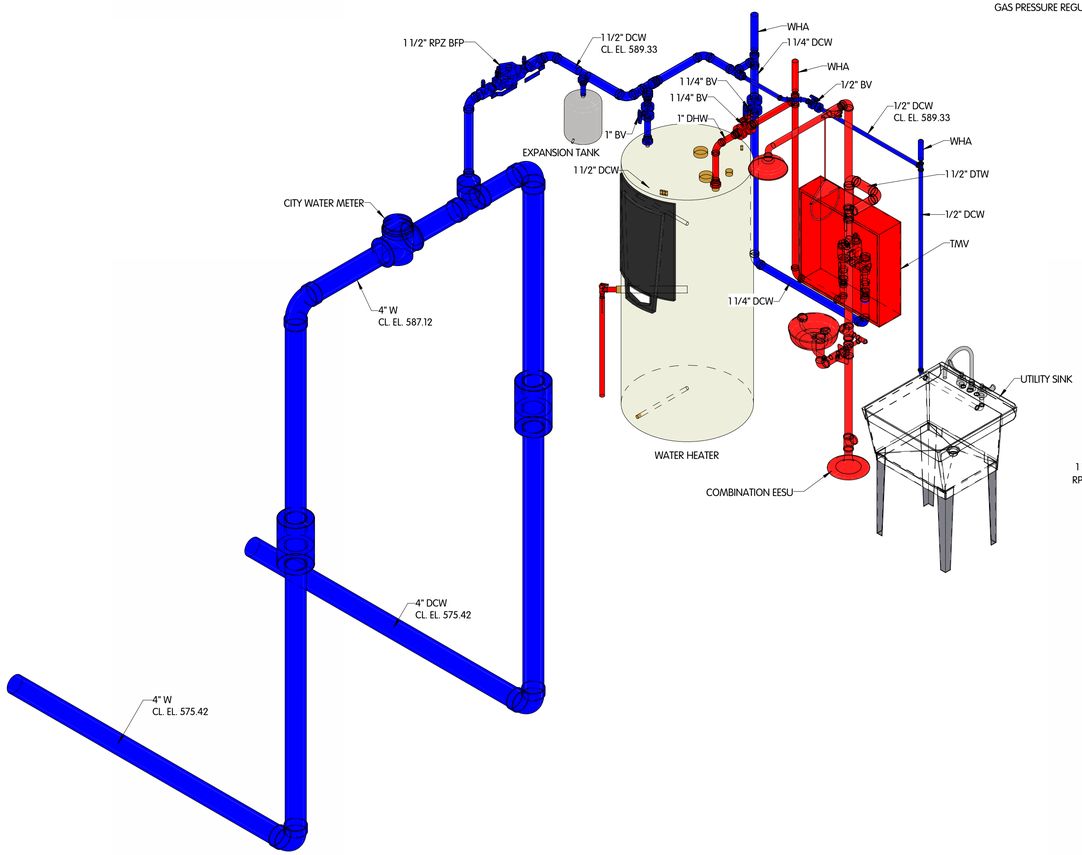
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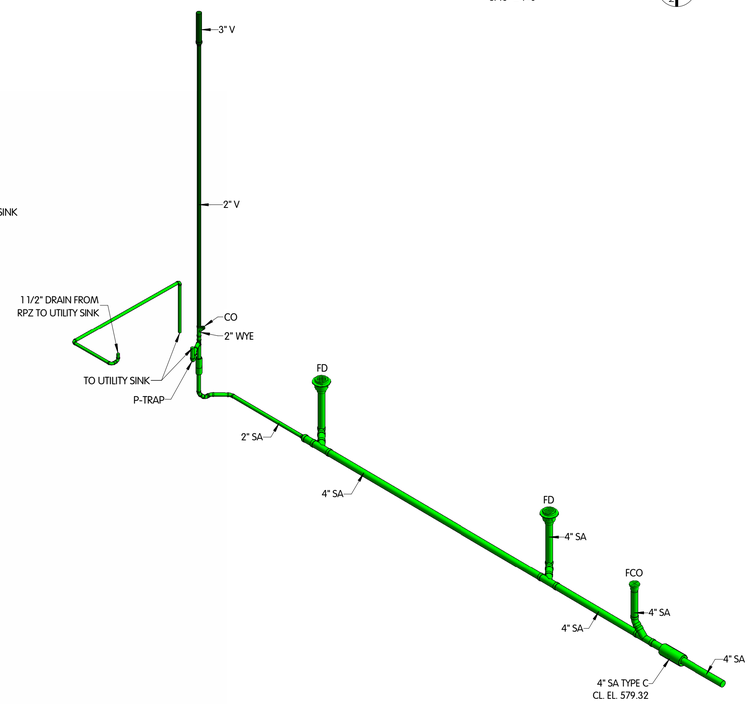
NATURAL GAS ISOMETRIC
NTS



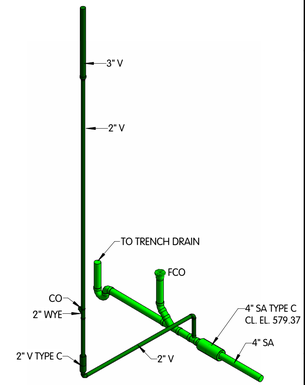
PLAN AT EL. 600.00
3/16" = 1'-0"



WATER ISOMETRIC
NTS



SANITARY ISOMETRIC
NTS



STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRICK
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

SLUDGE HANDLING BUILDING
PLUMBING
PLAN AND ISOMETRICS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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JOB NO.:	904-8119.002
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DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
P-11.1
208 OF 309

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FAN SCHEDULE

TAG	LOCATION	TYPE	AIRFLOW (CFM)	E.S.P. (INCHES W.C.)	DRIVE	ELECTRICAL		MAKE	MODEL	FEI	NOTES
						HP	V/PH/HZ				
EF-2-1	HEADWORKS BUILDING	WALL MOUNTED CENTRIFUGAL UPBLAST	3,000	0.40	BELT	2	480/3/60	LOREN COOK	ACW-B XP 195WX9B	-	1,2,4,5,6,12,13,15,17,22
EF-2-2	HEADWORKS BUILDING	CENTRIFUGAL BLOWER	900	0.25	BELT	1/2	120/1/60	LOREN COOK	120 CPS	-	1,2,4,5,6,7,8,9,10,11,12,17,20
IV-2-1	HEADWORKS BUILDING	GRAVITY VENTILATOR	900	0.083	-	-	-	LOREN COOK	GI 12X12	-	1,2,6,7,17,25
EF-3-1	GRIT REMOVAL BUILDING	WALL MOUNTED CENTRIFUGAL UPBLAST	400	0.25	BELT	1/3	120/1/60	LOREN COOK	100 ACWB	-	1,2,3,12,14,15,20
SF-3-1	GRIT REMOVAL BUILDING	PROPELLER	300	0.25	DIRECT	1/8	120/1/60	LOREN COOK	10XW24D17 (VF)	-	1,2,3,12,14,15,19,20,23
EF-10-1	ADMIN RR	SQUARE INLINE DUCT MOUNTED	200	0.35	DIRECT	1/6	120/1/60	LOREN COOK	100SQN10D	-	1,2,3,8,9,10,16,18
EF-10-2	MAINTENANCE	WALL MOUNTED CENTRIFUGAL UPBLAST	3200	0.5	BELT	1/2	120/1/60	LOREN COOK	210 ACWB	-	1,2,3,12,14,16,20
EF-10-3	ADMIN RR	WALL MOUNTED CENTRIFUGAL UPBLAST	225	0.5	BELT	1/3	120/1/60	LOREN COOK	100 ACWB DP2	-	1,2,3,15
EF-11-1	SLUDGE HANDLING BUILDING	WALL MOUNTED CENTRIFUGAL UPBLAST	2,400	0.45	DIRECT	1/2	480/3/60	LOREN COOK	165W17D (VF)	-	1,2,3,8,14,17,20,22
EF-11-2	SLUDGE HANDLING BUILDING	WALL MOUNTED CENTRIFUGAL UPBLAST	2,200	0.25	BELT	3/4	120/1/60	LOREN COOK	165WH6B	-	1,2,3,8,12,14,17,20
SF-11-1	SLUDGE HANDLING BUILDING	PROPELLER	2,100	0.25	BELT	1/3	120/1/60	LOREN COOK	14XWS40D152	-	1,2,3,12,13,14,17,19,20
SF-12-1	DIGESTER BUILDING	INLINE CENTRIFUGAL BLOWER	1,100	0.45	BELT	1/3	120/1/60	LOREN COOK	140WB	-	1,2,3,12,13,14,15
EF-12-1	DIGESTER BUILDING	ROOF MOUNTED CENTRIFUGAL UPBLAST	1,100	0.25	BELT	1/6	120/1/60	LOREN COOK	ACRU-B 120R2B	-	1,2,3,7,8,12,14,15,20
SF-14-1	EXISTING BLOWER BUILDING	PROPELLER	9250	0.25	BELT	1	480/3/60	LOREN COOK	36XMW	2.03	1,2,3,12,14,17,19,20
SF-14-1	EXISTING BLOWER BUILDING	PROPELLER	9250	0.25	BELT	1	480/3/60	LOREN COOK	36XMW	2.03	1,2,3,12,14,17,19,20
EF-14-1	EXISTING BLOWER BUILDING	ROOF MOUNTED CENTRIFUGAL UPBLAST	9250	0.25	BELT	1-1/2	480/3/60	LOREN COOK	ACRU-B 300R8B	1.28	1,2,3,7,8,12,14,15,20
EF-14-2	EXISTING BLOWER BUILDING	ROOF MOUNTED CENTRIFUGAL UPBLAST	9250	0.25	BELT	1-1/2	480/3/60	LOREN COOK	ACRU-B 300R8B	1.28	1,2,3,8,12,14,15,20,21
EF-15-1	EXISTING CHEMICAL FEED BUILDING	WALL MOUNTED CENTRIFUGAL UPBLAST	1,100	0.45	BELT	1/3	120/1/60	LOREN COOK	120 ACWB	-	1,2,3,12,13,14,15

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. FINAL ROOF OR WALL OPENING SIZE TO MATCH APPROVED SUBMITTAL.
3. INTEGRAL PRE-WIRED, NEMA 3R RATED DISCONNECT SWITCH.
4. INTEGRAL PRE-WIRED, EXPLOSION PROOF, NEMA 7 RATED DISCONNECT SWITCH.
5. EXPLOSION PROOF, NEMA 7 RATED MOTOR.
6. SPARKPROOF ALUMINUM CONSTRUCTION.
7. 12 INCH HIGH ROOF CURB OF ALUMINUM CONSTRUCTION.
8. GRAVITY TYPE BACKDRAFT DAMPER.
9. INLET AND OUTLET FLEXIBLE DUCT CONNECTIONS.
10. VIBRATION ISOLATORS.
11. WEATHERPROOF MOTOR AND BELT GUARD COVER.
12. SPARE BELT SET.
13. SQUARE WALL MOUNT GRAVITY TYPE BACKDRAFT DAMPER.
14. ALUMINUM BIRDSCREEN.
15. PHENOLIC EPOXY POWDER FINISH WITH UV PROTECTION.
16. STANDARD FINISH.
17. BAKED EPOXY POWDER , UV PROTECTED, RESISTANT TO HYDROGEN SULFIDE FUMES.
18. UNIT MOUNTED, INTEGRAL, PRE-WIRED, SOLID STATE SPEED CONTROLLER.
19. PACKAGED WALL SLEEVE, INLET GUARD, AND MOTORIZED BACKDRAFT DAMPER.
20. FANS SHALL MEET OR EXCEED SCHEDULED FEI VALUE AND BE LICENSED TO BEAR THE AMCA CRP SEAL FOR FEI.
21. ROOF CURB ADAPTER.
22. TWO SPEED CONTROLLER.
23. WEATHERHOOD.
24. MOTORIZED BACKDRAFT DAMPER.

LOUVER SCHEDULE

TAG	LOCATION	SERVICE	TYPE	MODULAR OPENING SIZE		DEPTH (IN.)	AIRFLOW (CFM)	FREE AREA (SQ. FT.)	MAKE	MODEL	NOTES
				WIDTH (INCHES)	HEIGHT (INCHES)						
IL-10-1	MAINTENANCE	INTAKE	COMBINATION	48	48	6	3,200	7.48	RUSKIN	ELC6375DAX	1,3,4,5,6,7,8
IL-10-2	ADMIN ELECTRICAL ROOM	INTAKE	STATIONARY	56	24	6	2,400	4.84	RUSKIN	ELF6375DXH	1,2,3,4,5,6,7
EL-10-3	MAINTENANCE	EXHAUST	STATIONARY	16	16	6	200	0.75	RUSKIN	ELF6375DXH	1,2,3,4,5,6,7
L-10-4	ADMIN ELECTRICAL ROOM	RELIEF	COMBINATION	56	24	6	2,400	3.46	RUSKIN	ELC6375DAX	1,3,4,5,6,7,8
IL-15-1	SERVICE BUILDING	INTAKE	COMBINATION	32	32	6	1,100	2.9	RUSKIN	ELC6375DAX	1,3,4,5,6,7,8

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. FRONT STATIONARY DRAINABLE BLADE WITH INTEGRAL BACKDRAFT DAMPER.
3. STATIONARY DRAINABLE BLADE.
4. 6063T6 EXTRUDED ALUMINUM CONSTRUCTION.
5. BIRDSCREEN MOUNTED ON EXTERIOR.
6. INSECT SCREEN MOUNTED ON INTERIOR.
7. KYNAR OR FLUOROPOLYMER FINISH ON ENTIRE LOUVER AND BIRDSCREEN. COLOR TO BE SELECTED BY OWNER.
8. TWO POSITION, SPRING RETURN, 120/1/60 BACKDRAFT DAMPER MOTOR ACTUATOR.

AIR OUTLETS SCHEDULE

TAG	SERVICE	TYPE	STATIC P.D. (IN. W.C.)	PATTERN	MATERIAL	FINISH	MAKE	MODEL	NOTES
SR	SUPPLY	REGISTER	0.08	DOUBLE DEFLECTION	ALUMINUM	CLEAR ANODIZED	TITUS	300FS	1,2,3,4
RG	RETURN	GRILLE	0.08	EGGCRATE	ALUMINUM	CLEAR ANODIZED	TITUS	50F	1,2,3,4
EG	EXHAUST	GRILLE	0.08	EGGCRATE	ALUMINUM	CLEAR ANODIZED	TITUS	50F	1,2,3,4
RP	RETURN	PANEL	0.08	PERFORATED	ALUMINUM	WHITE	TITUS	PXP-AA	1,2,3,5
SD	SUPPLY	DIFFUSER	0.08	4-WAY	ALUMINUM	WHITE	TITUS	TMS-AA	1,2,3,5

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. SEE DRAWING FOR SIZES, AIRFLOW, AND QUANTITY.
3. INTEGRAL BALANCING DAMPER.
4. DUCT MOUNTING.
5. LAY-IN T-BAR CEILING GRID MOUNTING.

DEHUMIDIFIER SCHEDULE

TAG	LOCATION	TYPE	AIRFLOW	UNIT CAPACITY (PPD)	ELECTRICAL (V/PH/HZ)	MAKE	MODEL
DH-15-1	SERVICE BUILDING	PORTABLE	HORIZONTAL	195.0	120/1/60	QUEST	HI-E-DRY 195

CONTROL DAMPER SCHEDULE

TAG	TYPE	BLADES	MATERIAL	DUCT TYPE	MAKE	MODEL	NOTES
BD	BALANCING	OPPOSED	ALUMINUM	RECTANGULAR	RUSKIN	CD51	1,2,3
MD	MOTORIZED	PARALLEL	ALUMINUM	RECTANGULAR	RUSKIN	CD51	1,2,4
BDD	BACKDRAFT	PARALLEL	ALUMINUM	RECTANGULAR	RUSKIN	BD2A2	1,2
BD	BALANCING	OPPOSED	GALVANIZED STEEL	RECTANGULAR	RUSKIN	CD35	1,2,3
MD	MOTORIZED	PARALLEL	GALVANIZED STEEL	RECTANGULAR	RUSKIN	CD35	1,2,4
BDD	BACKDRAFT	PARALLEL	GALVANIZED STEEL	RECTANGULAR	RUSKIN	S3G	1,2

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. SEE DRAWINGS FOR SIZES, AIRFLOW, AND QUANTITY.
3. PROVIDE WITH LOCKING QUADRANT.
4. PROVIDE 120/1/60 DAMPER MOTOR OPERATOR.

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGTON
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

MECHANICAL
HVAC EQUIPMENT SCHEDULES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5.08.26	ADDENDUM# 2	ASB

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STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
M-0.6
216 OF 309

TOL-8119002-M05-M-0.6 - HVAC EQUIPMENT SCHEDULES
ISSUED FOR BID
5/19/2026 2:05 PM
RYAN WOGLER

ROOFTOP UNIT SCHEDULE

TAG	LOCATION	TYPE	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	SUPPLY FAN			HEATING SECTION			EVAPORATOR SECTION		COMPRESSOR SECTION		CONDENSER FANS	FILTER		ELECTRICAL			MAKE	MODEL	NOTES
					E.S.P. (IN. W.C.)	HP	BLOWER TYPE	FUEL	INPUT (MBH)	OUTPUT (MBH)	TOTAL (BTUH)	SENSIBLE (BTUH)	POWER (KW)	QUANTITY	QUANTITY	TYPE	MERV	V/PH/HZ	MCA	MFS			
RTU-10-1	ADMINISTRATION BUILDING	PACKAGED ROOFTOP UNIT	3,400	350	0.35	2	CENTRIFUGAL	NATURAL GAS	120	97	113	84	7.45	2	1	2" PLEATED	8	480/3/60	26.0	35.0	TRANE	YSK102A4S0L	1,2,3,4,5,6,7

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. 12 INCH HIGH ROOF CURB.
3. BOTTOM SUPPLY AND RETURN DUCT CONNECTIONS.
4. EVAPORATOR COIL ENTERING AIR DRY BULB/WET BULB TEMPERATURES: 80/67 DEGREES F.
5. CONDENSING UNIT ENTERING AIR DRY BULB TEMPERATURE: 95 DEGREES F.
6. REFRIGERNT R-454B.
7. 24 VOLT TWO STAGE HEATING, TWO STAGE COOLING THERMOSTAT WITH AUTOMATIC CHANGEOVER.

SPLIT SYSTEM FAN COIL UNIT/CONDENSING UNIT SCHEDULE

TAG	LOCATION	TYPE	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW (CFM)	SUPPLY FAN			AUXILIARY HEATING OUTPUT CAPACITY (KW)	COOLING CAPACITY		AHU					FILTER		CU					NOTES
					E.S.P. (IN. W.C.)	HP	BLOWER TYPE		TOTAL (BTUH)	SENSIBLE (BTUH)	MAKE	MODEL	V/PH/HZ	MCA	MFS	TYPE	MERV	MAKE	MODEL	V/PH/HZ	MCA	MFS	
FC-10-1/HP-10-1	ADMINISTRATION ELECTRICAL ROOM	SPLIT SYSTEM/DX COIL	2,400	200	0.50	2	CENTRIFUGAL	5.00	82,800	62,800	TRANE	BCHE072	480/3/60	14.00	15.0	2" PLEATED	8	TRANE	5TWA072K4D	480/3/60	17.0	20.0	1,2,3,4,5,6,7,8,9,10

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. PROVIDE AIR HANDLING UNIT WITH SPRING VIBRATION ISOLATORS FOR HORIZONTAL INSTALLATION.
3. PROVIDE EVAPORATOR COIL WITH REMOVABLE COMPOSITE DRAIN PAN.
4. EVAPORATOR COIL ENTERING AIR DRY BULB/WET BULB TEMPERATURES: 80/67 DEGREES F.
6. PROVIDE PRE-CHARGED LINE SETS FOR INSTALLTION OF REFRIGERANT PIPING, REFRIGERNT R-454B.
7. PROVIDE 24 VOLT TWO STAGE HEATING, TWO STAGE COOLING THERMOSTAT WITH AUTOMATIC CHANGEOVER.
8. HARD WIRED REMOTE CONTROLLER WITH MODE, FAN SPEED, AND TEMPERATURE SELECTION.
9. HEAT PUMP CONDENSER UNIT ENTERING AIR DRY BULB TEMPERATURE: 95 DEGREES F.
10. PROVIDE HEAT PUMP CONDENSER UNIT WITH LOW AMBIENT CONTROL FOR COOLING OPERATION TO OUTDOOR AMBIENT OF 0 DEGREES F.

GAS FIRED MAKE-UP AIR UNIT SCHEDULE

TAG	LOCATION	TYPE	SUPPLY AIRFLOW (CFM)	MAX O.A. (CFM)	MIN O.A. (CFM)	FAN SECTION			HEATING SECTION					FILTER		ELECTRICAL		MAKE	MODEL	NOTES
						E.S.P. (IN. W.C.)	HP	FAN TYPE	BURNER TYPE	INPUT (MBH)	OUTPUT (MBH)	EAT (°F)	LAT (°F)	TYPE	MERV	V/PH/HZ	MCA			
MAU-2-1	HEADWORKS BUILDING	OUTDOOR GRADE MOUNTED	2,800	2,800	1,400	0.45	2	CENTRIFUGAL	INDIRECT	300	243	0	70	2" PLEATED	8	480/3/60	5.1	ENGINEERED AIR	DJS40	1,2,3,4,5,6,7,8,9
MAU-11-1	SLUDGE HANDLING BUILDING	OUTDOOR GRADE MOUNTED	2,300	2,300	1,150	0.50	2	CENTRIFUGAL	INDIRECT	275	223	0	70	2" PLEATED	8	480/3/60		ENGINEERED AIR	DJS40	1,2,3,4,5,6,7,8,9

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.

GAS FIRED UNIT HEATER SCHEDULE

TAG	LOCATION	TYPE	AIRFLOW DISCHARGE	HEATING SECTION		AIRFLOW (CFM)	TEMPERATURE RISE (°F)	THROW (FT.)	ELECTRICAL		MAKE	MODEL	NOTES
				INPUT (BTUH)	OUTPUT (BTUH)				HP	V/PH/HZ			
GUH-12-1	DIGESTER BUILDING - UPPER LEVEL	PROPELLER FAN	HORIZONTAL	60,000	49,800	769	60	42	0.03	120/1/60	REZNOR	UDXC-60	1,2,3,4,5
GUH-12-2	DIGESTER BUILDING - UPPER LEVEL	PROPELLER FAN	HORIZONTAL	60,000	49,800	769	60	42	0.03	120/1/60	REZNOR	UDXC-60	1,2,3,4,5
GUH-12-3	DIGESTER BUILDING - LOWER LEVEL	PROPELLER FAN	HORIZONTAL	30,000	24,600	456	50	26	0.02	120/1/60	REZNOR	UDXC-30	1,2,3,4,5

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. UNITS SHALL BE UL LISTED.
3. SWIVEL WALL MOUNT BRACKET.
4. UL LISTED, NEMA 1 RATED, DISCONNECT SWITCH.
5. 120 VOLT, SINGLE STAGE, WALL MOUNTED THERMOSTAT.

