To: All Plan Holders of Record

From: Verdantas LLC
For the Owner

Re: ***Addendum No. 2***
North Adams Regional Wastewater Treatment Plant
Village of Winchester, OH

Date: September 17, 2026

This Addendum forms a part of the contract documents and modifies the original bidding documents dated July 2026 and all previous addenda, if any. Acknowledge receipt of this addendum in the space provided in the bid forms. Failure to do so may subject the bidder to disqualification.

BID OPENING DATE

The date of receiving and opening bids shall be changed from 2:00 p.m. on September 22, 2026 to 2:00 p.m. on October 6, 2026. The place shall remain the same.

PRE-BID CONFERENCE

A copy of the second mandatory pre-bid meeting minutes and sign-in sheet from August 25, 2026 are attached to this addendum.

SPECIFICATIONS

In Specification Section 012300 – Alternates, Rev. 08/12/26 Add No. 1, in Paragraph 3.1.A, change the words “80-foot” to “100-foot”.

In Specification Section 012300 – Alternates, Rev. 08/12/26 Add No. 1, in Paragraph 3.1.A.1, change the words “80-feet” to “100-feet”.

Add Specification Section 042200 - Concrete Unit Masonry in its entirety.

Add Specification Section 047200 - Cast Stone Masonry in its entirety.

Add Specification Section 061600 – Sheathing in its entirety.

Add Specification Section 071113 - Bituminous Dampproofing in its entirety.

Add Specification Section 071416 - Cold Fluid-Applied Waterproofing in its entirety.

Add Specification Section 071900 - Water Repellents in its entirety.

Add Specification Section 072726 - Fluid-Applied Membrane Air Barriers in its entirety.

Add Specification Section 074213.19 - Insulated Metal Wall Panels in its entirety.

Add Specification Section 076200 - Sheet Metal Flashing and Trim in its entirety.

Add Specification Section 077200 - Roof Accessories in its entirety.

Add Specification Section 077253 - Snow Guards in its entirety.

Add Specification Section 088000 – Glazing in its entirety.

Add Specification Section 088300 – Mirrors in its entirety.

Add Specification Section 101423.16 - Room-Identification Panel Signage in its entirety.

Add Specification Section 104300 - Emergency Aid Specialties in its entirety.

Add Specification Section 104413 - Fire Protection Cabinets in its entirety.

Add Specification Section 334113 - Reinforced Concrete Storm Sewer Pipe in its entirety.

PLANS

Replace plan sheet 11/79, Sheet 01C-06 Proposed Site Piping Plan, with the enclosed plan sheet 11/79.

Replace plan sheet 12/79, Sheet 01C-07 Proposed Grading Plan, with the enclosed plan sheet 12/79.

Replace plan sheet 32/79, Sheet 40S-01 Service Building Foundation Plan, with the enclosed plan sheet 32/79.

Replace plan sheet 42/79, Sheet 40A-00 Notes & Abbreviations, with the enclosed plan sheet 42/79.

Replace plan sheet 43/79, Sheet 40A-01 Project Notes and Plans, with the enclosed plan sheet 43/79.

Replace plan sheet 46/79, Sheet 40A-00 ALT Notes & Abbreviations, with the enclosed plan sheet 46/79.

Replace plan sheet 47/79, Sheet 40A-01 ALT Plans, with the enclosed plan sheet 47/79.

Replace plan sheet 52/79, Sheet 20D-01 SBR Tank – Process Plan, with the enclosed plan sheet 52/79.

Replace plan sheet 53/79, Sheet 20D-01 SBR Tank – Sections A-C, with the enclosed plan sheet 53/79.

Replace plan sheet 54/79, Sheet 20D-03 SBR Tank – Sections D-F, with the enclosed plan sheet 54/79.

Replace plan sheet 56/79, Sheet 40D-01 Service Building – Blower Pad, with the enclosed plan sheet 56/79.

Replace plan sheet 57/79, Sheet 40D-02 Service Building – Blower Room - Alternate, with the enclosed plan sheet 57/79.