ELECTRIC UNIT HEATER SCHEDULE

TAG	LOCATION	TYPE	AIRFLOW DISCHARGE	OUTPUT CAPACITY (KW)	AIRFLOW (CFM)	TEMPERATURE RISE (°F)	THROW (FT.)	ELECTRICAL		MAKE	MODEL	NOTES
								HP	V/PH/HZ			
EUH-2-1	HEADWORKS	EXPLOSION PROOF BLOWER	HORIZONTAL	5.0	650	25	15	1/4	480/3/60	Q MARK	GUX-233-FA-0056U	1,2,3,6,7,10
EUH-3-1	GRIT BUILDING	CORROSION RESISTANT BLOWER	HORIZONTAL	7.5	590	37	13	1/15	480/3/60	CHROMALOX	HD3D-750	1,2,4,8,9
EUH-3-2	GRIT BUILDING	CORROSION RESISTANT BLOWER	HORIZONTAL	7.5	590	37	13	1/15	480/3/60	CHROMALOX	HD3D-750	1,2,4,8,9
EUH-15-1	SERVICE BUILDING	CORROSION RESISTANT BLOWER	HORIZONTAL	7.5	850	28	27	1/15	480/3/60	CHROMALOX	LUH-07-43-32	1,2,5,11
EUH-15-2	SERVICE BUILDING	CORROSION RESISTANT BLOWER	HORIZONTAL	7.5	850	28	27	1/15	480/3/60	CHROMALOX	LUH-07-43-32	1,2,5,11

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. UNITS SHALL BE UL LISTED.
3. SWIVEL WALL MOUNT BRACKET.
4. UL LISTED, NEMA 4X RATED, DISCONNECT SWITCH.
5. 120 VOLT, SINGLE STAGE, WALL MOUNTED THERMOSTAT, CHROMALOX TYPE WR-80 OR EQUAL.
6. UL LISTED, NEMA 7 RATED, EXPLOSION PROOF DISCONNECT SWITCH.
7. 24 VOLT, SINGLE STAGE, WALL MOUNTED, NEMA 7 RATED EXPLOSION PROOF THERMOSTAT.
8. UL LISTED, NEMA 4X RATED, CORROSION RESISTANT THERMOSTAT.
9. 120 VOLT, SINGLE STAGE, WALL MOUNTED, NEMA 4X RATED, CORROSION RESISTANT THERMOSTAT, CHROMALOX TYPE WCRT-100 OR EQUAL.
10. NEMA 7 RATED, EXPLOSION PROOF MOTOR, FOR CLASS I, DIVISION 1, GROUP D AREAS.
11. UL LISTED, NEMA 1 RATED DISCONNECT SWITCH.

GAS FIRED RADIANT HEATER SCHEDULE

TAG	LOCATION	TYPE	HEATING CAPACITY (BTUH)	TUBE LENGTH (FT)	ELECTRICAL (V/PH/HZ)	MAKE	MODEL	NOTES
RTH-10-1	MAINTENANCE BUILDING	LOW INTENSITY TUBULAR	200,000	50	120/1/60	ROBERTS GORDON	CTH3-200	1,2,3
RTH-10-2	MAINTENANCE BUILDING	LOW INTENSITY TUBULAR	200,000	50	120/1/60	ROBERTS GORDON	CTH3-200	1,2,3

NOTES:

1. INSTALL PER MANUFACTURERS INSTRUCTIONS.
2. PROVIDE WITH REFLECTOR SHIELD.
3. CONTROLLED BY 120/1/60 WALL MOUNTED THERMOSTAT.

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGTON
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

MECHANICAL
HVAC EQUIPMENT SCHEDULES

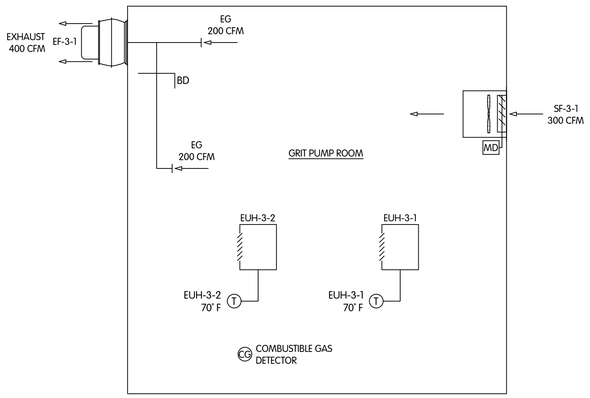
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO. M-0.7
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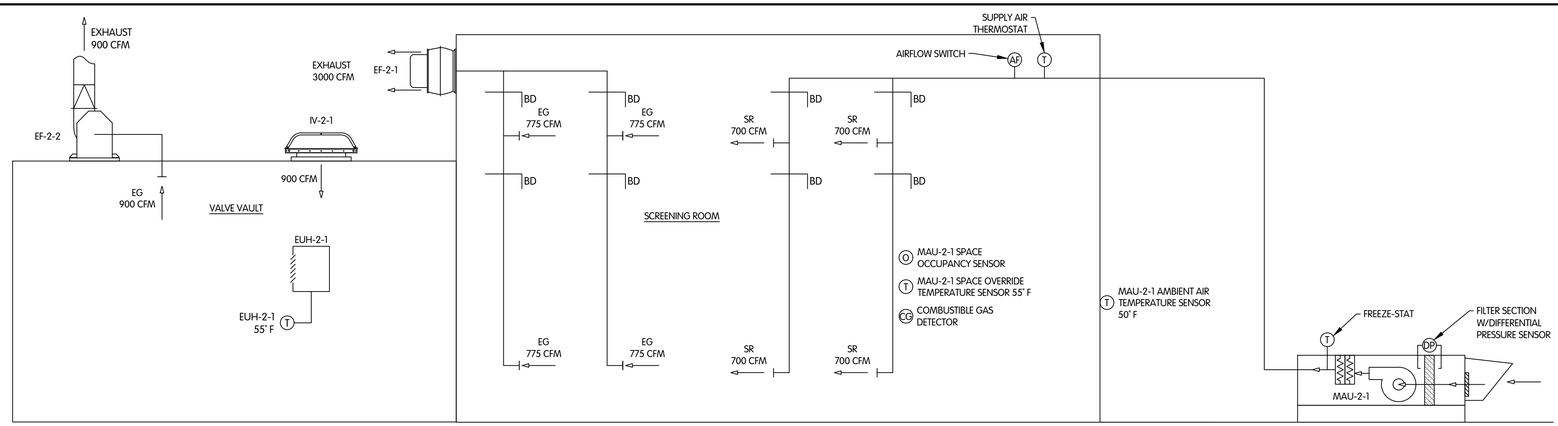


GRIT BUILDING (3) AIRFLOW SCHEMATIC

GRIT BUILDING HEATING AND VENTILATION SEQUENCE OF OPERATION:

VENTILATION FOR THE GRIT BUILDING SHALL BE SUPPLIED BY A WALL MOUNTED PROPELLER SUPPLY FAN SF-3-1 AND WALL MOUNTED CENTRIFUGAL EXHAUST FANS EF-3-1. THE SYSTEM SHALL RUN CONTINUOUSLY AND PROVIDE 6 AIR CHANGES PER HOUR OF 100 PERCENT OUTSIDE AIRFLOW TO THE GRIT BUILDING. THE GRIT BUILDING SHALL HAVE AN NEC AREA CLASSIFICATION RATING OF UNCLASSIFIED. THE EXHAUST AIRFLOW SHALL BE LARGER THAN THE SUPPLY AIRFLOW IN ORDER TO PROVIDE A NEGATIVE PRESSURE TO THE SPACE.

HEATING FOR THE GRIT BUILDING SHALL BE PROVIDED BY ELECTRIC UNIT HEATERS CONTROLLED BY SINGLE TEMPERATURE, WALL-MOUNTED THERMOSTATS THAT MAINTAIN SPACE TEMPERATURE BY CONTROLLING UNIT HEATING ELEMENTS AND FAN SIMULTANEOUSLY.



HEADWORKS BUILDING (2) AIRFLOW SCHEMATIC

VALVE VAULT VENTILATION (IV-2-1/EF-2-2) SEQUENCE OF OPERATION:

VENTILATION FOR THE VALVE VAULT SHALL BE PROVIDED BY GRAVITY INTAKE VENTILATOR IV-2-1 AND CENTRIFUGAL BLOWER EXHAUST FAN EF-2-2. EF-2-2 SHALL BE CONTROLLED AND INTERLOCKED WITH THE LIGHT SWITCH. THE LIGHT SWITCH SHALL BE LOCATED AT EACH ENTRANCE INTO THE VALVE VAULT. WHEN THE LIGHT SWITCH IS ACTIVATED, EF-2-2 SHALL RUN CONTINUOUSLY. WHEN THE LIGHT SWITCH IS DE-ACTIVATED, EXHAUST FAN EF-2-2 SHALL BE DE-ACTIVATED. IN THE HAND POSITION, THE EXHAUST FAN MOTOR IS ACTIVATED. IV-2-1 SHALL PROVIDE MAKE-UP AIR FOR EF-2-2.

VALVE VAULT HEATING SEQUENCE OF OPERATION:

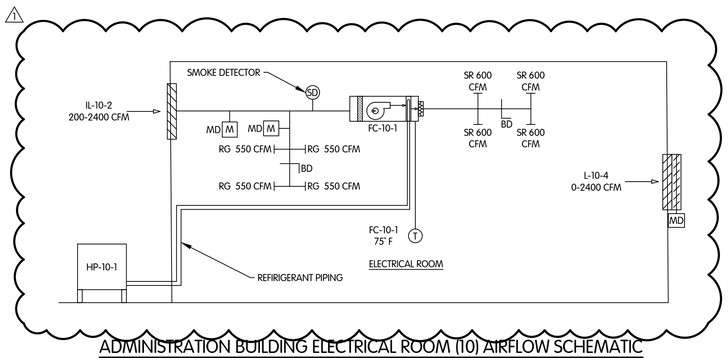
HEATING FOR THE VALVE VAULT SHALL BE PROVIDED BY ELECTRIC UNIT HEATER EUH-2-1 CONTROLLED BY A SINGLE TEMPERATURE, WALL-MOUNTED THERMOSTAT THAT MAINTAINS SPACE TEMPERATURE BY CONTROLLING UNIT HEATING ELEMENTS AND FAN SIMULTANEOUSLY.

HEADWORKS SCREEN ROOM HEATING AND VENTILATION SEQUENCE OF OPERATION:

HEATING AND VENTILATION FOR THE HEADWORKS SCREEN ROOM SHALL BE SUPPLIED BY A NATURAL GAS INDIRECT FIRED MAKE-UP AIR HANDLING UNIT INSTALLED AT GRADE MAU-2-1 AND WALL MOUNTED CENTRIFUGAL EXHAUST FAN EF-2-1. THE SYSTEM SHALL RUN CONTINUOUSLY AND PROVIDE 12 AIR CHANGES PER HOUR OF 100 PERCENT OUTSIDE AIRFLOW TO THE HEADWORKS SCREEN ROOM. THE HEADWORKS SCREEN ROOM SHALL HAVE AN NEC AREA CLASSIFICATION RATING OF CLASS 1, DIVISION 2, GROUP D. THE EXHAUST AIRFLOW SHALL BE LARGER THAN THE SUPPLY AIRFLOW IN ORDER TO PROVIDE A NEGATIVE PRESSURE TO THE SPACE.

MAU-2-1 SHALL BE CONTROLLED BY AN H-O-A SWITCH, CONTROL PANEL, AND DUCT AND ROOM THERMOSTATS. WHEN THE HEADWORKS SCREEN ROOM IS UN-OCCUPIED, WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 50 DEGREES F, AND COMBUSTIBLE GAS DETECTOR HAS NOT BEEN ACTIVATED, MAU-2-1 SHALL RUN CONTINUOUSLY WITH FAN AIRFLOW REDUCED TO NOT LESS THAN 50% OF OUTSIDE AIR ENTERING THE UNIT. EF-2-1 SHALL BE ENERGIZED. A DUCT THERMOSTAT LOCATED IN THE SUPPLY DUCTWORK DOWNSTREAM OF THE UNIT SHALL SENSE THE DISCHARGE AIR TEMPERATURE AND CONTROL THE HEAT OUTPUT BY MODULATION OF THE GAS VALVE. MAU-2-1 GAS VALVE SHALL ELECTRONICALLY MODULATE BETWEEN 100 AND 40 PERCENT RATED INPUT TO SATISFY SUPPLY AIR DUCT THERMOSTAT SETTING. A WALL MOUNTED SPACE THERMOSTAT SHALL OVERRIDE THE SUPPLY AIR DUCT THERMOSTAT AND SHALL CAUSE THE UNIT TO GO TO FULL HEATING WHEN THE ROOM TEMPERATURE FALLS BELOW THE OVERRIDE ROOM THERMOSTAT SETPOINT OF 55 DEGREES F. WHEN THE HEADWORKS SCREEN ROOM IS OCCUPIED, OUTSIDE AMBIENT AIR TEMPERATURE IS ABOVE 50 DEGREES F, AND THE COMBUSTIBLE GAS DETECTOR SENSES A LOWER EXPLOSIVE LIMIT OF 10% OR GREATER, MAU-2-1 SUPPLY FAN SHALL GO TO 100% TO ALLOW 100% OF OUTSIDE AIR TO ENTER THE UNIT. EF-2-1 SHALL BE ENERGIZED.

SAFETY AND AIRFLOW DEVICES SHALL CONSIST OF THE FOLLOWING. A DUCT MOUNTED FREEZE PROTECTION THERMOSTAT LOCATED DOWNSTREAM OF THE UNIT IN THE SUPPLY DUCTWORK SHALL DEACTIVATE MAU-2-1 WHENEVER IT SENSES A TEMPERATURE BELOW 40 DEGREES F. A SIGNAL ALARM LIGHT "MAU-2-1 FREEZE" ON THE MAU-2-1 CONTROL PANEL. DIFFERENTIAL PRESSURE SWITCH (PS) SHALL SIGNAL INDICATOR LIGHT "FAN ON" ON MAU-2-1 CONTROL PANEL WHENEVER FAN IS IN OPERATION. DIFFERENTIAL PRESSURE SWITCH (PS) SHALL SIGNAL INDICATOR LIGHT "DIRTY FILTER" ON MAU-2-1 CONTROL PANEL UPON SENSING A CLOGGED FILTER ON MAU-2-1.



ADMINISTRATION BUILDING ELECTRICAL ROOM (10) AIRFLOW SCHEMATIC

ADMINISTRATION ELECTRICAL ROOM (FC-10-1/HP-10-1) SEQUENCE OF OPERATION:

HEAT AND COOL THE ELECTRICAL ROOM BY A SPLIT SYSTEM CONSISTING OF AN INDOOR FAN COIL UNIT FC-10-1 AND OUTDOOR HEAT PUMP HP-10-1. CONTROL THE SYSTEM BY A SINGLE STAGE HEAT/SINGLE STAGE COOL, WALL MOUNTED THERMOSTAT LOCATED IN THE ELECTRICAL ROOM WITH MANUAL/AUTOMATIC HEAT-COOL CHANGEOVER. ENERGIZE FAN COIL UNIT FAN AND HEAT PUMP CONDENSING UNIT COMPRESSOR WHENEVER THE THERMOSTAT CALLS FOR COOLING TO MAINTAIN SET-POINT.

COMPRESSOR SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS. DE-ENERGIZE THE COOLING AND FAN WHEN THERMOSTAT HAS REACHED SET-POINT. ENERGIZE FC-10-1 FAN AND HEAT PUMP WHENEVER THE THERMOSTAT CALLS FOR HEATING TO MAINTAIN SET-POINT. WHEN HEAT PUMP CANNOT MAINTAIN SPACE TEMPERATURE AUXILIARY ELECTRIC RESISTANCE HEATING COIL SHALL BE ACTIVATED IN STAGES. DE-ENERGIZE THE HEATING COIL, AND FAN WHEN THE THERMOSTAT HAS REACHED SET-POINT.

THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM 200 CFM OF OUTSIDE AIR DURING ALL HOURS.

THE FAN COIL CONTROL PANEL SHALL MEASURE THE MIXED AIR TEMPERATURE AND MODULATE THE OUTSIDE AND RETURN AIR DAMPERS TO MAINTAIN A SETPOINT 2° F LESS THAN THE COOLING SUPPLY AIR TEMPERATURE SETPOINT. THE ECONOMIZER SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65 °F.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB.
- AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE.
- AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY.
- AND THE SUPPLY FAN STATUS IS ON.

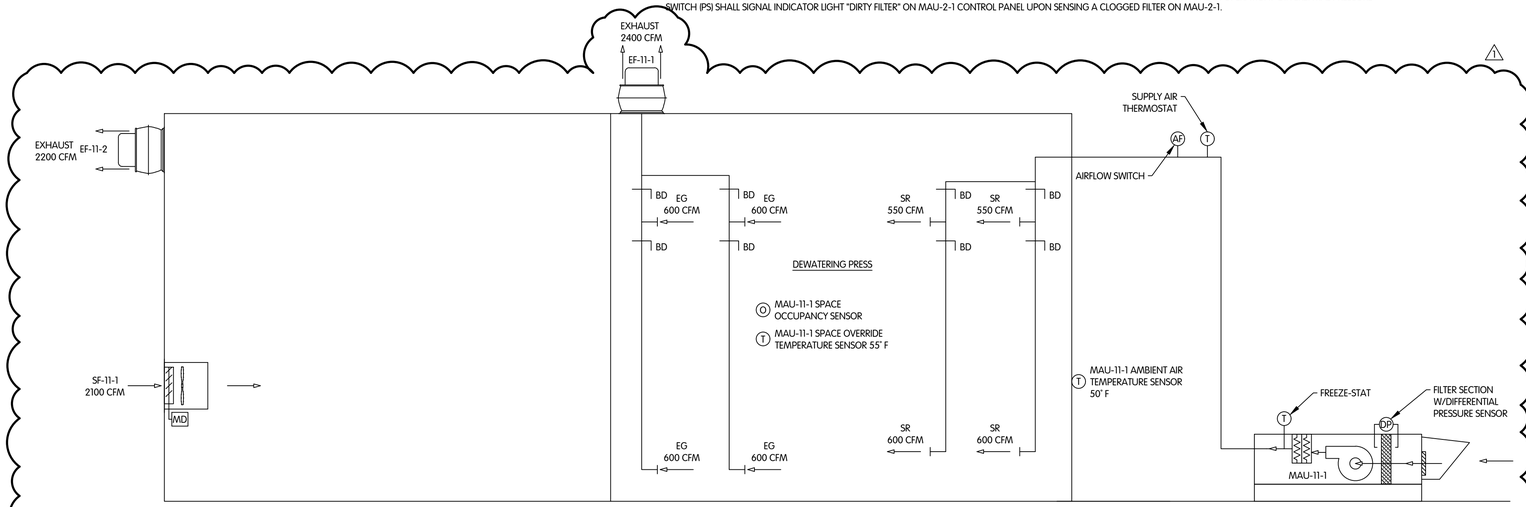
THE OUTSIDE AIR DAMPER SHALL GO TO ITS MINIMUM POSITION WHENEVER:

- MIXED AIR TEMPERATURE DROPS FROM 40 °F TO 35 °F
- OR ON LOSS OF SUPPLY FAN STATUS

MOTORIZED RELIEF DAMPER L-10-4 SHALL MODULATE AS NECESSARY TO REDUCE BUILDING PRESSURE.

WHEN FC-10-1 IS ENERGIZED, MODULATING MOTORIZED DAMPER MD ASSOCIATED WITH FC-10-1 SHALL OPEN AND ALLOW A MINIMUM OF 200 CFM OF 100% OUTDOOR AIR TO BE BROUGHT INTO THE SPACE THROUGH OUTDOOR AIR INTAKE LOUVER IL-10-2.

A DUCT MOUNTED SMOKE DETECTOR (SD) LOCATED IN THE RETURN DUCTWORK DOWNSTREAM OF THE UNIT SHALL DEACTIVATE FC-10-1 WHENEVER SMOKE IS DETECTED AND SIGNAL ALARM LIGHT "SMOKE" ON FC-10-1 CONTROL PANEL.



SLUDGE HANDLING BUILDING (11) AIRFLOW SCHEMATIC

SLUDGE HANDLING BUILDING HEATING AND VENTILATION SEQUENCE OF OPERATION:

HEATING AND VENTILATION FOR THE SLUDGE HANDLING BUILDING SHALL BE SUPPLIED BY A NATURAL GAS INDIRECT FIRED MAKE-UP AIR HANDLING UNIT INSTALLED AT GRADE MAU-11-1 AND WALL MOUNTED CENTRIFUGAL EXHAUST FANS EF-11-1. THE SYSTEM SHALL RUN CONTINUOUSLY AND PROVIDE 6 AIR CHANGES PER HOUR OF 100 PERCENT OUTSIDE AIRFLOW TO THE SLUDGE HANDLING BUILDING. THE SLUDGE HANDLING BUILDING SHALL HAVE AN NEC AREA CLASSIFICATION RATING OF UNCLASSIFIED. THE EXHAUST AIRFLOW SHALL BE LARGER THAN THE SUPPLY AIRFLOW IN ORDER TO PROVIDE A NEGATIVE PRESSURE TO THE SPACE.