Add Headwall Detail Sketch to the plan set as included with this Addendum.

QUESTIONS AND ANSWERS

Q1. Who is responsible for the bypass pumping from the existing lagoon to the primary lagoons?
A1. The Contractor is responsible for bypass pumping. Per the plans, a temporary sewer bypass will be installed to divert flow into the existing submersible pump station that pumps to the upper lagoons. Should the existing submersible pump prove ineffective and unable incoming I&I, we will work with the Contractor on a backup system.

Q2. Who is responsible for the removal of all the sediment, organic matter, and other waste from the existing lagoon?
A2. The Contractor will be responsible for removal of all waste that is not transported to the upper lagoon.

Q3a. Do we have an estimated quantity of soils that is anticipated to be removed from the existing lagoon?
Q3b. Do you have a quantity of material that is to be present in the existing lagoon?
A3. It is assumed that the existing lagoon #1 has materials approximately 3-feet deep at 2-3% solids. The volume of material at 3’ deep equates to approximately 1,385 cu yd.

Q4. If the Contractor is responsible, are we able to liquify and transport to the primary lagoons? Or do we need to remove offsite?
A4. Initial thought was that a trash pump would be utilized in the corner of the lagoon to pump the material to lagoon #2. Liquification is acceptable as needed. Off site removal is not required.

Q5. During reading of the soils report, it is anticipated that the structures will bare on limestone/shale. Is the use of a mud mat acceptable? If not, what material is suitable for foundation support?
A5. Yes, a mud mat or compacted granular mat is acceptable.

Q6. Is a drainage base required under foundations? If so, what material and how deep?
A6. No. Compacted granular fill shall be provided per the drawings.

Q7. Is the native soil suitable for backfill?
A7. On site soils may be used for backfill provided they meet the recommendations of the geotechnical report and the requirements of the project specifications/drawings. Backfill materials shall be approved by the geotechnical engineer or special inspector prior to use.

Q8. On sheet 01C-06 the line from CB1 and CB2 does not have a material listed, please provide pipe material.
A8. See revised sheet with this addendum.

Q9. Is there a headwall detail?
A9. Headwall detail added per this addendum.

Q10. There are specs and details for chain link fencing. I don't see any proposed fencing on the site plan. Can you confirm if new fencing will be required on this project, and is so, where?
A10. There is no proposed fencing in the project at this time.

Q11. There is a spec for FRP Weirs. Can you confirm where on the drawings FRP Weirs is called out?
A11. There are no proposed FRP Weirs at this time.

Q12. Is there manhole cover (casting) spec or detail? CB grate also?
A12. Manhole frames and covers as well as catch basin frames, grates, and castings shall be gray cast iron conforming to ASTM A48, Class 35B minimum.

Q13. Is 1-1/4" HDPE waterline to be SDR13.5 per Plan or SDR7 per spec.
A13. 1-1/4" HDPE waterline shall be SDR13.5.

Q14. Can you please confirm what the 12" storm sewer pipe material should be?
A14. HDPE Dual Wall as noted in the revised Sheet 12, 01C-07 – Proposed Grading Plan.

Q15. Is there a spec on the 36" RCP?
A15. See added specification Section 334113 - Reinforced Concrete Storm Sewer Pipe.

Q16. Sheet 40A-03 details 2&3 call out a fluid applied air barrier, will this spec be provided?
A16. See spec Section 072726 - Fluid-Applied Membrane Air Barriers which is added as part of this addendum.

Q17. Sheet 40A-01, under General Floor notes Line A, will the Finished floor USGS elevation be provided.
A17. See Process/Civil Drawings for USGS elevations.

Q18. Sheet 40A-03/3&4 will an enlarged detail be provided to indicate the flashing requirements at the transition from the cast stone sill to the metal panel system? Confirm the cast stone sill is 5" deep, detail 1&2 indicate a wider sill.
A18. The cast stone sill profile should be RockCast SL-100 profile (5" depth), not SL-200 as indicated.