MAU-11-1 SHALL BE CONTROLLED BY AN H-O-A SWITCH, CONTROL PANEL, AND DUCT AND ROOM THERMOSTATS. WHEN THE SLUDGE HANDLING BUILDING IS UN-OCCUPIED, WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 50 DEGREES F, MAU-11-1 SHALL RUN CONTINUOUSLY WITH FAN AIRFLOW REDUCED TO NOT LESS THAN 50% OF OUTSIDE AIR ENTERING THE UNIT. EF-11-1 SHALL BE ENERGIZED. A DUCT THERMOSTAT LOCATED IN THE SUPPLY DUCTWORK DOWNSTREAM OF THE UNIT SHALL SENSE THE DISCHARGE AIR TEMPERATURE AND CONTROL THE HEAT OUTPUT BY MODULATION OF THE GAS VALVE. MAU-11-1 GAS VALVE SHALL ELECTRONICALLY MODULATE BETWEEN 100 AND 40 PERCENT RATED INPUT TO SATISFY SUPPLY AIR DUCT THERMOSTAT SETTING. A WALL MOUNTED SPACE THERMOSTAT SHALL OVERRIDE THE SUPPLY AIR DUCT THERMOSTAT AND SHALL CAUSE THE UNIT TO GO TO FULL HEATING WHEN THE ROOM TEMPERATURE FALLS BELOW THE OVERRIDE ROOM THERMOSTAT SETPOINT OF 55 DEGREES F. WHEN THE SLUDGE HANDLING BUILDING IS OCCUPIED, OUTSIDE AMBIENT AIR TEMPERATURE IS ABOVE 50 DEGREES F, MAU-11-1 SUPPLY FAN SHALL GO TO 100% TO ALLOW 100% OF OUTSIDE AIR TO ENTER THE UNIT. EF-11-1 SHALL BE ENERGIZED.

SAFETY AND AIRFLOW DEVICES SHALL CONSIST OF THE FOLLOWING. A DUCT MOUNTED FREEZE PROTECTION THERMOSTAT LOCATED DOWNSTREAM OF THE UNIT IN THE SUPPLY DUCTWORK SHALL DEACTIVATE MAU-11-1 WHENEVER IT SENSES A TEMPERATURE BELOW 40 DEGREES F. A SIGNAL ALARM LIGHT "MAU-11-1 FREEZE" ON THE MAU-11-1 CONTROL PANEL. DIFFERENTIAL PRESSURE SWITCH (PS) SHALL SIGNAL INDICATOR LIGHT "FAN ON" ON MAU-11-1 CONTROL PANEL WHENEVER FAN IS IN OPERATION. DIFFERENTIAL PRESSURE SWITCH (PS) SHALL SIGNAL INDICATOR LIGHT "DIRTY FILTER" ON MAU-11-1 CONTROL PANEL UPON SENSING A CLOGGED FILTER ON MAU-11-1.

VENTILATION FOR THE SLUDGE STORAGE ROOM SHALL BE SUPPLIED BY A WALL MOUNTED PROPELLER SUPPLY FAN SF-11-1 AND WALL MOUNTED CENTRIFUGAL EXHAUST FAN EF-11-2. THE SYSTEM SHALL RUN CONTINUOUSLY AND PROVIDE 6 AIR CHANGES PER HOUR OF 100 PERCENT OUTSIDE AIRFLOW TO THE SPACE. THE SLUDGE STORAGE ROOM SHALL HAVE AN NEC AREA CLASSIFICATION RATING OF UNCLASSIFIED. THE EXHAUST AIRFLOW SHALL BE LARGER THAN THE SUPPLY AIRFLOW IN ORDER TO PROVIDE A NEGATIVE PRESSURE TO THE SPACE.

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGON
E-93148
03-2-26
REGISTERED
PROFESSIONAL ENGINEER

MECHANICAL HVAC SEQUENCE OF OPERATIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
3			
2	5/18/26	ADDENDUM 2	ASB
1			

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JOB NO.	904-8119.002
SCALE	NONE

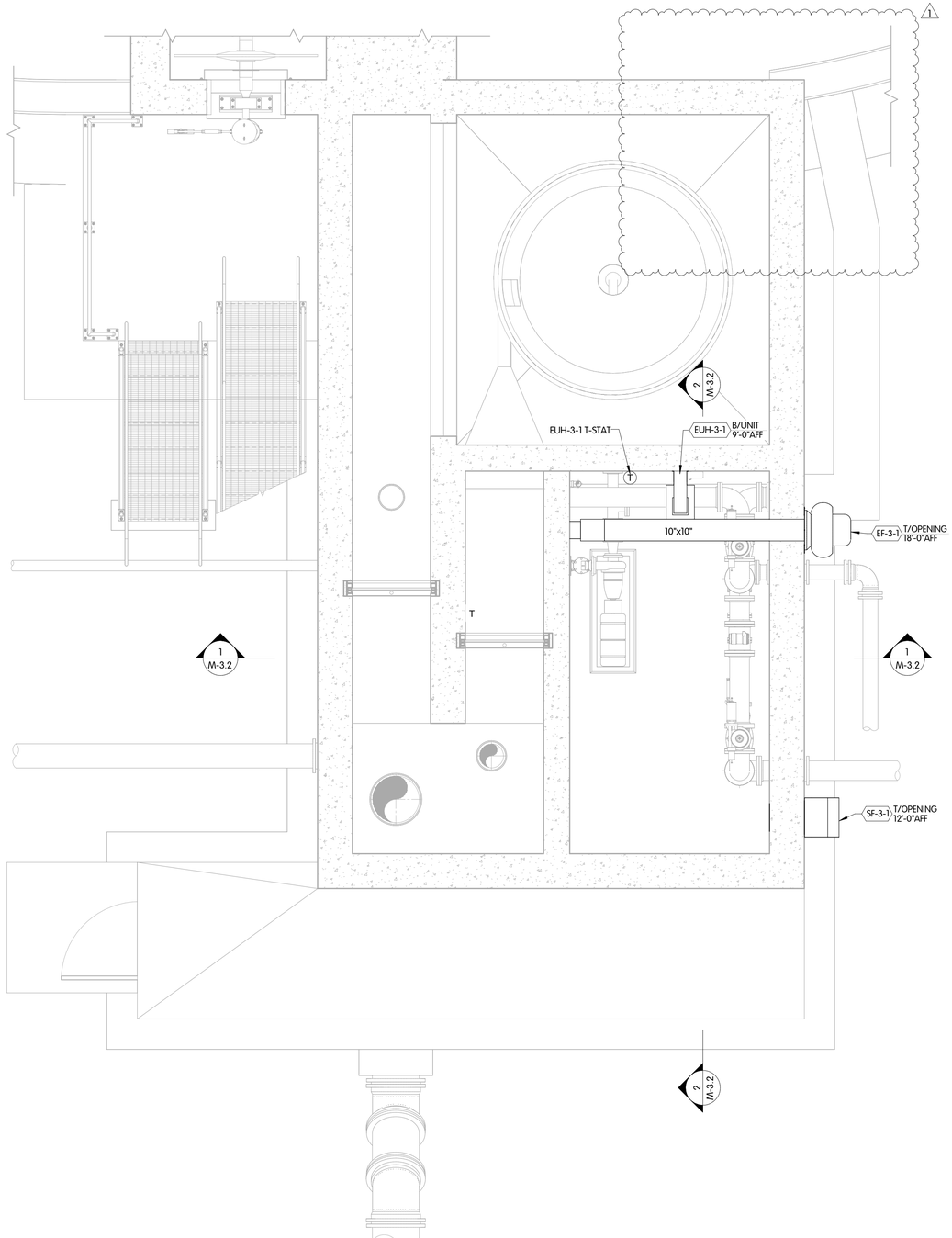
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DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

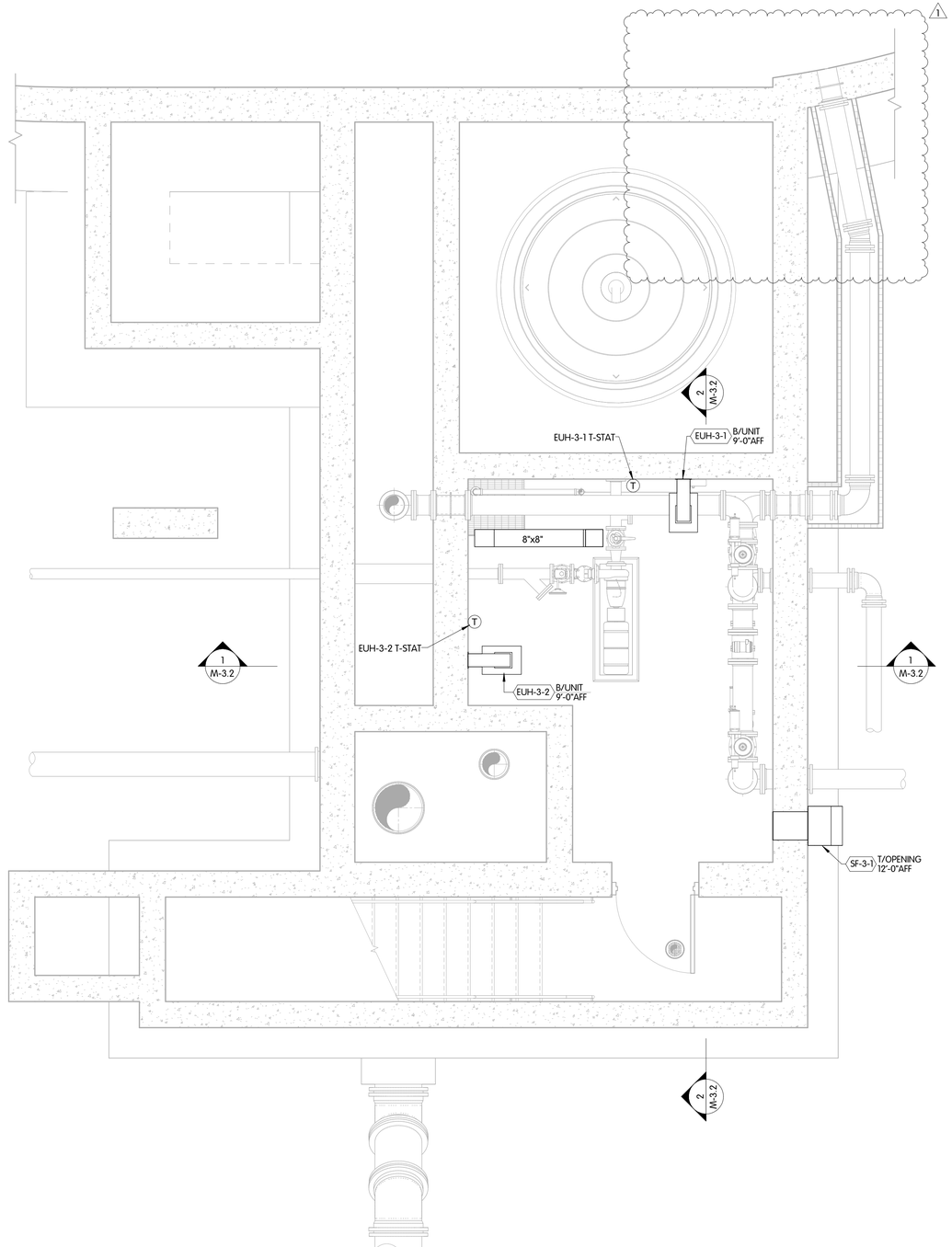
STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
M-0.8
218 OF 309

T:\0L-8119002_H\02_M\0.8 - HVAC SEQUENCE OF OPERATIONS
5/18/2026 2:05 PM - RWORLEY



PLAN AT EL. 592.00
3/8" = 1'-0"



PLAN AT EL. 574.17
3/8" = 1'-0"

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGON
E-93148
REGISTERED PROFESSIONAL ENGINEER
03-27-26

GRIT
MECHANICAL
PLANS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

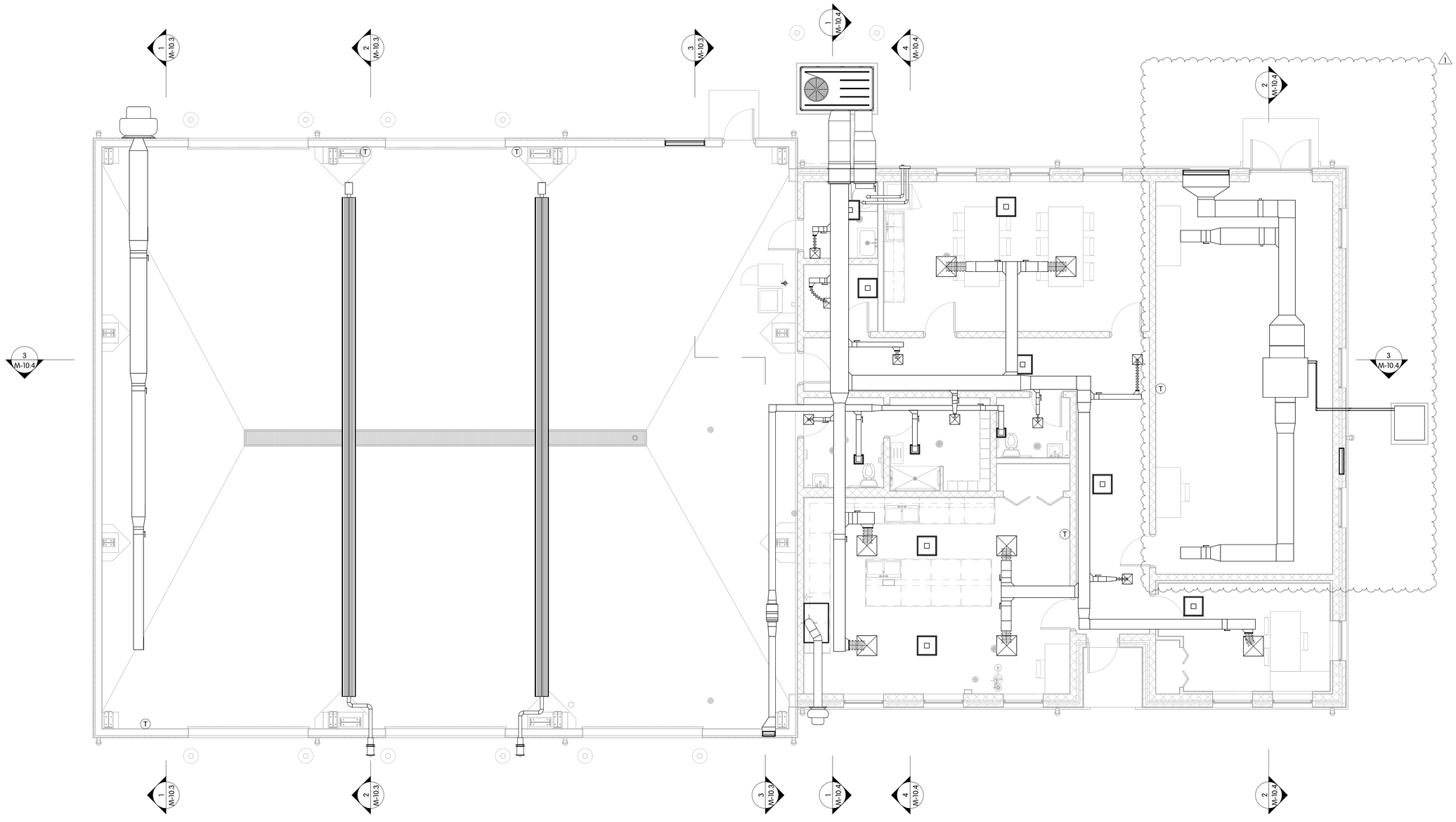
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JOB NO.: 904-8119.002
SCALE: 3/8" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
M-3.1
222 OF 309

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5/18/2026 2:22:15 PM



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

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRICK
E-93148
03-27-26
REGISTERED PROFESSIONAL ENGINEER

ADMINISTRATION/MAINTENANCE BUILDING
MECHANICAL
OVERALL PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

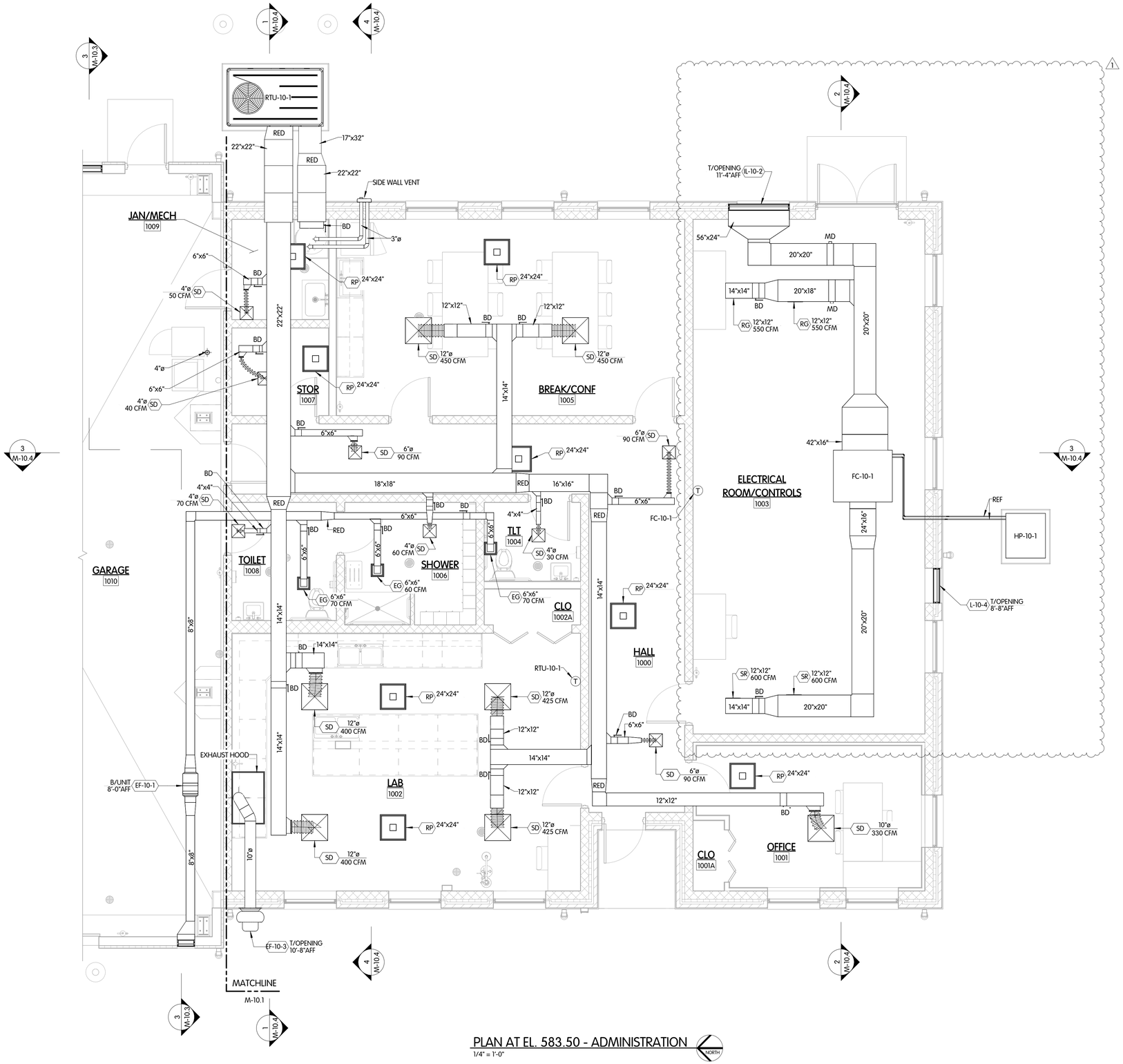
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JOB NO.: 904-8119.002
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THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
M-10.0
224 OF 309

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STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRIGTON
E-93148
REGISTERED PROFESSIONAL ENGINEER
05-22-26

ADMINISTRATION/MAINTENANCE BUILDING
MECHANICAL
PLAN AT EL. 583.50 - ADMINISTRATION

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

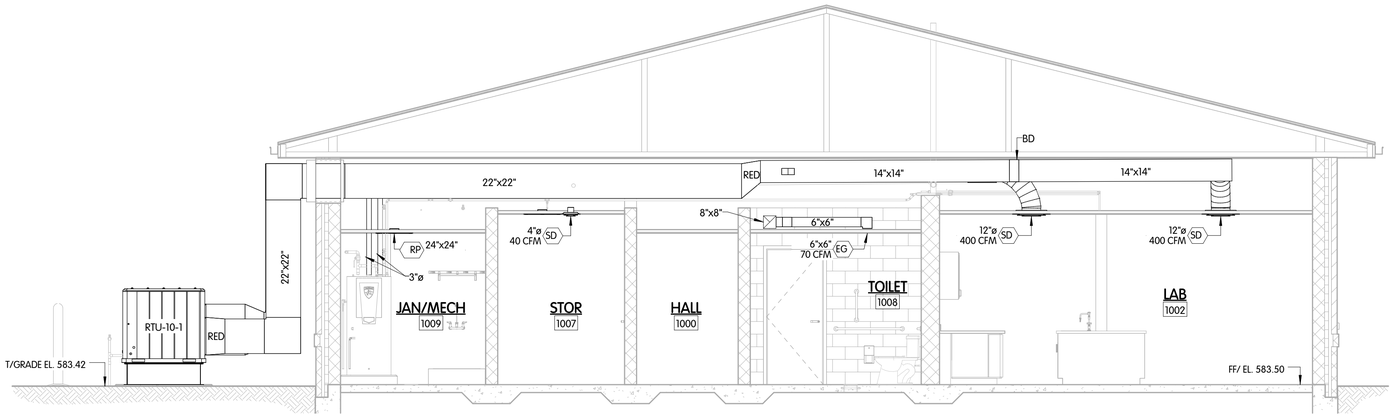
NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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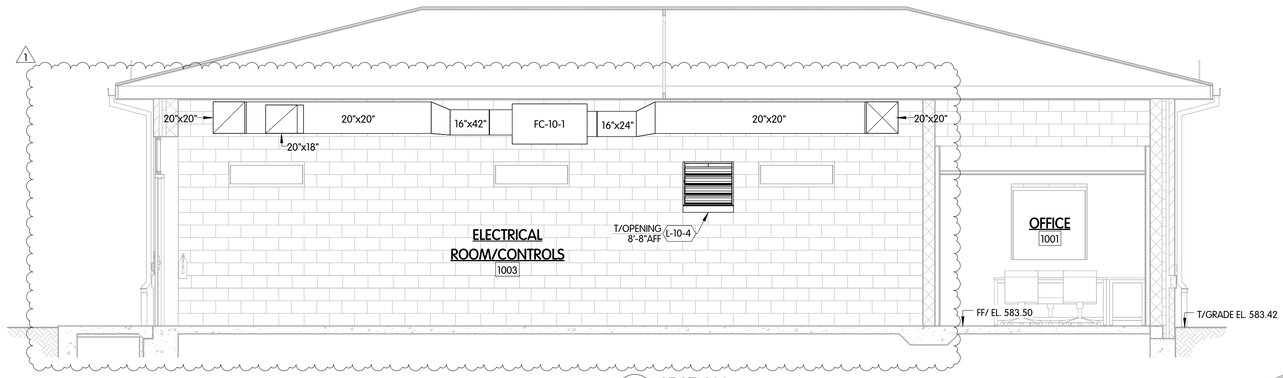
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THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

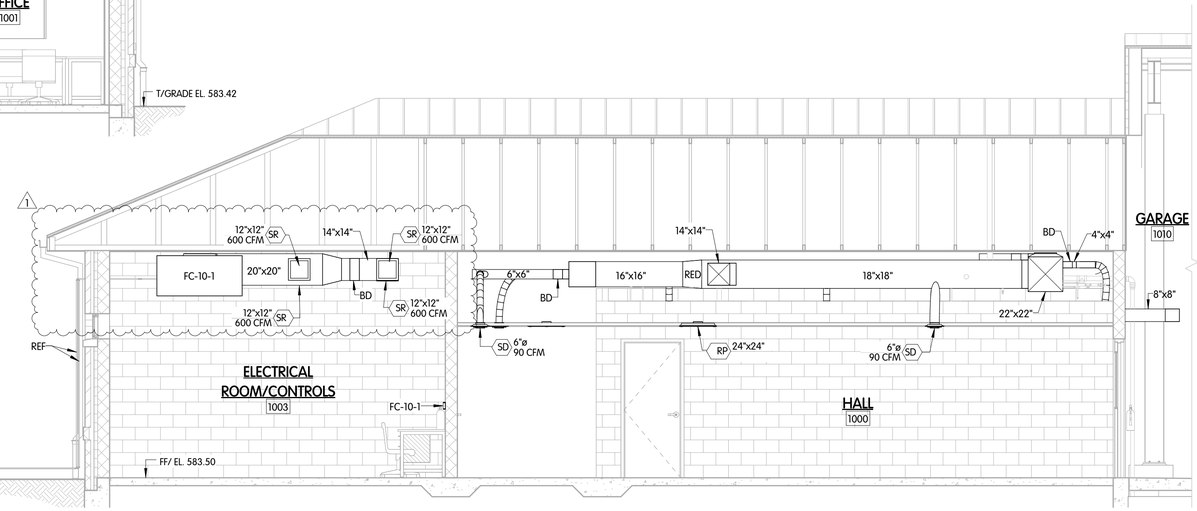
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DATE: APRIL 2026
SHEET NO.
M-10.2
226 OF 309



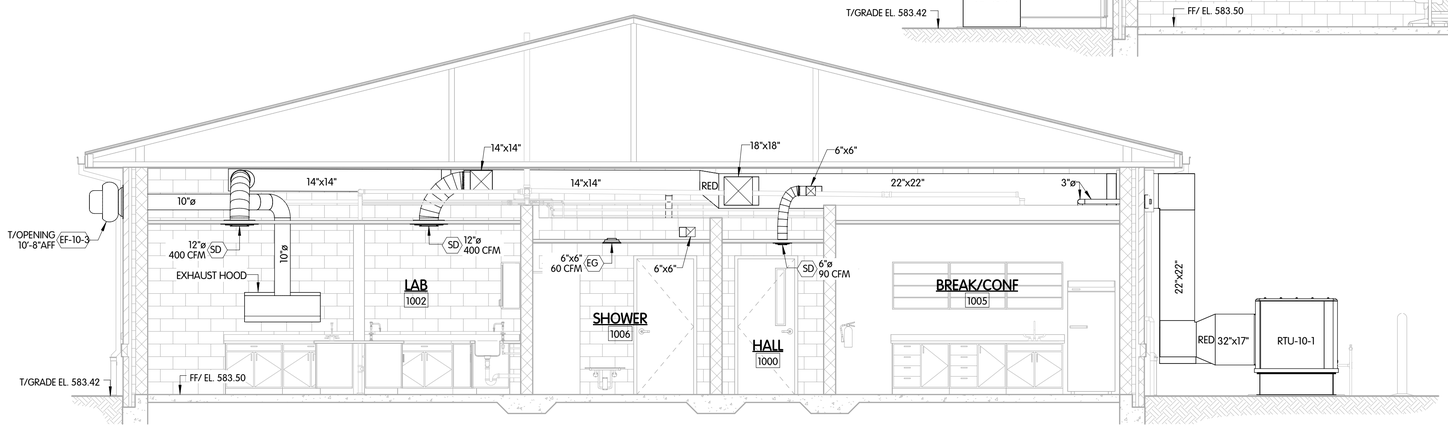
1 SECTION
1/4" = 1'-0"



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



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



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

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRICK
E-93148
REGISTERED PROFESSIONAL ENGINEER
03-27-26

ADMINISTRATION/MAINTENANCE BUILDING MECHANICAL SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

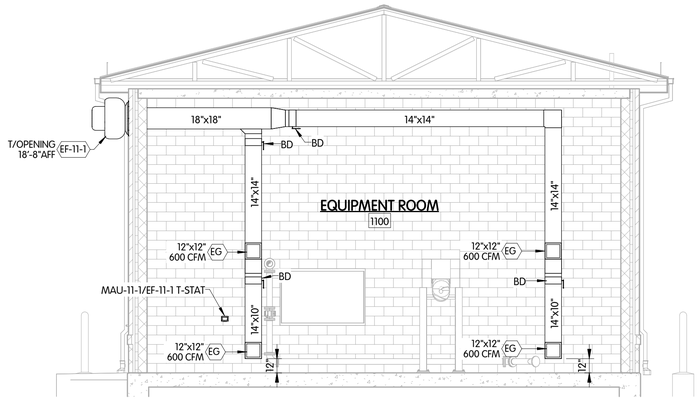
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JOB NO.: 904-8119.002
SCALE: 1/4" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

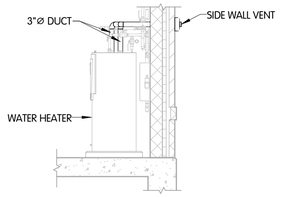
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ASB	RGW	ASB

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
M-10.4
228 OF 309

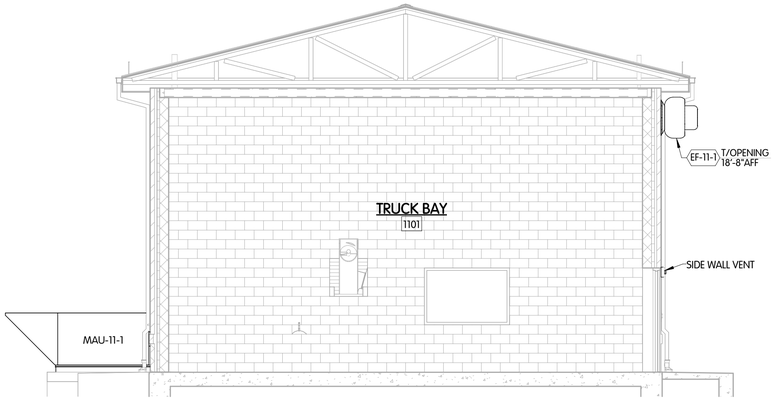
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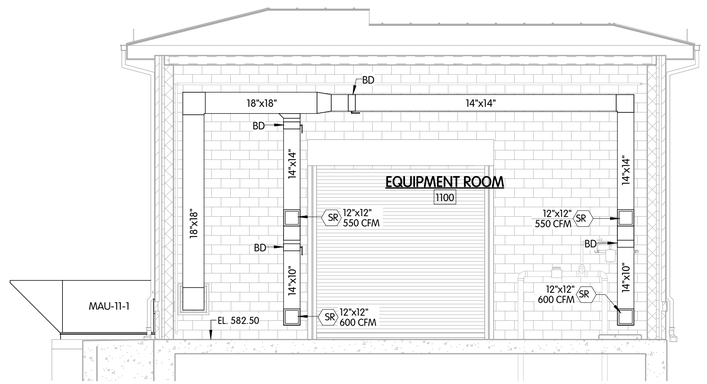
1 SECTION
3/16" = 1'-0"



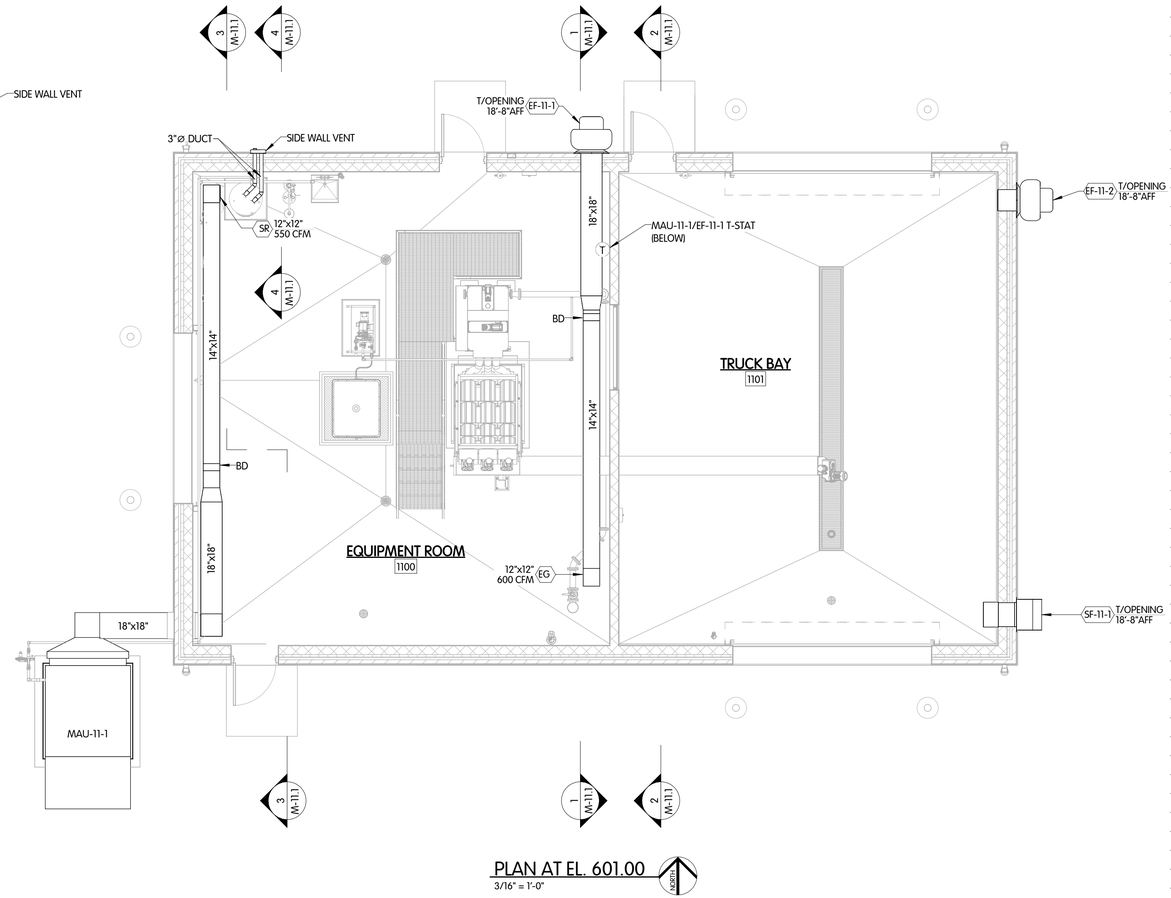
4 SECTION
1/4" = 1'-0"



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



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



PLAN AT EL. 601.00
3/16" = 1'-0"

STATE OF OHIO
ALEXANDER SEBASTIAN BUTTRICK
E-93148
REGISTERED PROFESSIONAL ENGINEER
03-2-26

SLUDGE HANDLING BUILDING MECHANICAL PLAN AND SECTIONS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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

DESIGNED	DRAWN	CHECKED
ASB	RGW	ASB

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
M-11.1
229 OF 309

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MATCH LINE SHEET E-100.1

MAINTENANCE BUILDING

ADMINISTRATION BUILDING

ODOT GUARDRAIL SEE CIVIL DETAILS

EMH-1C

EMH-1B

EMH-1A

MCCS

ELECTRICAL ROOM

700KW DIESEL GENERATOR (SEE NOTE 6)

POWER POLE INSTALLED BY OAK HARBOR POWER

S.E. ATS (SEE NOTE 5)

1000KVA TRANSFORMER AND UTILITY METER (BY OAK HARBOR POWER)

EQ BASIN PUMP STATION

DIVERSION WEIR

HEADWORKS BUILDING

EMH-5

EMH-6

FSG-1-1

PP-10-55, 57, 59

EXISTING LAB BUILDING SHALL REMAIN IN SERVICE UNTIL PLANT IS ONLINE

EMH-4

VOLUTE PRESS

SLUDGE LOADING

FUTURE CLARIFIER 3

EMH-2

OXIDATION DITCH

SPLITTER BOX

GRIT REMOVAL

CLARIFIER 2

CLARIFIER 1

EMH-3

RAS/WAS PUMP STATION

U.V. SYSTEM

SERVICE BUILDING

Existing Building

Chain Link Fence

Gravel

Grass

Grass Area

Woods Area

36" SANITARY

24" SANITARY

12" STORM

15" STORM

1713 12" Inv. 581.41

1781 12" Inv. 581.10

1799 15" Inv. 581.42

1820 15" Inv. 581.11

NOTES:

1. CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITIES BEFORE CONSTRUCTION TO AVOID ANY CONFLICTS.
2. SEE DUCT BANK SECTIONS AND DETAILS SHEET FOR CONCRETE ENCASED CONDUIT DETAIL AND DUCT BANK SECTIONS.
3. BOND ALL LIGHT POLES TO NEAREST GROUND RINGS.
4. REFER TO STRUCTURAL SHEETS FOR GENERATOR PAD, TRANSFORMER VAULT, AND ATS VAULT DETAILS.
5. CONTRACTOR SHALL FURNISH AND INSTALL SIGN PER NEC 700.7.
   SERVICE ENTRANCE BREAKER/AUTOMATIC TRANSFER SWITCH.
   EMERGENCY GENERATOR LOCATED 18 FEET SOUTH OF THIS DEVICE TO ACCESS GENERATOR CONTROL PANEL.
   1. PRESS NON-AUTO MODE
   2. PUSH EMERGENCY STOP
   3. OPEN CIRCUIT BREAKER
6. CONTRACTOR SHALL FURNISH AND INSTALL SIGN PER NEC 700.7.
   1. PRESS NON-AUTO MODE
   2. PUSH EMERGENCY STOP
   3. OPEN CIRCUIT BREAKER
7. THE EXISTING FIBER OPTIC INTERNET SERVICE BY OMNI FIBER TERMINATES AT THE EXISTING LAB BUILDING. THE CONTRACTOR SHALL COORDINATE WITH OMNI FIBER FOR THE RELOCATION OF THE INCOMING INTERNET SERVICE TO THE NEW ADMINISTRATION BUILDING ELECTRICAL ROOM. THE EXISTING SERVICE SHALL BE KEPT IN PLACE UNTIL THE NEW PLANT IS READY TO BE TAKEN ONLINE.

MATCH LINE SHEET E-100.3

STATE OF OHIO
PAUL EDWARD McNICHOL
E-39164
REGISTERED PROFESSIONAL ENGINEER
3/24/2026

ELECTRICAL SITE PLAN B

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
2	5/18/26	ADDENDUM 2	JAH

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JOB NO.	904-8119.002
SCALE	1"=20'
	THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE
DESIGNED	BBK
DRAWN	BJD
CHECKED	EBK
STATUS:	ISSUED FOR BID
DATE:	APRIL 2026
SHEET NO.	E-100.2
	239 OF 309

TCL-8119002E100-E-100.2 ELECTRICAL SITE PLAN B
5/18/2026 2:05 PM - RWORLEY
5/18/2026 2:05 PM

MDP-10							
LOAD DESCRIPTION	SIZE (Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOP	DEMAND VA
MCC-10A	350	480	3	245	257937	DUTY	203897
MCC-10B	300	480	3	256	225943	DUTY	212558
PP-10	400	480	3	265	221903	DUTY	220157

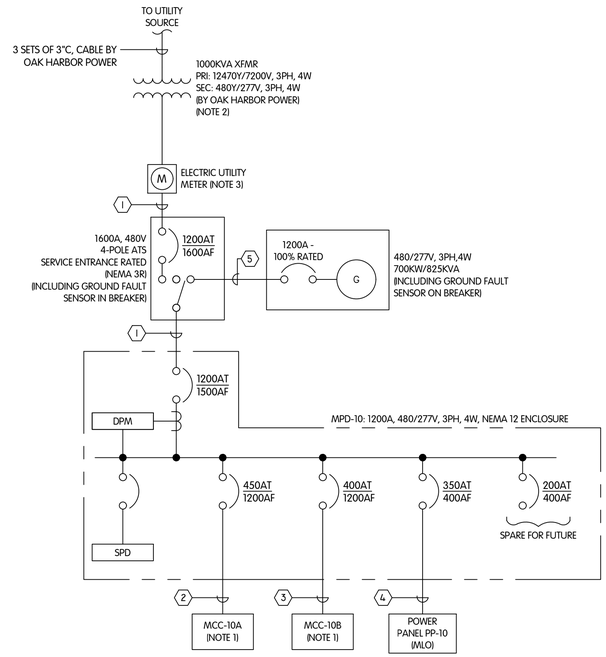
DEMND ANMPS @ 480V-3PH: 773A

1

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	VFD	0.5 HP	480	3	1.1	915	DUTY	915
WASHER/COMPACTOR 1	HEADWORKS BUILDING	VFD	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
RTU-10-1	ADMIN BUILDING	N/A	12.3 A	480	3	12.3	10227	DUTY	10227

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	VFD	0.5 HP	480	3	1.1	915	DUTY	915
WASHER/COMPACTOR 2	HEADWORKS BUILDING	VFD	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
DEWATERING CONVEYOR	SLUDGE HANDLING BUILDING	ATL	5 HP	480	3	7.6	6319	DUTY	6319
DEWATERING DRUM DRIVE 1	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
DEWATERING DRUM DRIVE 2	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
DEWATERING DRUM DRIVE 3	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
FLASH MIXING TANK DRIVE	SLUDGE HANDLING BUILDING	ATL	0.2 KW	480	3	0.2	200	DUTY	200
FLOCC. MIXING TANK DRIVE	SLUDGE HANDLING BUILDING	ATL	1 HP	480	3	2.1	1746	DUTY	1746
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	ADMIN BUILDING	N/A	9.4 A	480	3	9.4	7827	DUTY	7827
HP-10-1	ADMIN BUILDING	N/A	13.6 A	480	3	13.6	11307	DUTY	11307

PP-10									
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
LP-10 XFMR	ADMIN BUILDING	N/A	75 KVA	480	3	90.2	75000	DUTY	75000
LP-15 XFMR	SERVICE BUILDING	N/A	25 KVA	480	1	52.1	25000	DUTY	25000
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
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 BUILDING	N/A	10 KVA	480	1	20.8	10000	DUTY	10000
WELDING RECEPTACLE	MAINENANCE BUILDING	N/A	30 A	480	3	30.0	24942	DUTY	24942
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
MPZ-11	SLUDGE HANDLING BUILDING	N/A	15 KVA	480	1	31.3	15000	DUTY	15000
MAU-11-1	SLUDGE HANDLING BUILDING	N/A	2 HP	480	3	3.4	2827	DUTY	2827
EF-11-1	SLUDGE HANDLING BUILDING	ATL	1/2 HP	480	3	1.1	915	DUTY	915
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
FSG-1-1	100-MH SA-1	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FRONT GATE OPERATOR	FRONT GATE	ATL (CP)	1 HP	480	3	5.0	4157	DUTY	4157

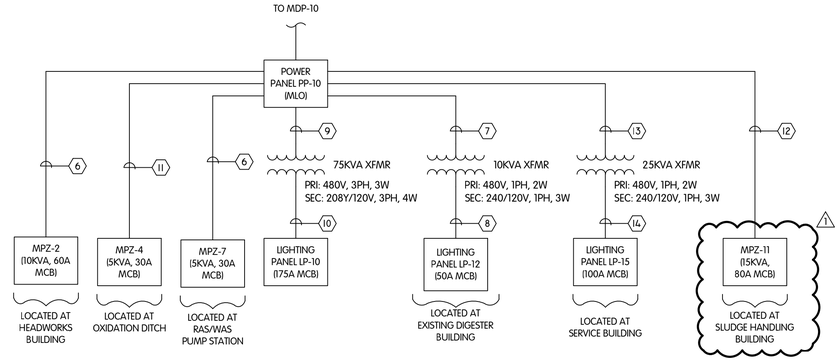


PLANT SINGLE-LINE DIAGRAM

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	3"C, 3#500 KCMIL & 1#2 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	2"C, 3#1 & 1#6 GND
10	2"C, 4#3/0 & 1#6 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

1



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.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-68164
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

ELECTRICAL
PLANT SINGLE LINE DIAGRAM AND LOAD SCHEDULES
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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2	5.18.26	ADDENDUM 2	EBK
1			