Q19. For Sheet 40A-03 detail 3&4, at the masonry veneer cavity, what is the required insulation thickness and what is the dimension for the air space?

A19. Rigid insulation should be the same thickness, continuous from roof to foundation. Wall Type 1 on sheet 40A-00 indicates 2-1/2". Air space is approximately 1".

Q20. Lining for ductile iron pipe / fittings to be used in air lines is not specified. Please clarify the lining type.

A20. Ductile iron pipe/fittings for air lines shall be unlined.

Q21. Lining for ductile iron pipe / fittings to be used in digested sludge / supernatant return lines are not specified. Please clarify the lining type.

A21. Ductile iron pipe/fittings shall be ceramic epoxy lined ductile iron pipe, such as Protecto 401 or approved equal.

Q22. Spec section 06 17 53, 2.3 indicates that all trusses need to be Fire-Retardant-Treated Wood, but the Project Data on Sheet 40A-00 Roof Construction & Secondary Members shows 0 hrs. Could you please confirm if the trusses need to be FRT or not for the base bid and the alternate?

A22. Trusses are not required to be FRT.

NLD:nld

Enclosures

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Meeting Minutes

To: **Attendees**

Subject: ***200619 – North Adams Wastewater Treatment Plant***

Date: **August 25, 2026 @ 11:00 AM**

The minutes for the Pre-bid Conference scheduled for August 25, 2026 @ 11:00 AM at the Village of Winchester Town Hall, 24 W. Washington St., Winchester, OH 45697 is as follows:

- Sign-In Sheet & Introductions
- Introduction of the Project
  - The project includes the construction of the site for the new plant, construction of a new screen building, process tanks and digester tanks for the activated sludge process and digestion equipment, and an ultra-violet (UV) disinfection system.
  - Base bid contains electrical room and shop in a smaller building with aeration blowers on a slab outside the building. Alternate bid will include a larger building as shown in the plans.
  - Contract will be with the Village of Winchester. Adams County has been assisting the Village with the project, but will not be the contract holder.
- Funding:
  - Ohio EPA WPCLF Funded Project
  - CPF/EPA Community Grant Funded Project
- Schedule
  - Bid Date (as Revised by Addendum) - 2:00 p.m. on September 22, 2026
  - Loan Approval – October 29, 2026
  - Contract and NTP – November 2026
  - Alternate Loan Approval – December 10, 2026
- Review of Project and Bid Sheet
  - Allowances
  - Alternates
- Project Specific Items:
  - Build America, Buy America Act (BABA) requirements for the Congressional Community Project Funding (CPF) funding through US EPA STAG.
  - AIS Requirements
  - Federal Prevailing Wages
- Question and Answers – Note all answers to question are only made final when documented by addendum.
- Site Visit

MEETING SIGN-IN: 200619 – North Adams Wastewater Treatment Plant

DATE: August 25, 2026 @ 11:00 AM

NAME	COMPANY (REPRESENTING)	ADDRESS	CITY	ZIP	PHONE#	EMAIL ADDRESS
Kent Bryan, PE Project Manager	Verdantas	4420 Cooper Rd, Suite 200	Cincinnati	45242	419-733-4115	kbryan@verdantas.com
Nicole Diak, PE Senior Engineer	Verdantas (Via Teleconference)	4420 Cooper Rd, Suite 200	Cincinnati	45242	937-707-8863	ndiak@verdantas.com
Jerry Kirker	Verdantas	4420 Cooper Rd, Suite 200	Cincinnati	45242	937-217-1284	Jerry.Kirker@verdantas.com
Mike Dreyer	Building Crafts, Inc.	2 Rosewood Drive	Wilder, KY	41076	859-781-9500	MDreyer@BuildingCrafts.com
Sam Maurer	Adena Corporation (Via Teleconference)				419-632-1253	smaurer@adena-construction.com
Granger Long	Adena Corporation (Via Teleconference)	6816 Lauffer Road	Columbus	43231	614.865.9000 Ext 629	glong@adena-construction.com
Adam Ferree	Gripp Inc. (Via Teleconference)				317-864-2877	adamf@grippinc.com

SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Mortar and grout materials.
3. Reinforcement.
4. Masonry-joint reinforcement.
5. Embedded flashing materials.
6. Miscellaneous masonry accessories.
7. Masonry-cell insulation.

B. Products Installed, but Not Furnished, under This Section:

1. Cast-stone trim in accordance with Section 047200 "Cast Stone Masonry" in concrete unit masonry.

C. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for dovetail slots for masonry anchors.
2. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
3. Section 071900 "Water Repellents" for water repellents applied to surface of unit masonry assemblies.
4. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

C. Exposed: Weather-exposed side of a constructed wall.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.
3. Lintel design and types required.

B. Samples for Initial Selection:

1. Architectural CMUs, in the form of small-scale units.
2. Colored mortar.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each type and size of the following:

1. Masonry units.
   a. Include material test reports substantiating compliance with requirements.
   b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Integral water repellent used in CMUs, if not surface treated.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Mortar admixtures.
5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Joint reinforcement.
9. Anchors, ties, and metal accessories.

C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 402/602.

E. Weather Procedures:

1. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

2. Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

A. Project team craftworkers of the Masonry Contractor assigned to Project will be required to have the International Masonry Institute - Flashing Training or equal and to provide evidence of certificate or a letter of the firm's commitment to enroll key project personnel in the training program prior to the start of Project.

B. Project team craftworkers of the Masonry Contractor assigned to Project will be required to have the International Masonry Institute - Grouting and Reinforcing Training or equal and to provide evidence of certificate or a letter of the firm's commitment to enroll key project personnel in the training program prior to the start of Project.

C. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects.

1. Build sample panels for typical exterior wall in sizes approximately 48 inches long by 48 inches high by full thickness.
2. Build sample panels facing south.
3. Protect approved sample panels from the elements with weather-resistant membrane.
4. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by A/E in writing.
    a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless A/E specifically approves such deviations in writing.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.9 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 402/602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 402/602.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

C. Source Limitations for Integral Water Repellent: Obtain integral water-repellent units from CMU and mortar manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with Tables 1 and 2 in TMS 402/602.

B. Regulatory Requirements: Comply with the provisions of the following codes, specifications, and standards, except as otherwise shown or specified:

1. TMS 402/602:
   a. Maintain one copy of the standard in Project field office at all times during construction. Contractor's supervisory personnel are to be thoroughly familiar with this material as it applies to Project.

2.3 CONCRETE UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 402/602 except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 20 ft. vertically and horizontally of a walking surface.

C. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

D. Building Lintels:

1. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout.
   a. Knockout blocks will not be acceptable.
2. Concrete Lintels: Complying with requirements in Section 033000 "Cast-in-Place Concrete," and with reinforcing bars indicated.
3. Manufactured Concrete Lintels, ASTM C1623: Provide lintels with net-area compressive strength not less than CMUs.

2.4 CONCRETE MASONRY UNITS

A. Architectural CMUs:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Cemex USA
b. Echelon
c. Midwest Block and Brick

2. Density Classification: Normal weight.
3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
4. Pattern and Texture:
   a. Scored vertically so units laid in running bond appear as square units laid in stacked bond, standard finish. Match existing buildings.
5. Colors: As selected by A/E from manufacturer's full range.

2.5 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content is not more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Davis Colors
   b. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
   c. Lanxess Corporation
   d. Solomon Colors Inc.

E. Colored Cement Products: Packaged blend made from portland cement and hydrated lime or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
2. Pigments does not exceed 10 percent of portland cement by weight.
3. Pigments does not exceed 5 percent of mortar cement by weight.

F. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing

the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

G. Aggregate for Grout: ASTM C404.

H. Epoxy Pointing Mortar: ASTM C395, epoxy-resin-based material formulated for use as pointing mortar for glazed or pre-faced masonry units (and approved for such use by manufacturer of units); in color indicated or, if not otherwise indicated, as selected by A/E from manufacturer's colors.