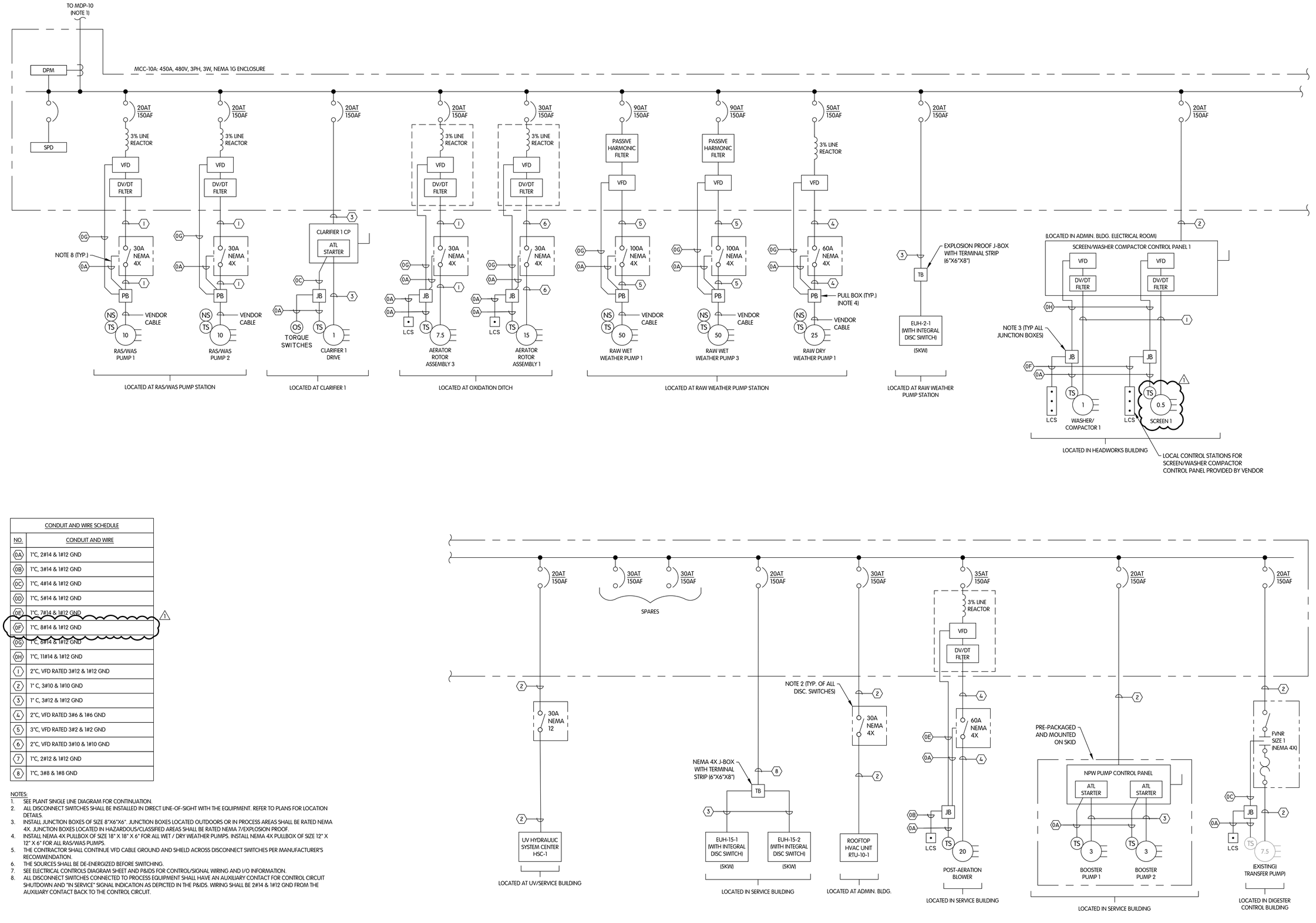
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JOB NO. 904-8119.002
SCALE AS INDICATED
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	AAE	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
E-101.1
241 OF 309

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LAST SAVED: 2026 - AWORLEY
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CONDUIT AND WIRE SCHEDULE	
NO.	CONDUIT AND WIRE
0A	1"C, 2#14 & 1#12 GND
0B	1"C, 3#14 & 1#12 GND
0C	1"C, 4#14 & 1#12 GND
0D	1"C, 5#14 & 1#12 GND
0E	1"C, 7#14 & 1#12 GND
0F	1"C, 8#14 & 1#12 GND
0G	1"C, 6#14 & 1#12 GND
0H	1"C, 11#14 & 1#12 GND
1	2"C, VFD RATED 3#12 & 1#12 GND
2	1" C, 3#10 & 1#10 GND
3	1" C, 3#12 & 1#12 GND
4	2"C, VFD RATED 3#6 & 1#6 GND
5	3"C, VFD RATED 3#2 & 1#2 GND
6	2"C, VFD RATED 3#10 & 1#10 GND
7	1"C, 2#12 & 1#12 GND
8	1"C, 3#8 & 1#8 GND

NOTES:
1. SEE PLANT SINGLE LINE DIAGRAM FOR CONTINUATION.
2. ALL DISCONNECT SWITCHES SHALL BE INSTALLED IN DIRECT LINE-OF-SIGHT WITH THE EQUIPMENT. REFER TO PLANS FOR LOCATION DETAILS.
3. INSTALL JUNCTION BOXES OF SIZE 8"X6"X6". JUNCTION BOXES LOCATED OUTDOORS OR IN PROCESS AREAS SHALL BE RATED NEMA 4X. JUNCTION BOXES LOCATED IN HAZARDOUS/CLASSIFIED AREAS SHALL BE RATED NEMA 7/EXPLOSION PROOF.
4. INSTALL NEMA 4X PULLBOX OF SIZE 18" X 18" X 6" FOR ALL WET / DRY WEATHER PUMPS. INSTALL NEMA 4X PULLBOX OF SIZE 12" X 12" X 6" FOR ALL RAS/WAS PUMPS.
5. THE CONTRACTOR SHALL CONTINUE VFD CABLE GROUND AND SHIELD ACROSS DISCONNECT SWITCHES PER MANUFACTURER'S RECOMMENDATION.
6. THE SOURCES SHALL BE DE-ENERGIZED BEFORE SWITCHING.
7. SEE ELECTRICAL CONTROLS DIAGRAM SHEET AND P&IDS FOR CONTROL/SIGNAL WIRING AND I/O INFORMATION.
8. ALL DISCONNECT SWITCHES CONNECTED TO PROCESS EQUIPMENT SHALL HAVE AN AUXILIARY CONTACT FOR CONTROL CIRCUIT SHUTDOWN AND "IN SERVICE" SIGNAL INDICATION AS DEPICTED IN THE P&IDS. WIRING SHALL BE 2#14 & 1#12 GND FROM THE AUXILIARY CONTACT BACK TO THE CONTROL CIRCUIT.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-68164
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

ELECTRICAL
MCC-10A SINGLE LINE DIAGRAM

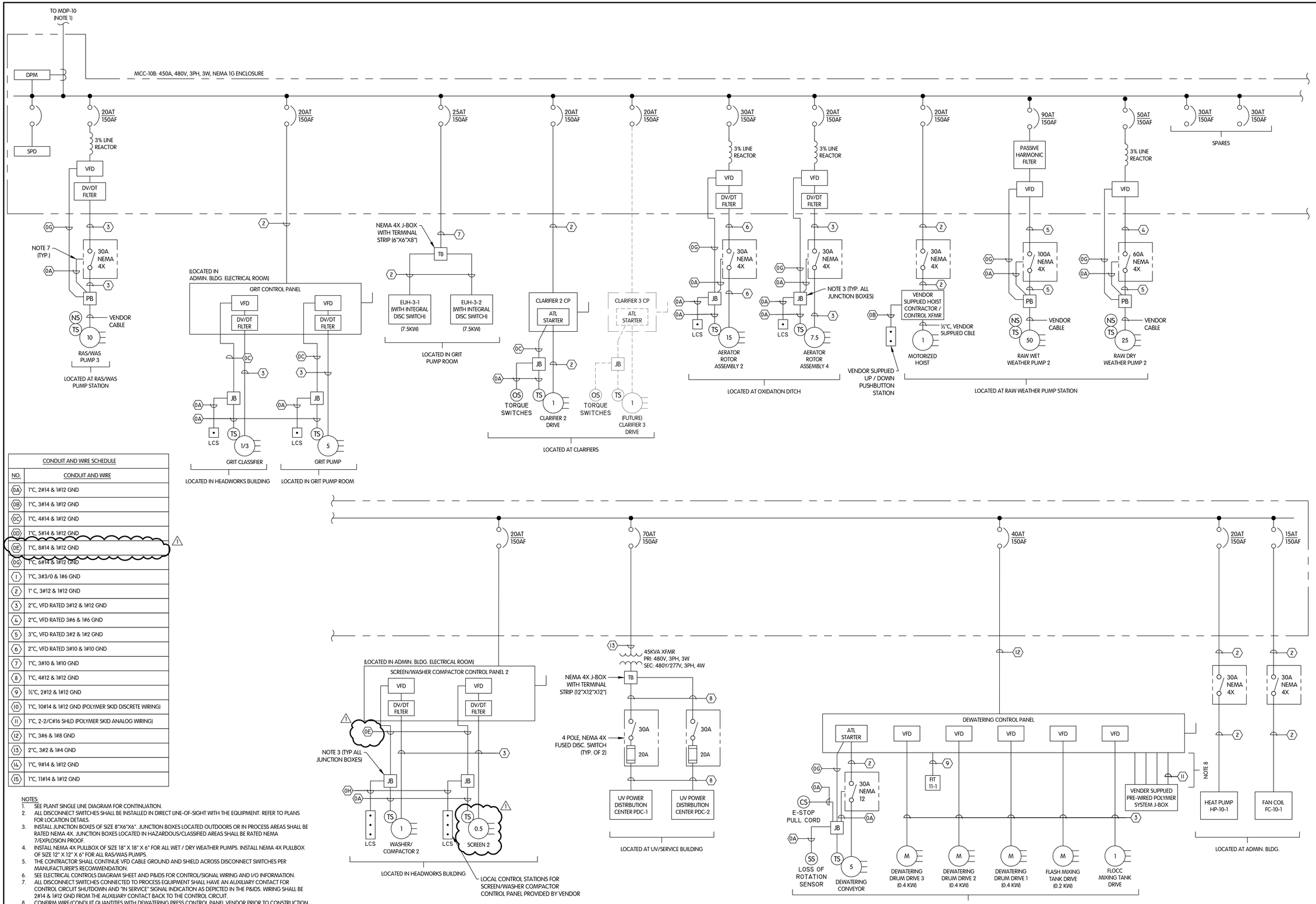
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
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4			
3			
2	5/18/26	ADDENDUM 2	EBK
1			

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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 BID
DATE:	APRIL 2026
SHEET NO.	E-101.2
	242 OF 309

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CONDUIT AND WIRE SCHEDULE	
NO.	CONDUIT AND WIRE
0A	1"C, 2#14 & 1#12 GND
0B	1"C, 3#14 & 1#12 GND
0C	1"C, 4#14 & 1#12 GND
0D	1"C, 5#14 & 1#12 GND
0E	1"C, 8#14 & 1#12 GND
0G	1"C, 6#14 & 1#12 GND
1	1"C, 3#3/0 & 1#6 GND
2	1" C, 3#12 & 1#12 GND
3	2"C, VFD RATED 3#12 & 1#12 GND
4	2"C, VFD RATED 3#6 & 1#6 GND
5	3"C, VFD RATED 3#2 & 1#2 GND
6	2"C, VFD RATED 3#10 & 1#10 GND
7	1"C, 3#10 & 1#10 GND
8	1"C, 4#12 & 1#12 GND
9	¾"C, 2#12 & 1#12 GND
10	1"C, 10#14 & 1#12 GND (POLYMER SKID DISCRETE WIRING)
11	1"C, 2-2/C#16 SHLD (POLYMER SKID ANALOG WIRING)
12	1"C, 3#6 & 1#8 GND
13	2"C, 3#2 & 1#4 GND
14	1"C, 9#14 & 1#12 GND
15	1"C, 11#14 & 1#12 GND

NOTES:
1. SEE PLANT SINGLE LINE DIAGRAM FOR CONTINUATION.
2. ALL DISCONNECT SWITCHES SHALL BE INSTALLED IN DIRECT LINE-OF-SIGHT WITH THE EQUIPMENT. REFER TO PLANS FOR LOCATION DETAILS.
3. INSTALL JUNCTION BOXES OF SIZE 8"X6"X6". JUNCTION BOXES LOCATED OUTDOORS OR IN PROCESS AREAS SHALL BE RATED NEMA 4X. JUNCTION BOXES LOCATED IN HAZARDOUS/CLASSIFIED AREAS SHALL BE RATED NEMA 7/EXPLOSION PROOF.
4. INSTALL NEMA 4X PULLBOX OF SIZE 18" X 18" X 6" FOR ALL WET / DRY WEATHER PUMPS. INSTALL NEMA 4X PULLBOX OF SIZE 12" X 12" X 6" FOR ALL RAS/WAS PUMPS.
5. THE CONTRACTOR SHALL CONTINUE VFD CABLE GROUND AND SHIELD ACROSS DISCONNECT SWITCHES PER MANUFACTURER'S RECOMMENDATION.
6. SEE ELECTRICAL CONTROLS DIAGRAM SHEET AND P&IDS FOR CONTROL/SIGNAL WIRING AND I/O INFORMATION.
7. ALL DISCONNECT SWITCHES CONNECTED TO PROCESS EQUIPMENT SHALL HAVE AN AUXILIARY CONTACT FOR CONTROL CIRCUIT SHUTDOWN AND "IN SERVICE" SIGNAL INDICATION AS DEPICTED IN THE P&IDS. WIRING SHALL BE 2#14 & 1#12 GND FROM THE AUXILIARY CONTACT BACK TO THE CONTROL CIRCUIT.
8. CONFIRM WIRE/CONDUIT QUANTITIES WITH DEWATERING PRESS CONTROL PANEL VENDOR PRIOR TO CONSTRUCTION. WIRE/CONDUITS SHOWN ARE ASSUMED.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/24/2026

ELECTRICAL
MCC-10B SINGLE LINE DIAGRAM

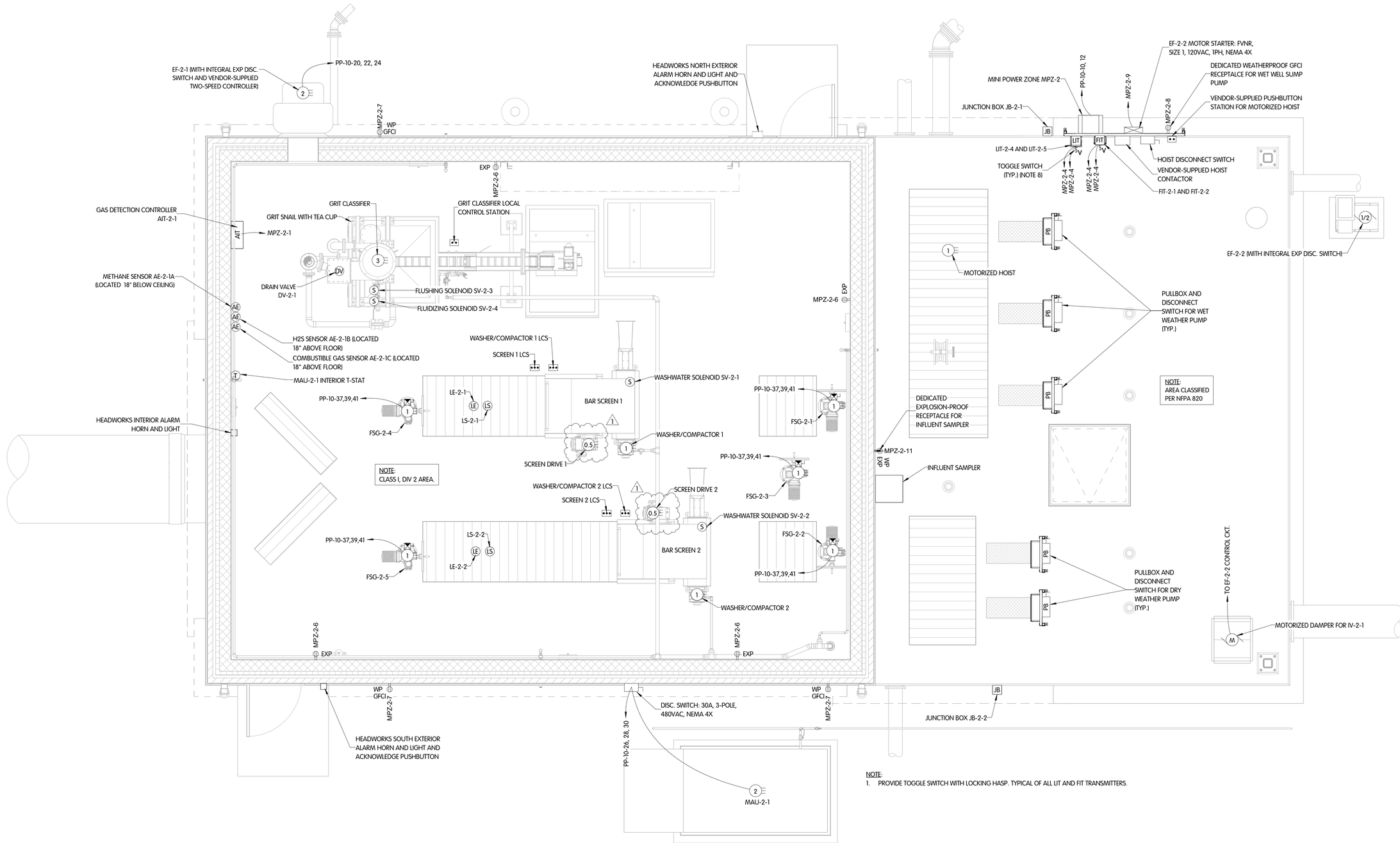
VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	EBK

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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 BID
DATE:	APRIL 2026
SHEET NO.	E-101.3
	243 OF 309

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NOTE:
1. PROVIDE TOGGLE SWITCH WITH LOCKING HASP. TYPICAL OF ALL LIT AND FIT TRANSMITTERS.

PLAN AT EL. 586.00
3/8" = 1'-0"

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49364
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

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	5/18/26	ADDENDUM 2	JAH

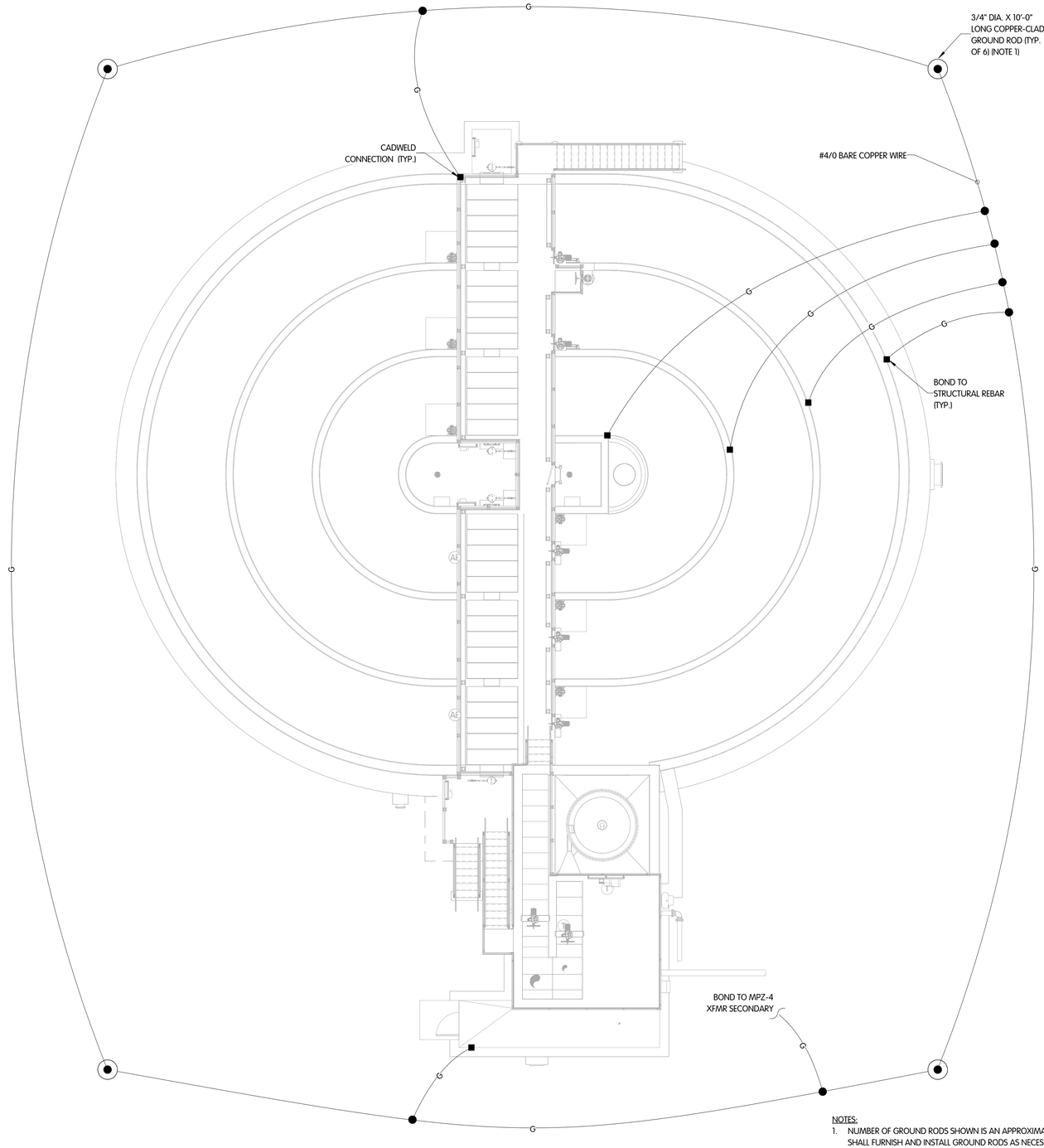
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JOB NO.: 904-8119.002
SCALE: 3/8" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
E-2.1
248 OF 309

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OVERALL GROUNDING PLAN

1/8" = 1'-0"

NORTH

NOTES:

1. NUMBER OF GROUND RODS SHOWN IS AN APPROXIMATION. THE CONTRACTOR SHALL FURNISH AND INSTALL GROUND RODS AS NECESSARY TO MEET NEC ARTICLE 250 OHMIC REQUIREMENTS.
2. BOND HANDRAIL AND METAL PARTS IN CONTACT WITH WATER TO GROUND RING WITH #4/0 BARE COPPER WIRE.
3. METAL UNDERGROUND PIPES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250.52(A)(1).