I. Water: Potable.

2.6 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Heckmann Building Products, Inc.
   b. Hohmann & Barnard, Inc
   c. Wire-Bond

C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.

1. Exterior Walls: Stainless steel.
2. Wire Size for Side Rods: 0.148-inch diameter.
3. Wire Size for Cross Rods: 0.148-inch diameter.
4. Spacing of Cross Rods: Not more than 16 inches o.c.
5. Provide in lengths of not less than 10 ft., with prefabricated corner and tee units.

2.7 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Stainless Steel Wire: ASTM A580/A580M, Type 304.
2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M commercial steel, with ASTM A153/A153M, Class B coating.

3. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
4. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, stainless steel wire.
2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, stainless steel wire.

D. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.062-inch-thick, stainless steel sheet.
2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, stainless steel wire.
3. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.062-inch- thick, stainless steel sheet with dovetail tabs for inserting into dovetail slots in concrete.

2.8 EMBEDDED FLASHING MATERIALS

A. Embedded Flashing Applications: Unless otherwise indicated, use the following:

1. Where flashing is indicated to receive counterflashing, use metal flashing.
2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a drip edge or flexible flashing with a metal drip edge.
4. Where flashing is fully concealed, use metal flashing or flexible flashing.

B. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:

1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch thick.
2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 ft.. Provide splice plates at joints of formed, smooth metal flashing.
3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Cheney Flashing Company
    b. Hohmann & Barnard, Inc
    c. Keystone Flashing Company, Inc

5. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
6. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
7. Fabricate through-wall flashing with sealant stop unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
8. Fabricate metal drip edges, and, sealant stops for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam sheds water.

C. Flexible Flashing: Use one of the following unless otherwise indicated:

1. Self-Adhering, Stainless Steel Fabric Flashing: Composite, flashing product consisting of 2 mil of Type 316 stainless steel sheet, bonded to a layer of polymeric fabric with a butyl adhesive, to produce an overall thickness of 40 mil.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) Hohmann & Barnard, Inc
        2) STS Coatings, Inc.
        3) VaproShield LLC
        4) Wire-Bond
        5) York Manufacturing, Inc

    b. Applications: Use 10-mil- thick flashing at windows, doors, and small wall penetrations; not at base of walls. Use 40-mil- thick flashing at base of walls.

2. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 35 mil.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) DuPont de Nemours, Inc.
        2) GCP Applied Technologies Inc.
        3) Protecto Wrap Company
        4) Viaflex
        5) Wire-Bond

    b. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) Hohmann & Barnard, Inc
        2) Hyload; IKO Industries, Inc.
        3) Mortar Net Solutions
        4) Wire-Bond

    b. Monolithic Sheet: Elastomeric thermoplastic flashing, 40 mil thick.
    c. Self-Adhesive Sheet: Elastomeric thermoplastic flashing, 25 mil thick, with a 15-mil- thick coating of adhesive.

        1) Color: Black.

    d. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D4637/D4637M, 40 mil thick.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

        1) Carlisle Coatings & Waterproofing Inc
        2) Elevate; Holcim Building Envelope
        3) Heckmann Building Products, Inc.
        4) Hohmann & Barnard, Inc
        5) Wire-Bond

D. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

1. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.
2. Elastomeric Sealant: ASTM C920, chemically curing urethane sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and remain watertight.

E. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from

neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.10 MASONRY-CELL INSULATION

A. Molded-Polystyrene Insulation Units: CMU units with molded rigid expandable polystyrene-inserts to comply with ASTM C578, Type 1. Provide insulated block units designed for installing in cores of masonry units.

2.11 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime,or, mortar cement mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.

1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type S.
3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.