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

GRIT/OXIDATION DITCH ELECTRICAL OVERALL GROUNDING PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

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JOB NO.: 904-8119.002

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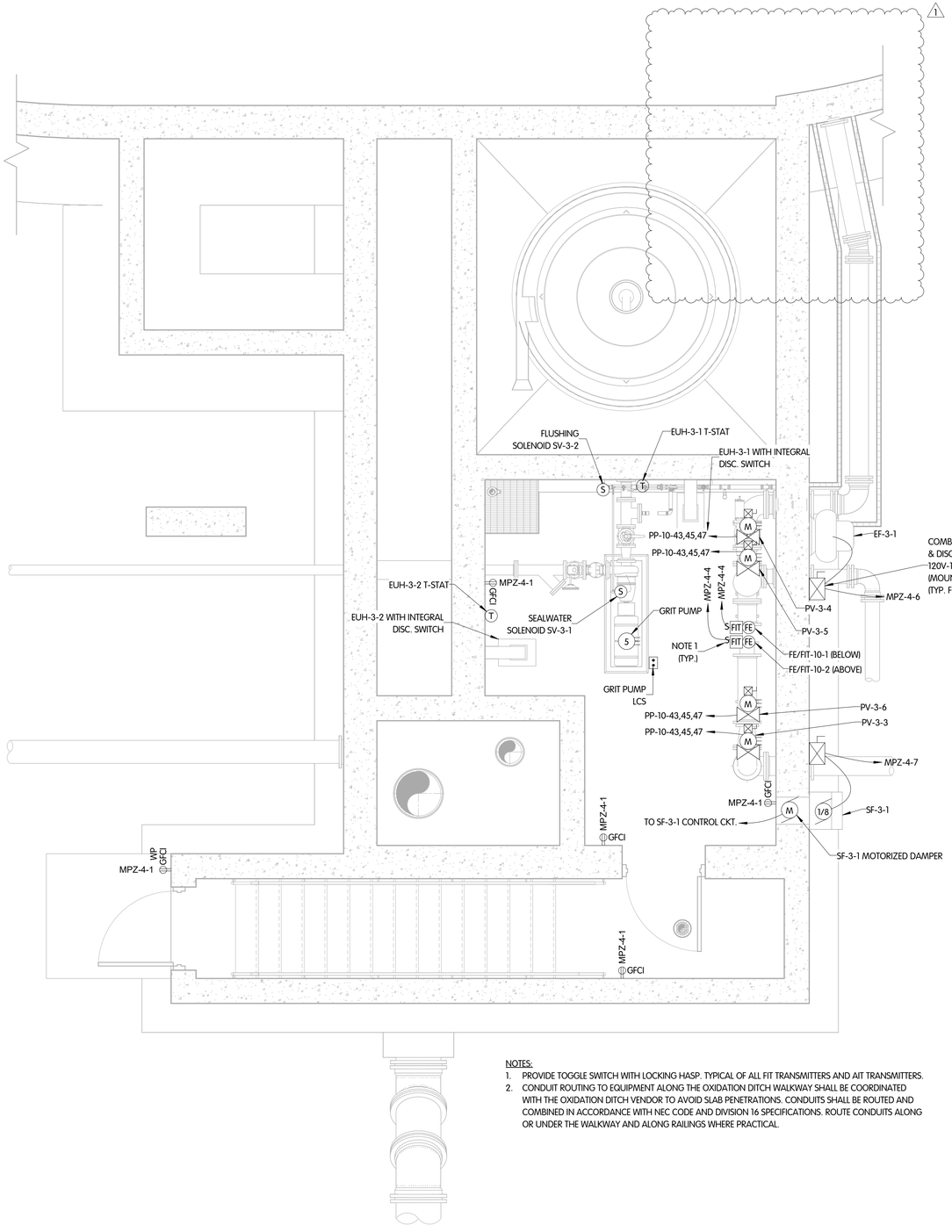
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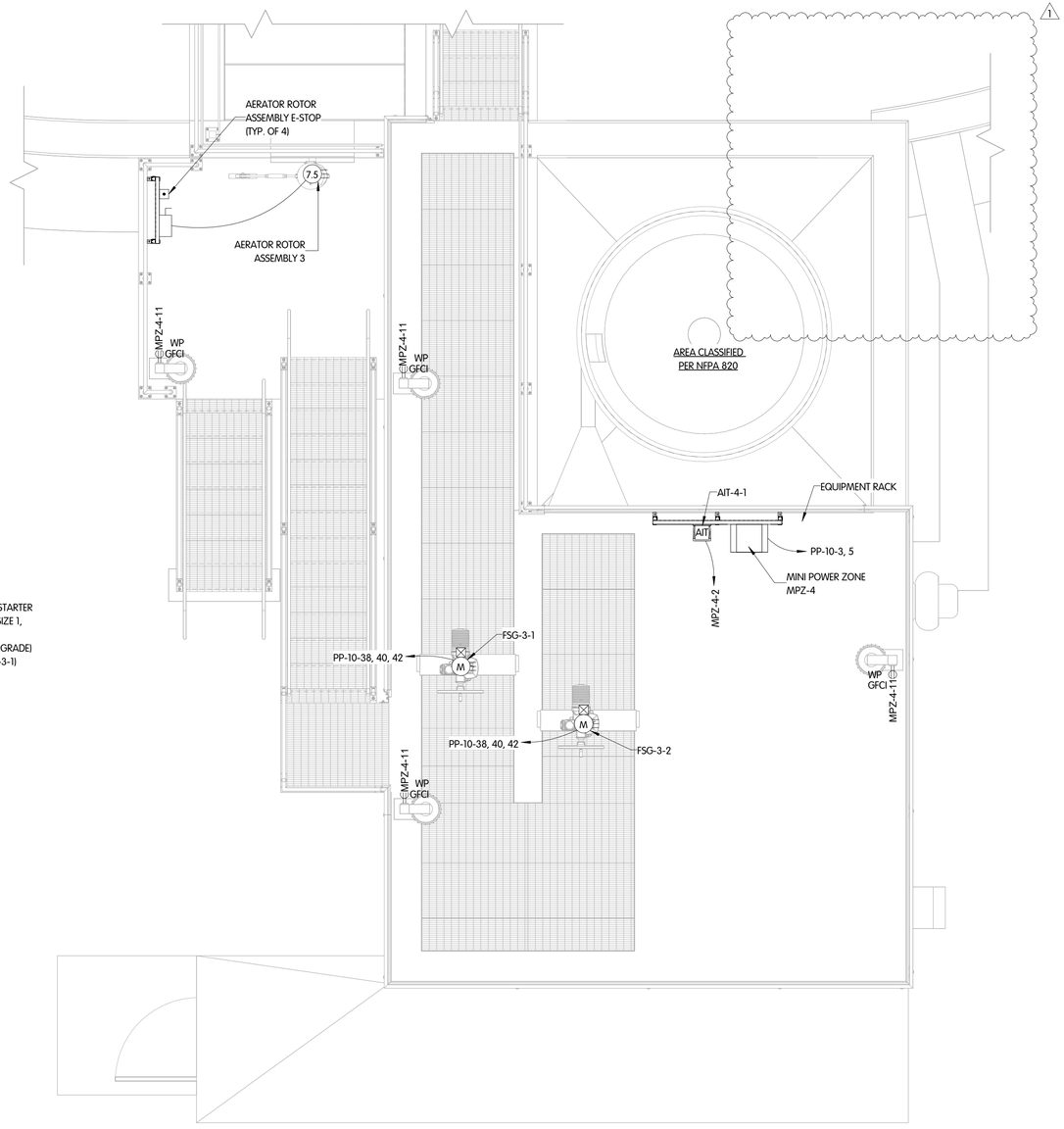
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DATE: APRIL 2026

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255 OF 309

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NOTES:

1. PROVIDE TOGGLE SWITCH WITH LOCKING HASP. TYPICAL OF ALL FIT TRANSMITTERS AND AIT TRANSMITTERS.
2. CONDUIT ROUTING TO EQUIPMENT ALONG THE OXIDATION DITCH WALKWAY SHALL BE COORDINATED WITH THE OXIDATION DITCH VENDOR TO AVOID SLAB PENETRATIONS. CONDUITS SHALL BE ROUTED AND COMBINED IN ACCORDANCE WITH NEC CODE AND DIVISION 16 SPECIFICATIONS. ROUTE CONDUITS ALONG OR UNDER THE WALKWAY AND ALONG RAILINGS WHERE PRACTICAL.

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

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

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/24/2026

GRIT
ELECTRICAL
POWER PLANS

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: 3/8" = 1'-0"

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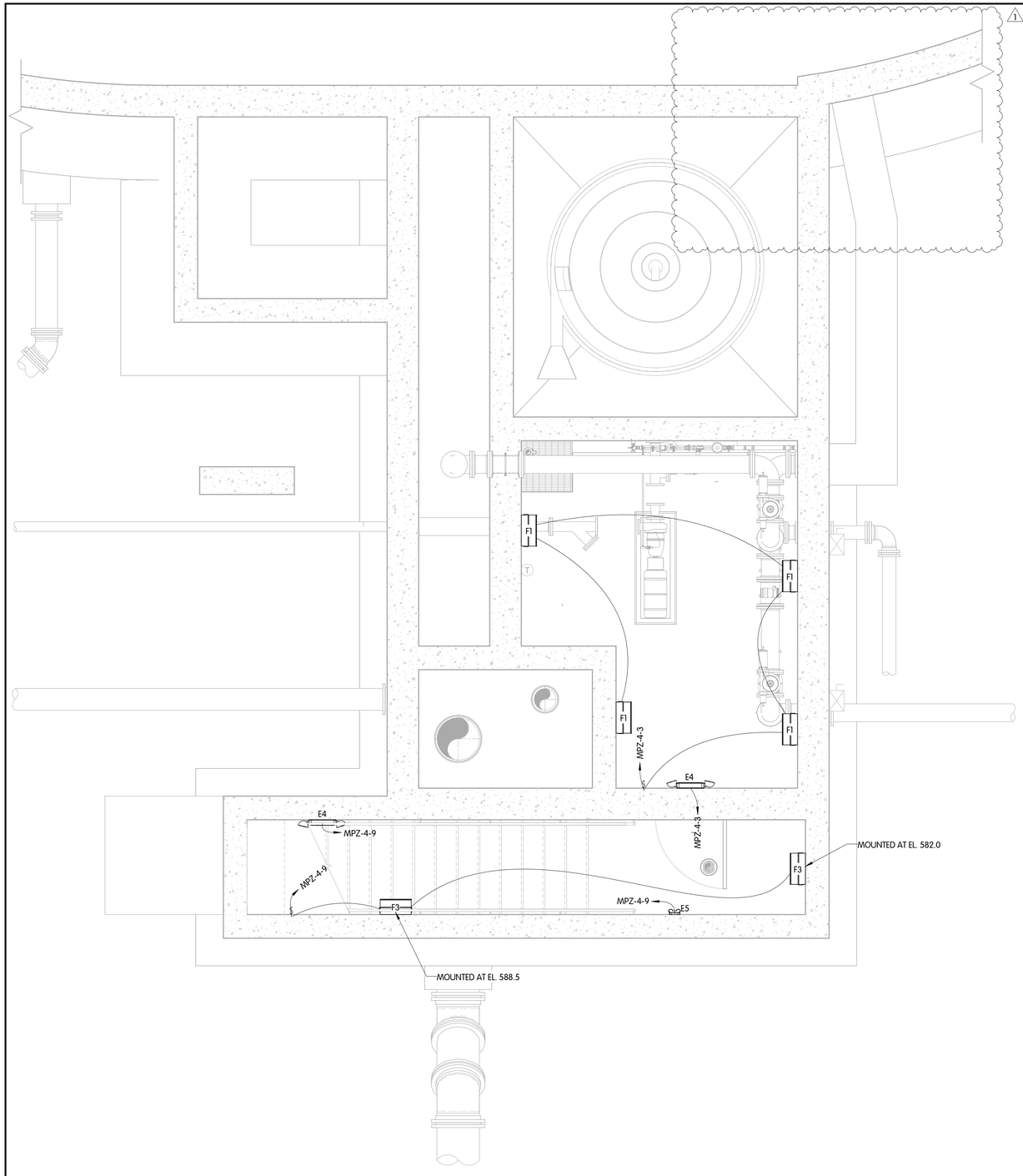
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EBK	AAE	EBK

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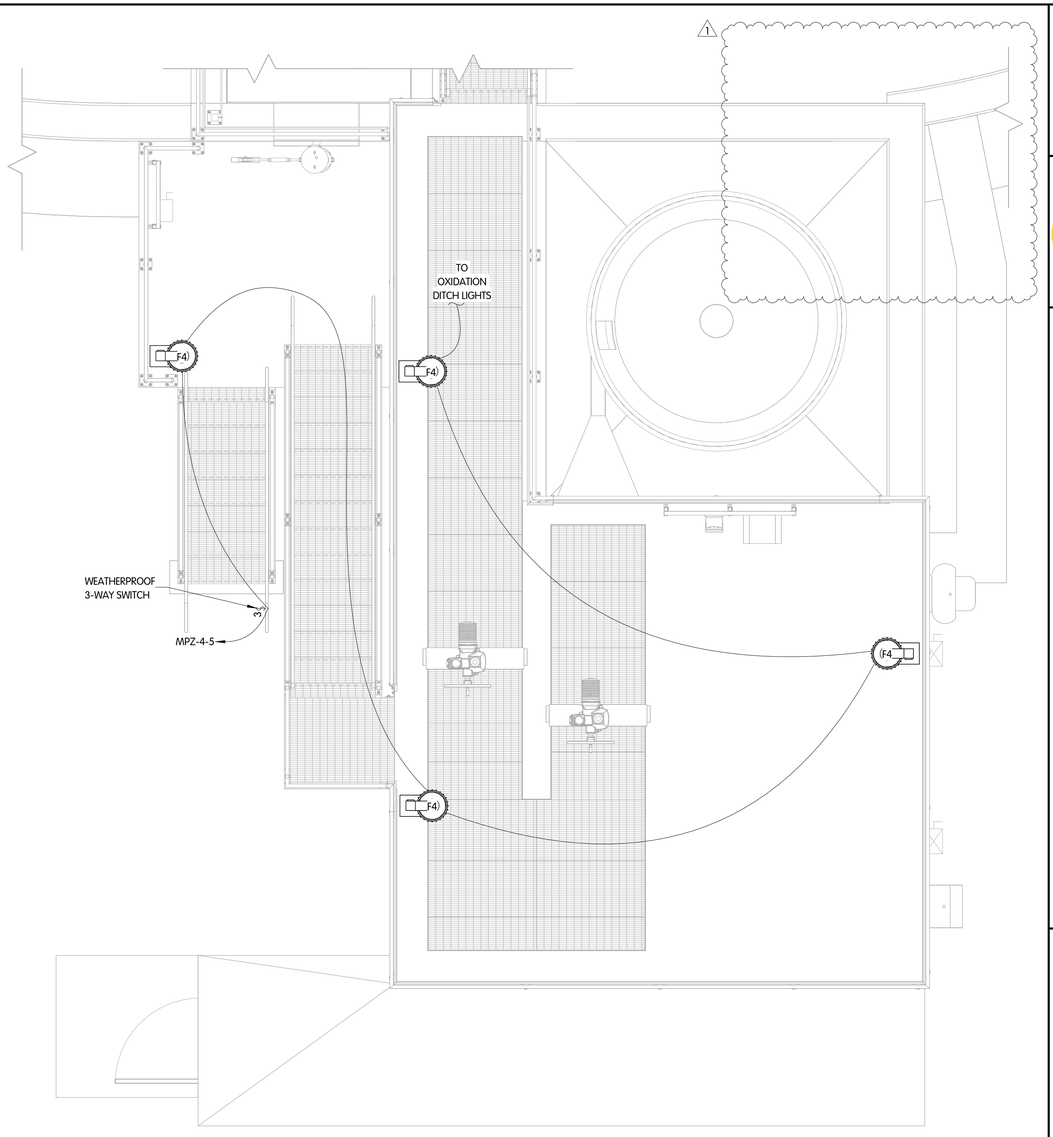
DATE: APRIL 2026

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



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

GRIT PUMP ROOM 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" ABOVE PUMP ROOM FLOOR.
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 7'-0" ABOVE PUMP ROOM.
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 8'-0" ABOVE PUMP ROOM FLOOR.
F3	LITHONIA CAT. NO. TWX1-LED-P1-40K-MVOLT-PE-DBLXD. LED WALL LUMINAIRE, PERFORMANCE PACKAGE 2, 4000K COLOR TEMPERATURE, MULTIVOLT, BUTTON-STYLE PHOTOCELL, BLACK FINISH. 11.4 WATTS. SEE PLAN FOR MOUNTING ELEVATION.

STATE OF OHIO
PAUL EDWARD McNICHOL
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

GRIT
ELECTRICAL
LIGHTING PLANS AND SCHEDULE

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	BY
1	5/18/26	ADDENDUM 2
		REVISIONS AFTER ISSUED FOR BID
		JAH

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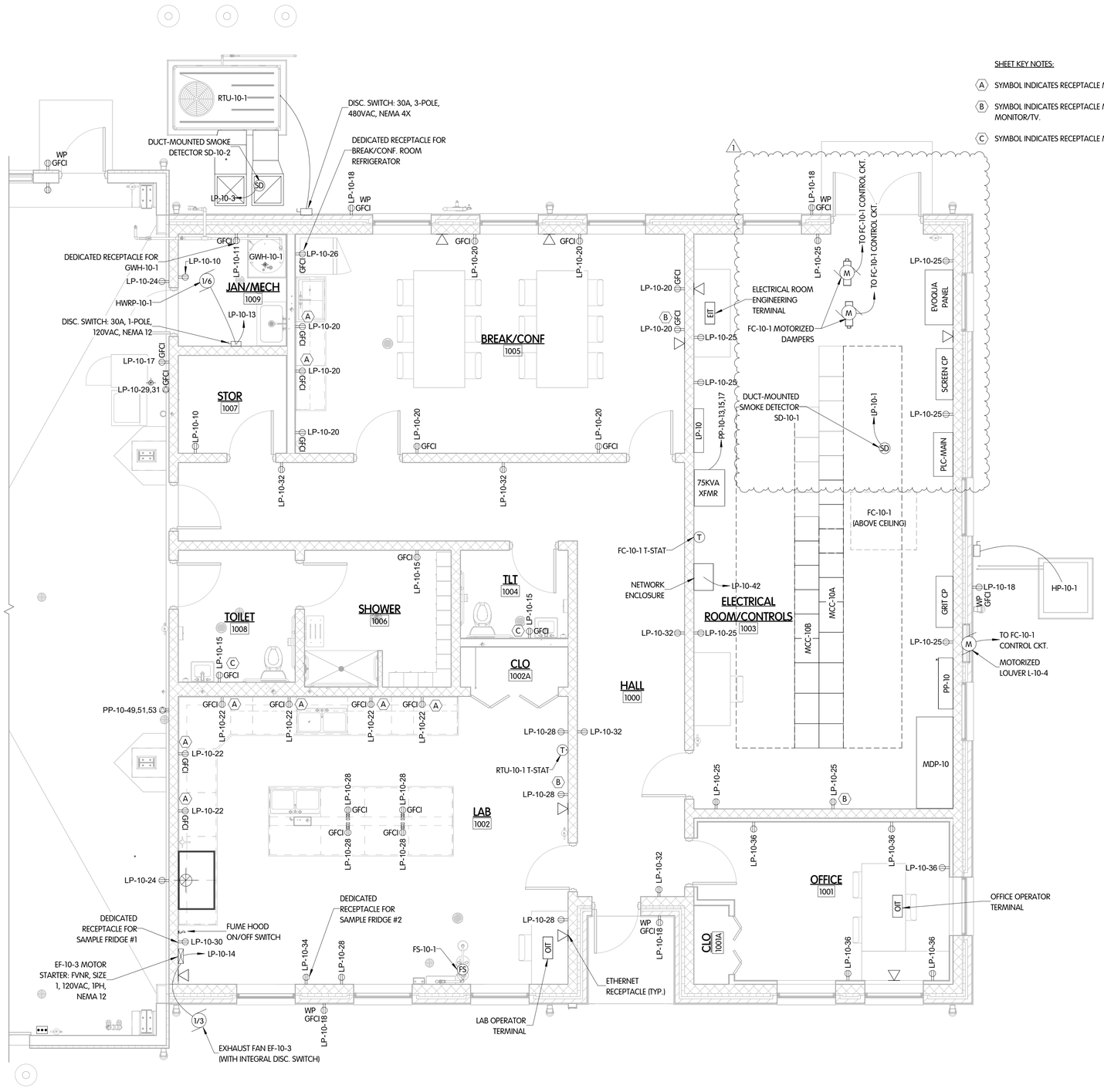
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SCALE: 3/8" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026

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257 OF 309

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SHEET KEY NOTES:

(A) SYMBOL INDICATES RECEPTACLE MOUNTED 18" ABOVE COUNTERTOP.

(B) SYMBOL INDICATES RECEPTACLE MOUNTED 60" AFF FOR USE WITH MONITOR/TV.

(C) SYMBOL INDICATES RECEPTACLE MOUNTED 54" AFF.