D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments does not exceed 10 percent of portland cement by weight.
2. Pigments does not exceed 5 percent of mortar cement by weight.
3. Mix to match A/E's sample.
4. Application: Use pigmented mortar for exposed mortar joints with the following units:

a. Architectural CMUs.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

1. Mix to match A/E's sample.
2. Application: Use colored-aggregate mortar for exposed mortar joints with the following units:
   a. Architectural CMUs.

F. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 402/602 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1, or.
3. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that would impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Build chases and recesses to accommodate items specified in this and other Sections.

B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

D. Exposed Masonry: Mix units to product uniform blend of colors and textures.

E. Temperature Control: Perform temperature-sensitive construction procedures while masonry Work is progressing. Temperature ranges indicated below apply to air temperatures existing at time of installation except for grout. For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10 deg F.

1. 40 to 32 Deg F (4 to 0 Deg C):
   a. Mortar: Heat mixing water to produce mortar temperature between 40 and 120 deg F.
   b. Grout: Follow normal masonry procedures.
2. 32 to 25 Deg F (0 to Minus 4 Deg C):
   a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F; maintain temperature of mortar on boards above freezing.
   b. Grout: Heat grout materials to 90 deg F to produce in-place grout temperature of 70 deg F at end of workday.
3. 25 to 20 Deg F (Minus 4 to 7 Deg C):
   a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F; maintain temperature of mortar on boards above freezing.
   b. Grout: Heat grout materials to 90 deg F to produce in-place grout temperature of 70 deg F at end of workday.
   c. Heat both sides of walls under construction using salamanders or other heat sources.
   d. Use windbreaks or enclosures when wind is in excess of 15 mph.
4. 20 Deg F (Minus 7 Deg C) and Below:
   a. Mortar: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F.
   b. Grout: Heat grout materials to 90 deg F to produce in-place grout temperature of 70 deg F at end of workday.
   c. Masonry Units: Heat masonry units so that they are above 20 deg F at time of laying.
   d. Provide enclosure and auxiliary heat to maintain an air temperature of at least 40 deg F for 24 hours after laying units.
5. Do not heat water for mortar and grout to above 160 deg F.

F. Masonry Protection: Protect completed masonry and masonry not being worked on in the following manner. Temperature ranges indicated apply to mean daily air temperatures except for grouted masonry. For grouted masonry, temperature ranges apply to anticipated minimum night temperatures.

1. 40 to 32 Deg F (4 to 0 Deg C): Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.
2. 32 to 25 Deg F (0 to Minus 4 Deg C): Completely cover masonry with weather-resistive membrane for at least 24 hours.
3. 25 to 20 Deg F (Minus 4 to 7 Deg C): Completely cover masonry with weather-resistive insulating blankets or similar protection for at least 24 hours, 48 hours

for grouted masonry.

4. 20 Deg F (Minus 7 Deg C) and Below: Except as otherwise indicated, maintain masonry temperature above 32 deg F (0 deg C) for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps or other methods proven to be satisfactory. For grouted masonry, maintain heated enclosure to 40 deg F for 48 hours.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft. or 1/2 inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform

joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Where applicable, set masonry trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.

1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
2. Wet joint surfaces thoroughly before applying mortar.
3. Rake out mortar joints for pointing with sealant.

D. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.

E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

G. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 MASONRY-CELL FILL INSTALLATION

A. Install molded-polystyrene insulation units into masonry unit cells before laying units.

3.7 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.8 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:

1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.9 CONTROL JOINTS

A. General: Install control joint materials in CMUs as masonry progresses. Do not allow materials to span control joints without provision to allow for in-plane wall or partition

movement.

B. Locate control joints. See Drawings.

C. Form control joints in CMUs as follows:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
2. Install preformed control joint gaskets designed to fit standard sash block.
3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

3.10 LINTELS

A. Install lintels over openings as indicated.

B. Provide concrete or formed-in-place masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.11 FLASHING

A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
3. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
4. Install metal drip edges, and, sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
5. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible

flashing to top of metal drip edge.