POWER PLAN - ADMINISTRATION

1/4" = 1'-0"

NORTH

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

ADMINISTRATION/MAINTENANCE BUILDING
ELECTRICAL
POWER PLAN - ADMINISTRATION

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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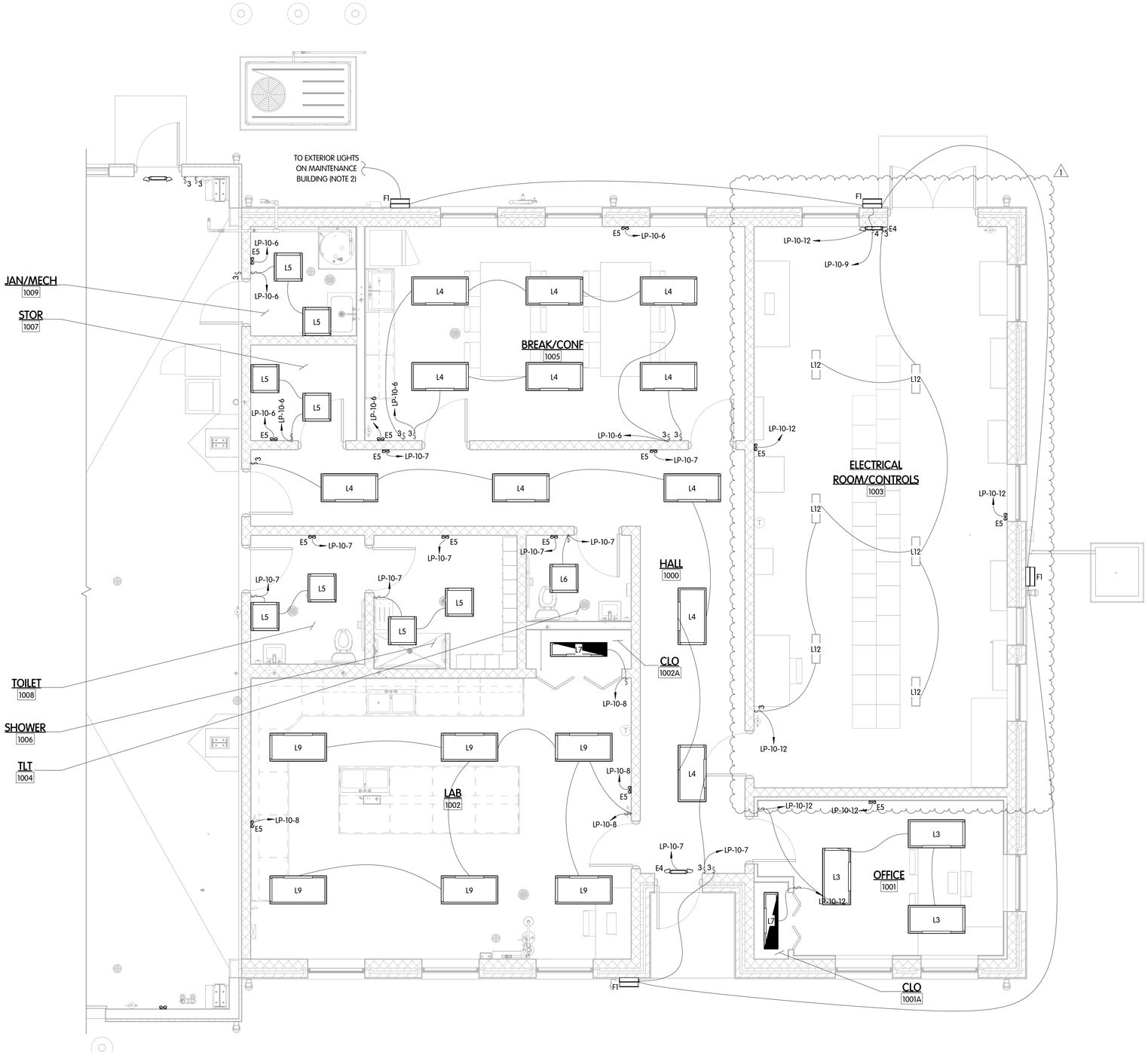
JOB NO.: 904-8119.002
SCALE: 1/4" = 1'-0"
THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
E-10.3
270 OF 309

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5/18/2026 2:26:06 PM



LIGHTING PLAN - ADMINISTRATION

1/4" = 1'-0"

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/24/2026

ADMINISTRATION/MAINTENANCE BUILDING
ELECTRICAL
LIGHTING PLAN - ADMINISTRATION

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAH

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DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026

SHEET NO.
E-10.5
272 OF 309

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PANELBOARD DESIGNATION/TAG LP-10

LOCATION:	ADMIN/MAINTENANCE BLDG. ELECTRICAL ROOM	**VOLTS:**	208Y/120V	**A.I.C. (Fully Rated):**	10kA
FEEDER SIZE:	(SEE PLANT SINGLE LINE)	**PHASES:**	3	**BREAKERS:**	BOLT-ON
FED FROM:	75KVA XFMR	**WIRES:**	4	**MAINS RATING:**	200 A
MOUNTING:	SURFACE	**AVAILABLE CKTS.:**	54	**MCB:**	175 A
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	SMOKE DETECTOR, SD-10-1	#12	15 A	1	5 VA			120 VA			1	20 A	#12	RADIANT TUBE HEATER, RTH-102	2
3	SMOKE DETECTOR, SD-10-2	#12	20 A	1		5 VA			150 VA		1	20 A	#12	GENERATOR ENCLOSURE HEATER CONNECTOR	4
5	RADIANT TUBE HEATER, RTH-10-1	#12	20 A	1			120 VA			226 VA	1	20 A	#12	LIGHTING - BREAK, MECH, STORAGE ROOMS	6
7	LIGHTING - HALLWAY & RESTROOMS	#12	20 A	1	240 VA			373 VA			1	20 A	#12	LIGHTING - LAB	8
9	LIGHTING - EXTERIOR	#10	20 A	1		248 VA			373 VA		1	20 A	#12	LIGHTING - ELECTRICAL ROOM & OFFICE	10
11	RECEPTACLE - GAS WATER HEATER, GHW-10-1	#12	20 A	1			250 VA			390 VA	1	20 A	#12	LIGHTING - ELECTRICAL ROOM & OFFICE	12
13	HOT WATER RECIRC. PUMP, HWRP-10-1	#12	15 A	1	528 VA			598 VA			1	20 A	#12	LIGHTING - LAB	14
15	RECEPTACLES - RESTROOMS, SHOWER ROOM	#12	20 A	1		600 VA			932 VA		1	20 A	#6	LIGHTING - MAINTENANCE BLDG. INTERIOR	16
17	RECEPTACLE - WASHING MACHINE	#12	20 A	1			800 VA			1000 VA	1	20 A	#8	RECEPTACLES - ADMIN BLDG EXTERIOR	18
19	O/H DOOR, D-10-15	#10	20 A	1	1176 VA			1800 VA			1	20 A	#10	RECEPTACLES - BREAK/CONFERENCE ROOM	20
21	O/H DOOR, D-10-16	#8	20 A	1		1176 VA			1200 VA		1	20 A	#10	RECEPTACLES - LAB COUNTERTOP	22
23	GENERATOR BATTERY CHARGER	#12	20 A	1			1200 VA			1600 VA	1	20 A	#6	RECEPTACLES - MAINTENANCE BLDG. INTERIOR	24
25	RECEPTACLES - ELECTRICAL ROOM	#10	20 A	1	1800 VA			500 VA			1	20 A	#12	RECEPTACLE - BREAK ROOM FRIDGE	26
27	EXHAUST FAN, EF-10-2	#8	20 A	1		1276 VA			1600 VA		1	20 A	#10	RECEPTACLES - LAB WALLS AND CENTER ISLAND	28
29	RECEPTACLE - DRYER	#10	30 A	2			2000 VA			500 VA	1	20 A	#12	RECEPTACLE - SAMPLE FRIDGE #1	30
31					2000 VA			1000 VA			1	20 A	12	RECEPTACLES - CORRIDOR	32
33	GENERATOR JACKET WATER HEATER	#12	20 A	2		1125 VA			500 VA		1	20 A	12	RECEPTACLE - LAB SAMPLE FRIDGE #2	34
35							1125 VA			1000 VA	1	20 A	12	RECEPTACLES - OFFICE	36
37	O/H DOOR, D-10-17	#8	20 A	1	1176 VA			72 VA			1	20 A	#12	LIGHTING - FRONT GATE POLE LIGHT	38
39	RECEPTACLES - MAINTENANCE BLDG. EXTERIOR	#6	20 A	1		1000 VA			1176 VA		1	20 A	#10	O/H DOOR, D-10-18	40
41	O/H DOOR, D-10-19	#10	20 A	1			1176 VA			500 VA	1	20 A		NETWORK ENCLOSURE	42
43	SPARE	--	20 A	1	0 VA			0 VA			1	20 A	--	SPARE	44
45	SPARE	--	20 A	1		0 VA			0 VA		1	20 A	--	SPARE	46
47	SPARE	--	20 A	1			0 VA			0 VA	1	20 A	--	SPARE	48
49	SPACE	--	--	1	--			--			1	--	--	SPACE	50
51	SPACE	--	--	1		--			--		1	--	--	SPACE	52
53	SPACE	--	--	1			--			--	1	--	--	SPACE	54
				Total Load:	11654 VA			11388 VA		11900 VA					
				Total Amps:	97 A			95 A		100 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:**	400 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 10KVA TRANSFORMER (DIGESTER CONTROL BUILDING)	6
7	LIGHTING PANEL LP-15 25KVA TRANSFORMER (SERVICE 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	SPACE	--	--	1			--			5000 VA					12
13					25000 VA			1164 VA							14
15	LIGHTING PANEL LP-10 75KVA TRANSFORMER (ADMIN. BUILDING)	#1	125 A	3		25000 VA			1164 VA		3	20 A	#12	FSG-8-1 AND FSG-8-2 ACTUATORS (UV STRUCTURE)	16
17							25000 VA			1164 VA					18
19	EXHAUST FAN, EF-11-1 (SLUDGE HANDLING BUILDING)	#12	20 A	3	304 VA			746 VA							20
21						304 VA			1746 VA		3	20 A	#12	TELESCOPING VALVES TV-13-1 - TV-13-3 (DIGESTER CONTROL BUILDING)	22
23							304 VA			1746 VA					24
25					942 VA			942 VA							26
27	MAKE-UP AIR UNIT, MAU-11-1 (SLUDGE HANDLING BUILDING)	#12	20 A	3		942 VA			942 VA		3	20 A	#12	EXHAUST FAN, EF-2-1 (HEADWORKS)	28
29							942 VA			942 VA					30
31					1164 VA			942 VA							32
33	FABRICATED SLIDE GATES, FSG-4-4, FSG-4-5 (OX. DITCH)	#12	20 A	3		1164 VA			942 VA		3	20 A	#12	MAKE-UP AIR UNIT, MAU-2-1 (HEADWORKS)	34
35							1164 VA			942 VA					36
37					2909 VA			1164 VA							38
39	FABRICATED SLIDE GATES, FSG-2-1 - FSG-2-5 (HEADWORKS)	#10	20 A	3		2909 VA			1164 VA		3	20 A	#12	FSG-3-1 AND FSG-3-2 ACTUATORS (GRIT PUMP ROOM)	40
41							2909 VA			1164 VA					42
43					2327 VA			1746 VA							44
45	PLUG VALVES PV-3-3 - PV-3-6 (GRIT PUMP ROOM)	#12	20 A	3		2327 VA			1746 VA		3	20 A	#12	FABRICATED SLIDE GATES, FSG-4-1, FSG-4-2, FSG-4-3 (OX. DITCH)	46
47							2327 VA			1746 VA					48
49					8313 VA			--							50
51	WELDING RECEPTACLE (MAINTENANCE BUILDING)	#6	60 A	3		8313 VA			7500 VA		2	40 A	#6	MINI POWER ZONE, MPZ-11 (SLUDGE HANDLING BUILDING)	52
53							8313 VA			7500 VA					54
55					582 VA			1386 VA							56
57	FABRICATED SLIDGE GATE FSG-1-1 (100-MH SA-1)	#12	20 A	3		582 VA			1386 VA		3	20 A	#12	FRONT GATE OPERATOR	58
59							582 VA			1386 VA					60
61					0 VA			0 VA							62
63	SPARE	--	20 A	3		0 VA			0 VA		3	20 A	--	SPARE	64
65							0 VA			0 VA					66
				Total Load:	71269 VA			78769 VA		68769 VA					
				Total Amps:	259 A			286 A		248 A					

ADMINISTRATION AND MAINTENANCE 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.
F5	LITHONIA CAT. NO. TDSXW1-20C-700-40K-T2S-MVOLT-PE-HS-DBLXD. D-SERIES LED WALL LUMINAIRE, 20 LEDS, 700mA DRIVE CURRENT, 4000K COLOR TEMPERATURE, TYPE 2 SHORT DISTRIBUTION, MULTIVOLT, BUTTON-STYLE PHOTOCELL, HOUSE-SIDE SHIELD, BLACK FINISH. 120V / 46 WATTS. MOUNTED AT 9'-0" ABOVE GRADE.
L3	LITHONIA CAT. NO. CPX-4X2-4000LM-80CRI-40K-SWL-MVOLT. LAY-IN 4'X2' LED PANEL, 4000 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, SATIN WHITE DIFFUSER, MULTIVOLT. 120V / 36.7 WATTS. LAID IN CEILING.
L4	LITHONIA CAT. NO. CPX-4X2-3000LM-80CRI-40K-SWL-MVOLT. LAY-IN 4'X2' LED PANEL, 3000 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, SATIN WHITE DIFFUSER, MULTIVOLT. 120V / 24.6 WATTS. LAID IN CEILING.
L5	LITHONIA CAT. NO. CPX-2X2-2000LM-80CRI-40K-SWL-MVOLT. LAY-IN 2'X2' LED PANEL, 2000 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, SATIN WHITE DIFFUSER, MULTIVOLT. 120V / 15.6 WATTS. LAID IN CEILING.
L6	LITHONIA CAT. NO. CPX-2X2-3200LM-80CRI-40K-SWL-MVOLT. LAY-IN 2'X2' LED PANEL, 3200 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, SATIN WHITE DIFFUSER, MULTIVOLT. 120V / 30.1 WATTS. LAID IN CEILING.
L7	LITHONIA CAT. NO. LL4-3000LM-80CRI-40K-MVOLT-WH. LINEAR LED, LL4 SERIES, 3000 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, WHITE FINISH. 26 VA / 120V. SUSPENDED 8'-0" AFF.
L8	LITHONIA CAT. NO. CPHB-12000LM-HEF-WD-MVOLT-40K-80CRI. COMPACT PRO LED HIGH BAY, 12000 LUMENS, HIGH EFFICIENCY, WIDE DISTRIBUTION, MULTIVOLT, 4000K COLOR TEMPERATURE, 80 COLOR RENDERING INDEX. 120V / 75 WATTS. SUSPENDED 15'-0" AFF.
L9	LITHONIA CAT. NO. CPX-4X2-7200LM-80CRI-40K-SWL-MVOLT. LAY-IN 4'X2' LED PANEL, 7200 LUMENS, 80 COLOR RENDERING INDEX, 4000K COLOR TEMPERATURE, SATIN WHITE DIFFUSER, MULTIVOLT. 120V / 56.5 WATTS. LAID IN CEILING.
L12	LITHONIA CAT. NO. FEM-L24-6000LM-IMACD-MD-MVOLT-40K-80 CRI. LINEAR LED, 4000 LUMENS, ACRYLIC CLEAR DEEP LENS, MEDIUM DISTRIBUTION, MULTIVOLT, 4000K COLOR TEMPERATURE, 80 COLOR RENDERING INDEX. 120V/39.2 WATTS. SUSPENDED 9'-0" AFF.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-74364
REGISTERED PROFESSIONAL ENGINEER
9/26/2025

ADMINISTRATION/MAINTENANCE BUILDING
ELECTRICAL
SCHEDULES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	EBK

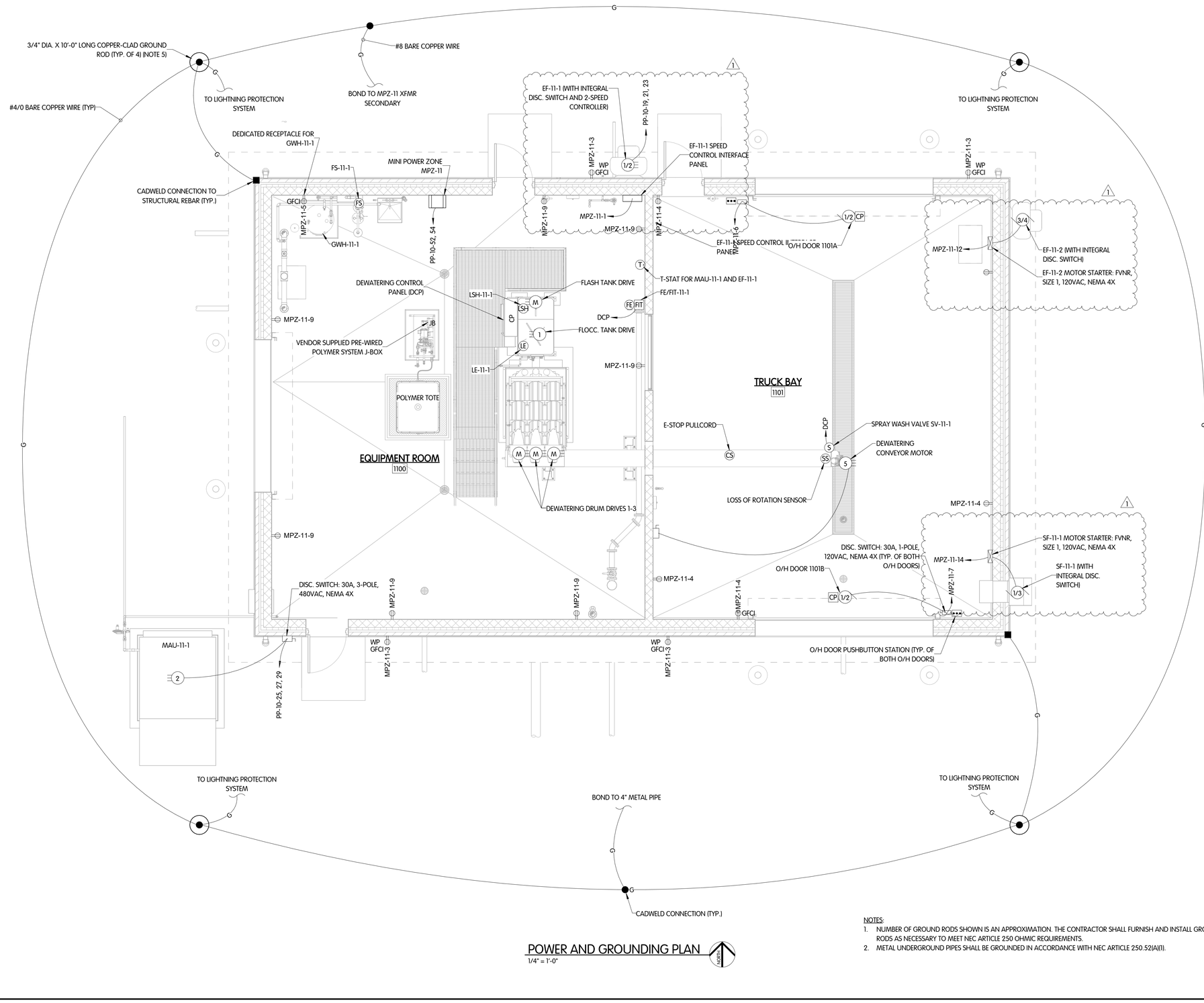
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JOB NO. 904-8119.002
SCALE AS INDICATED
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DESIGNED	DRAWN	CHECKED
EBK	AAE	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
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E-10.8
275 OF 309

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5/18/2026 2:05 PM - RWORLEY



POWER AND GROUNDING PLAN
1/4" = 1'-0"

NOTES:
1. NUMBER OF GROUND RODS SHOWN IS AN APPROXIMATION. THE CONTRACTOR SHALL FURNISH AND INSTALL GROUND RODS AS NECESSARY TO MEET NEC ARTICLE 250 OHMIC REQUIREMENTS.
2. METAL UNDERGROUND PIPES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250.52(A)(1).

STATE OF OHIO
PAUL EDWARD McNICHOL
E-49164
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

SLUDGE HANDLING BUILDING
ELECTRICAL
POWER AND GROUNDING PLAN

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5/18/26	ADDENDUM 2	JAM

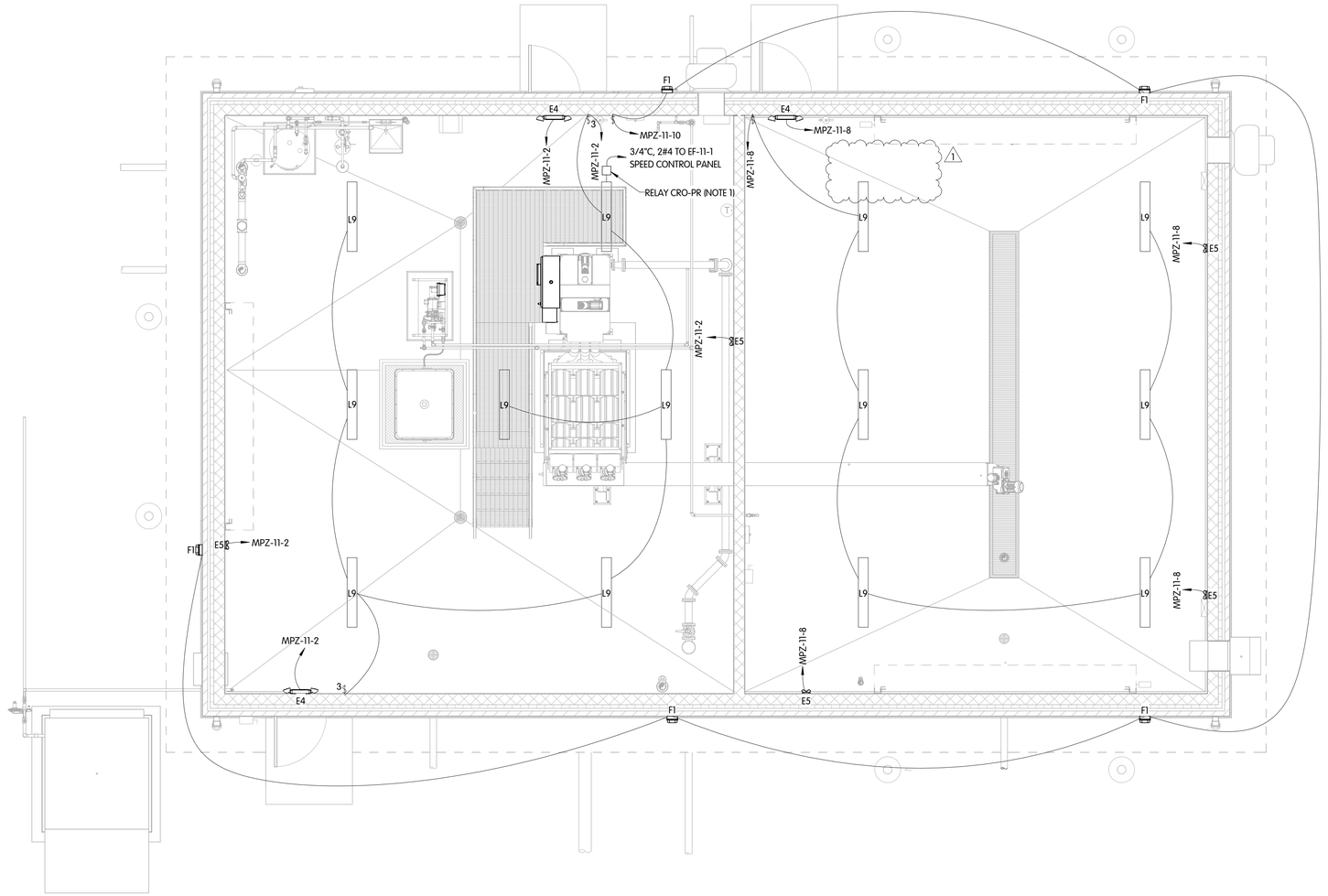
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JOB NO.: 904-8119.002
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EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
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E-11.1
276 OF 309

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LIGHTING PLAN

1/4" = 1'-0"

NOTE:
1. PROVIDE INTERPOSING RELAY WITH A 120V COIL IN A NEMA 4X ENCLOSURE FOR EF-11-1 CONTROL.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-68364
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

SLUDGE HANDLING BUILDING ELECTRICAL LIGHTING PLAN

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
EBK	RGW	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
E-11.2
277 OF 309

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PANELBOARD DESIGNATION/TAG	**MPZ-11**												
LOCATION:	EQUIPMENT ROOM 1100		**VOLTS:**	240/120V				**A.I.C. (Fully Rated):**	18kA				
FEEDER SIZE:	(SEE PP-1O PARTIAL SINGLE...		**PHASES:**	1				**BREAKERS:**	BOLT-ON				
FED FROM:	POWER PANEL PP-10		**WIRES:**	3				**PRI MCB RATING:**	40 A				
MOUNTING:	WALL		**AVAILABLE CIRCUIT...**	16				**SEC MCB RATING:**	80 A				
ENCLOSURE:	NEMA 3R STAINLESS STEEL		**% 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	EF-11-1 SPEED CONTROLLER	#12	20 A	1	100 VA		457 VA		1	20 A	#12	LIGHTING - PRESS ROOM	2
3	RECEPTACLES - EXTERIOR	#10	20 A	1		800 VA		1000 VA	1	20 A	#12	RECEPTACLES - SLUDGE STORAGE ROOM	4
5	RECEPTACLE - GAS WATER HEATER GWH-11-1	#12	20 A	1	200 VA		1176 VA		1	20 A	#12	O/H DOOR 1101A	6
7	O/H DOOR 1101B	#12	20 A	1		1176 VA		394 VA	1	20 A	#12	LIGHTING - SLUDGE STORAGE ROOM	8
9	RECEPTACLES - PRESS ROOM	#10	20 A	1	1400 VA		110 VA		1	20 A	#12	LIGHTING - EXTERIOR	10
11	FE/FIT-11-1	#12	20 A	1		100 VA		1656 VA	1	20 A	#12	EF-11-2	12
13	SPARE	--	20 A	1	0 VA		864 VA		1	20 A	#12	SF-11-1	14
15	SPACE	--	--	1		--		--	1	--	--	SPACE	16
				Total Load:	4307 VA		5126 VA						
				Total Amps:	39 A		39 A						

SLUDGE HANDLING 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.
L9	LITHONIA CAT. NO. FEM-L48-10000LM-IMACD-MD-MVOLT-40K-80CRI. LINEAR LED, 10000 LUMENS, ACRYLIC CLEAR DEEP LENS, MEDIUM DISTRIBUTION, MULTIVOLT, 4000K COLOR TEMPERATURE, 80 COLOR RENDERING INDEX. 120V / 63 WATTS. SUSPENDED 16'-0" AFF.

STATE OF OHIO
PAUL EDWARD McNICHOL
E-68364
REGISTERED PROFESSIONAL ENGINEER
9/26/2026

SLUDGE HANDLING BUILDING
ELECTRICAL
SCHEDULES

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
1	5.08.26	ADDENDUM 2	EBK

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

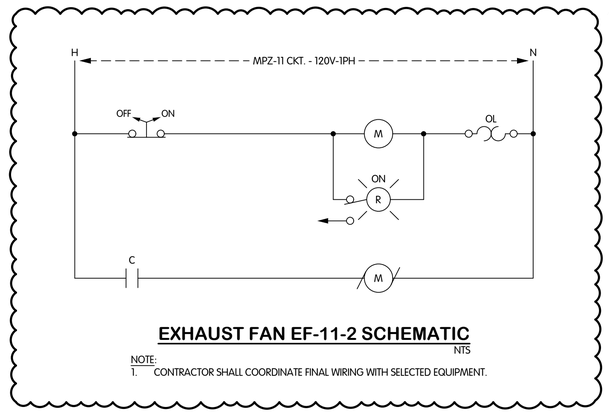
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EBK	RGW	EBK

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DATE: APRIL 2026

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E-11.4
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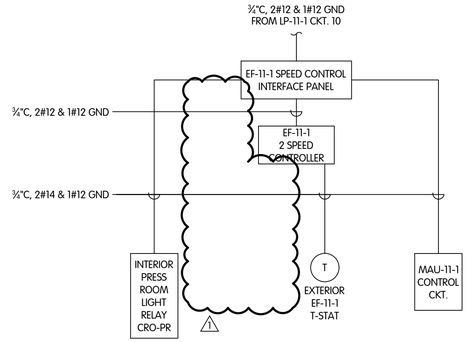
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ISSUED: 5/08/2026 4:04 PM
5/08/2026 2:05 PM RWORLEY



EXHAUST FAN EF-11-2 SCHEMATIC

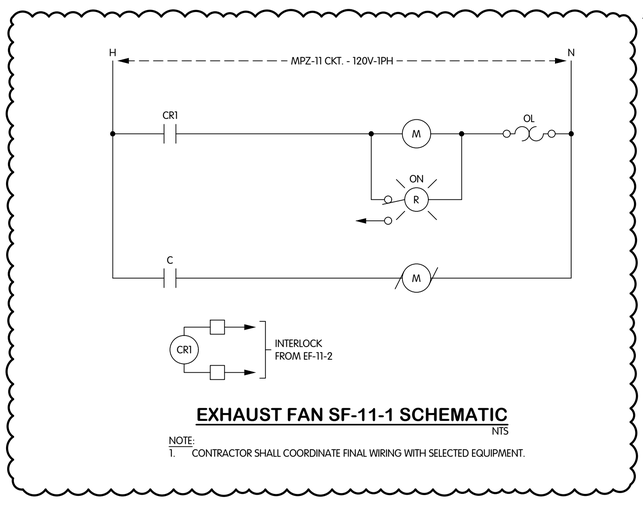
NTS

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



EXHAUST FAN EF-11-1
CONTROL CKT. INTERFACE DIAGRAM

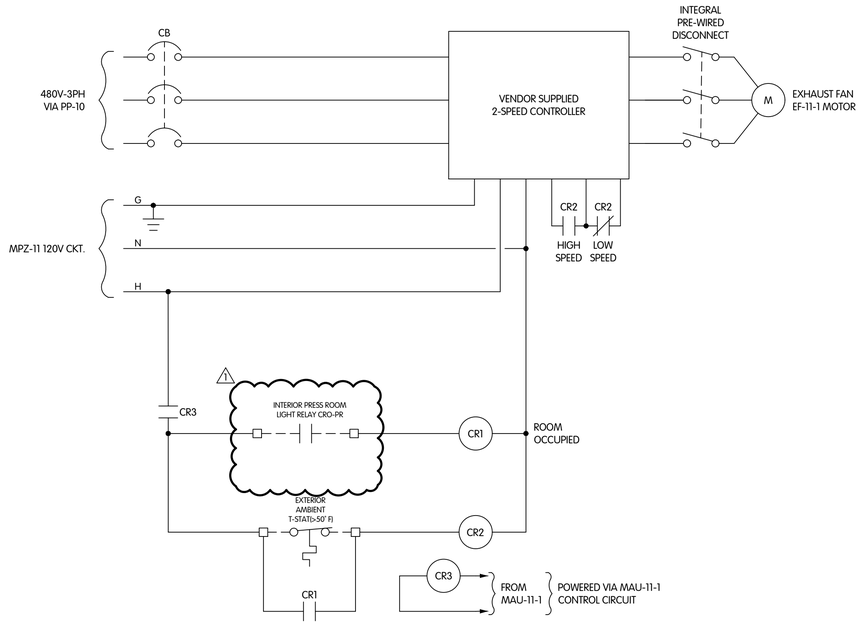
NOTE:
1. CONTRACTOR SHALL COORDINATE FINAL WIRING WITH SELECTED EQUIPMENT.



EXHAUST FAN SF-11-1 SCHEMATIC

NTS

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



EXHAUST FAN EF-11-1 SCHEMATIC

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

STATE OF OHIO
PAUL EDWARD McNICHOL
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

SLUDGE HANDLING BUILDING
ELECTRICAL
SCHEMATICS AND DIAGRAMS

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
3			
2	5/18/26	ADDENDUM 2	EBK
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	AAE	EBK

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
E-11.5
280 OF 309

T:\DL-8119000\E\115-E-11-5
5/18/2026 2:05 PM - RWORLEY

VIA ETHERNET

VIA ETHERNET

PLC

MCC-10A

MCC-10B

FIELD

FSG-1-1 IN SERVICE
FSG-1-1 FULL CLOSE
FSG-1-1 FULL OPEN
FSG-1-1 FAULT
FSG-1-1 IN AUTO
FSG-1-1 OPEN/CLOSE COMMAND
FSG-2-5 IN SERVICE
FSG-2-5 FULL CLOSE
FSG-2-5 FULL OPEN
FSG-2-5 FAULT
FSG-2-5 IN AUTO
FSG-2-5 POSITION SETPOINT
FSG-2-5 POSITION FEEDBACK
FSG-2-4 IN SERVICE
FSG-2-4 FULL CLOSE
FSG-2-4 FULL OPEN
FSG-2-4 FAULT
FSG-2-4 IN AUTO
FSG-2-4 POSITION SETPOINT
FSG-2-4 POSITION FEEDBACK
SCREEN 1 IN AUTO CHANNEL
SCREEN 1 FAULT
SCREEN 1 MOTOR OVER TEMP
SCREEN 1 RUNNING
SCREEN 1 INFLUENT CHANNEL LEVEL
WASHER COMPACTOR 1 RUNNING
WASHER COMPACTOR 1 FAULT
WASHER COMPACTOR 1 IN AUTO
WASHER COMPACTOR 1 MOTOR OVER TEMP
SCREEN 2 IN AUTO CHANNEL
SCREEN 2 FAULT
SCREEN 2 MOTOR OVER TEMP
SCREEN 2 RUNNING
SCREEN 2 INFLUENT CHANNEL LEVEL
WASHER COMPACTOR 2 RUNNING
WASHER COMPACTOR 2 FAULT
WASHER COMPACTOR 2 IN AUTO
WASHER COMPACTOR 2 MOTOR OVER TEMP
FSG-2-3 IN SERVICE
FSG-2-3 FULL CLOSE
FSG-2-3 FULL OPEN
FSG-2-3 FAULT
FSG-2-3 IN AUTO
FSG-2-3 POSITION SETPOINT
FSG-2-3 POSITION FEEDBACK
FSG-2-2 IN SERVICE
FSG-2-2 FULL CLOSE
FSG-2-2 FULL OPEN
FSG-2-2 FAULT
FSG-2-2 IN AUTO
FSG-2-2 POSITION SETPOINT
FSG-2-2 POSITION FEEDBACK
FSG-2-1 IN SERVICE
FSG-2-1 FULL CLOSE
FSG-2-1 FULL OPEN
FSG-2-1 FAULT
FSG-2-1 IN AUTO
FSG-2-1 POSITION SETPOINT
FSG-2-1 POSITION FEEDBACK

480VAC VIA PP-10

ZI POSITION INDICATION

ZC HN OPEN HN CLOSE

(15260)

480VAC

SCREEN/WASHER COMPACTOR 1 CONTROL PANEL

(11332)

SCREEN/WASHER COMPACTOR 2 CONTROL PANEL

(11332)

SCREEN 1

WASHER COMPACTOR 1

SCREEN 2

WASHER COMPACTOR 2

HS H-O-A
HS F-O-R
HN E-STOP

(11332)

VENDOR PROVIDED LOCAL CONTROL STATION

RAW SCREENINGS

120 VAC SCREEN CP

S

TS

M

WASHER COMPACTOR 1

SV-2-1

NPW

WASHER COMPACTOR 2

SV-2-2

LS 2-1

LE 2-1

(11330)

LS 2-2

LE 2-2

(11330)

CHANNEL

SCREEN 1

SCREEN 2

FSG-2-4

FSG-2-5

FSG-2-1

FSG-2-2

FSG-2-3

SP-2-2

SP-2-1

E.Q. BASIN FLOW

FSG-1-1

MH SA-1

RAW WASTE WATER

WET WEATHER WET WELL

DRY WEATHER WET WELL

SEE SHEET I-4

STATE OF OHIO
PAUL EDWARD McNICHOL
REGISTERED PROFESSIONAL ENGINEER
3/24/2026

HEADWORKS BUILDING INSTRUMENTATION AND CONTROL P & ID

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	REVISIONS AFTER ISSUED FOR BID	BY
5			
4			
3			
2	5/18/26	ADDENDUM 2	EBK
1			

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JOB NO. 904-8119.002

SCALE NONE

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.

I-3

297 OF 309

TOL-8119002_I03-I-3 - HEADWORKS
I-3 5/18/2026 1:43 PM RWORLET
5/18/2026 2:05 PM

PLC

MCC-108

FIELD

VIA ETHERNET

GRIT CLASSIFIER MOTOR HIGH TEMP.
GRIT CLASSIFIER IN AUTO
GRIT CLASSIFIER RUNNING
GRIT CLASSIFIER FAULT
GRIT CLASSIFIER START/STOP
GRIT PUMP IN AUTO
GRIT PUMP RUNNING
GRIT PUMP FAULT
GRIT PUMP MOTOR HIGH TEMP.
GRIT PUMP START/STOP

FSG-3-1 IN SERVICE
FSG-3-1 FULL CLOSE
FSG-3-1 FULL OPEN
FSG-3-1 FAULT
FSG-3-1 IN AUTO
FSG-3-1 OPEN/CLOSE COMMAND

FSG-3-2 IN SERVICE
FSG-3-2 FULL CLOSE
FSG-3-2 FULL OPEN
FSG-3-2 FAULT
FSG-3-2 IN AUTO
FSG-3-2 OPEN/CLOSE COMMAND

480VAC

480VAC VIA PP-10

480VAC VIA PP-10

GRIT CONTROL PANEL LOCATED IN ADMIN. BLDG. ELECTRICAL ROOM

CLASSIFIER SCREW
HN START
HN STOP
VFD
JJ RUNNING
HS H-O-A
EY
1
JJ POWER ON
JJ ALARM
PLC
OPEN/CLOSE
OPEN/CLOSE
OPEN/CLOSE
OPEN/CLOSE
OPEN/CLOSE

GRIT PUMP
HN START
HN STOP
VFD
JJ RUNNING
HS H-O-A
EY
(11260)

ZI POSITION INDICATION
ZC
HN OPEN
HN CLOSE
(15260)

ZI POSITION INDICATION
ZC
HN OPEN
HN CLOSE
(15260)

E-STOP HS
NEMA 4X (16902-2.05D) LOCAL CONTROL STATION

120 VDC GRIT CP
S
FLUIDIZING SV-2-3

120 VDC GRIT CP
M
DRAIN VALVE DV-2-1

120 VDC GRIT CP
S
FLUSHING SV-2-4

NPW

TS
M
GRIT CLASSIFIER

GRIT

GRIT CLASSIFIER SCREW (11215)

HEADWORKS BUILDING

TO INFLUENT CHANNEL

TO INFLUENT CHANNEL

E-STOP HS
NEMA 4X (16902-2.05D) LOCAL CONTROL STATION

M FSG-3-1

M FSG-3-2

INFLUENT CHANNEL (GRIT BYPASS)

RAW SEWAGE

WL

GRIT SEPARATOR

RAW SEWAGE (SEE SHEET I-3)

RAW SEWAGE (SEE SHEET I-3)

TS
PI
M
PI
GRIT PUMP

120 VDC GRIT CP
S
SEAL WATER SV-3-1

NPW

HB

S
FLUSHING SV-3-2

GRIT PUMP ROOM

OXIDATION CHANNEL 3

OXIDATION CHANNEL 2

FROM RAS/WAS PUMPS (SEE SHEET I-5)

STATE OF OHIO
PAUL EDWARD McNICHOL
E-40364
REGISTERED PROFESSIONAL ENGINEER
3/26/2026

GRIT
INSTRUMENTATION AND CONTROL
P & ID

VILLAGE OF OAK HARBOR, OHIO
WASTEWATER TREATMENT PLANT

NO.	DATE	ADDENDUM #	REVISIONS AFTER ISSUED FOR BID	BY
5				
4				
3				
2				
1	5/18/26	2		EBK

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SCALE NONE

THIS LINE SCALES 1" WHEN PLOTTED TO NOTED SCALE

DESIGNED	DRAWN	CHECKED
EBK	RGW	EBK

STATUS: ISSUED FOR BID

DATE: APRIL 2026

SHEET NO.
I-6
300 OF 309

TDL: 8119002_I06-I-6 - GRIT & ANAEROBIC TANK
LST: 8/19/26 12:07:14 PM KSCHLEY
5/19/2026 2:06 PM RWORLEY

MDP-10

LOAD DESCRIPTION	SIZE (Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOP	DEMAND VA
MCC-10A	350	480	3	245	257937	DUTY	203897
MCC-10B	300	480	3	256	225943	DUTY	212558
PP-10	400	480	3	265	221903	DUTY	220157

DEMND ANMPS @ 480V-3PH: 773A

1

MCC-10A

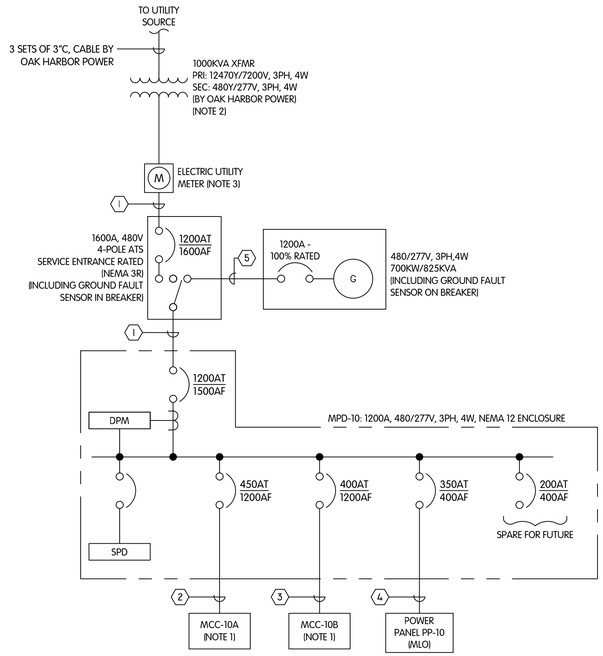
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
SCREEN 1	HEADWORKS BUILDING	VFD	0.5 HP	480	3	1.1	915	DUTY	915
WASHER/COMPACTOR 1	HEADWORKS BUILDING	VFD	1 HP	480	3	2.1	1746	DUTY	1746
UV HSC-1	SERVICE BUILDING	N/A	2.5 KVA	480	3	3.0	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
RTU-10-1	ADMIN BUILDING	N/A	12.3 A	480	3	12.3	10227	DUTY	10227

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	VFD	0.5 HP	480	3	1.1	915	DUTY	915
WASHER/COMPACTOR 2	HEADWORKS BUILDING	VFD	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
DEWATERING CONVEYOR	SLUDGE HANDLING BUILDING	ATL	5 HP	480	3	7.6	6319	DUTY	6319
DEWATERING DRUM DRIVE 1	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
DEWATERING DRUM DRIVE 2	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
DEWATERING DRUM DRIVE 3	SLUDGE HANDLING BUILDING	ATL	0.4 KW	480	3	0.5	400	DUTY	400
FLASH MIXING TANK DRIVE	SLUDGE HANDLING BUILDING	ATL	0.2 KW	480	3	0.2	200	DUTY	200
FLOCC. MIXING TANK DRIVE	SLUDGE HANDLING BUILDING	ATL	1 HP	480	3	2.1	1746	DUTY	1746
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	ADMIN BUILDING	N/A	9.4 A	480	3	9.4	7827	DUTY	7827
HP-10-1	ADMIN BUILDING	N/A	13.6 A	480	3	13.6	11307	DUTY	11307

PP-10

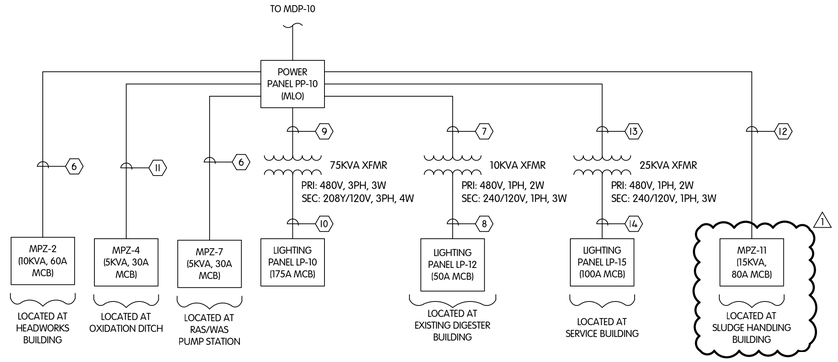
LOAD DESCRIPTION	LOAD LOCATION	STARTER TYPE	SIZE (HP/KVA/ KW/Amps)	VOLTS	PHASES	AMPS	VOLT-AMPS	DEMAND FACTOR	DEMAND VA
LP-10 XFMR	ADMIN BUILDING	N/A	75 KVA	480	3	90.2	75000	DUTY	75000
LP-15 XFMR	SERVICE BUILDING	N/A	25 KVA	480	1	52.1	25000	DUTY	25000
TV-13-1	DIGESTER BUILDING	N/A	1 HP	480	3	2.1	1746	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
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 BUILDING	N/A	10 KVA	480	1	20.8	10000	DUTY	10000
WELDING RECEPTACLE	MAINENANCE BUILDING	N/A	30 A	480	3	30.0	24942	DUTY	24942
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
MPZ-11	SLUDGE HANDLING BUILDING	N/A	15 KVA	480	1	31.3	15000	DUTY	15000
MAU-11-1	SLUDGE HANDLING BUILDING	N/A	2 HP	480	3	3.4	2827	DUTY	2827
EF-11-1	SLUDGE HANDLING BUILDING	ATL	1/2 HP	480	3	1.1	915	DUTY	915
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
FSG-1-1	100-MH SA-1	ATL	1 HP	480	3	2.1	1746	DUTY	1746
FRONT GATE OPERATOR	FRONT GATE	ATL (CP)	1 HP	480	3	5.0	4157	DUTY	4157



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	3"C, 3#500 KCMIL & 1#2 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	2"C, 3#1 & 1#6 GND
10	2"C, 4#3/0 & 1#6 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

1



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	5/18/26	ADDENDUM # 2	EBK

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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	AAE	EBK

STATUS: ISSUED FOR BID
DATE: APRIL 2026
SHEET NO.
E-101.1
241 OF 309

TOL:8119002-E08-E-101.1
LOGIN:ebk.rworley
5/18/2026 2:59 PM