C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

3.12 REINFORCED UNIT MASONRY

A. Placing Reinforcement: Comply with requirements in TMS 402/602.

B. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 402/602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.

3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.

B. Inspections: Level 1 special inspections to comply with the International Building Code.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces, grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140 for compressive strength.

E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.

3.14 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for

recycling.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042200

SECTION 047200 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Decorative elements.
2. Mortar materials.
3. Accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For cast stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

1. Include building elevations showing layout of units and locations of joints and anchors.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of cast stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by CSI, or, APA, or, PCI for Group A, Category AT.

B. Furnish cast stone for installation in mockups specified in Section 042000 "Unit Masonry."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of cast stone with unit masonry work to avoid delaying the Work and to minimize the need for on-site storage.

B. Pack, handle, and ship cast stone units in suitable packs or pallets.

1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units if required, using dollies with wood supports.
2. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store mortar aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.

1.7 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements in TMS 602.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Cast Stone: Obtain cast stone units from single source from single manufacturer.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

2.2 CAST STONE MATERIALS

A. General: Comply with ASTM C1364.

B. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.

C. Admixtures: Use only admixtures specified or approved in writing by A/E.

1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium

chloride.
2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.

D. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666, Type 304.

2.3 CAST STONE UNITS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Indiana Cast Stone
2. RockCast by Reading Rock, Inc.

B. Cast Stone Units: Comply with ASTM C1364.

1. Units are manufactured using the manufacturer's selected method.
2. Trim units including window sills,water tables.

C. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements unless otherwise indicated.

D. Fabrication Tolerances:

1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

E. Cure Units as Follows:

1. Cure units in enclosed, moist curing room at 95 percent relative humidity and temperature of 100 deg F for 12 hours or 70 deg F for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:

    a. No fewer than five days at mean daily temperature of 70 deg F or above.
    b. No fewer than seven days at mean daily temperature of 50 deg F or above.

F. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

G. Colors and Textures: As selected by A/E from manufacturer's full range.

2.4 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

B. Dowels: 1/2-inch- diameter round bars, fabricated from steel complying with ASTM A36/A36M and hot-dip galvanized to comply with ASTM A123/A123M.

2.5 MORTAR MIXES

A. Comply with requirements in Section 042000 "Unit Masonry" for mortar mixes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING CAST STONE IN MORTAR

A. Set cast stone as indicated in TMS 604.

B. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Coordinate installation of cast stone with installation of flashing specified in other Sections.

C. Wet joint surfaces thoroughly before applying mortar or setting in mortar.

D. Set units in full bed of mortar with full head joints unless otherwise indicated.

1. Set units with joints 1/4 to 3/8 inch wide unless otherwise indicated.
2. Build anchors and ties into mortar joints as units are set.
3. Fill dowel holes and anchor slots with mortar.
4. Fill collar joints solid as units are set.
5. Build concealed flashing into mortar joints as units are set.
6. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.

7. Keep joints at shelf angles open to receive sealant.

E. Rake out joints for pointing with mortar to depths of not less than 3/4 inch. Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

F. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

G. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.

3.3 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by A/E.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
3. Clean cast stone by methods described in Cast Stone Institute Technical Bulletin #39.

END OF SECTION 047200

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Roof sheathing.
3. Sheathing joint-and-penetration treatment materials.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for plywood backing panels.
2. Section 072500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review air-barrier and water-resistant glass-mat gypsum sheathing requirements and installation, special details, transitions, mockups, air-leakage testing, protection, and work scheduling that covers air-barrier and water-resistant glass-mat gypsum sheathing.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Wall sheathing.
2. Roof sheathing.
3. Sheathing joint-and-penetration treatment materials.

B. Product Data Submittals: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer

and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.

3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency in accordance with ASTM D5516.
4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and testing and inspecting agency.

B. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.

C. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.

D. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated plywood.
2. Fire-retardant-treated plywood.
3. Air-barrier and water-resistant glass-mat gypsum sheathing.

E. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

1. Installer is to be licensed by ABAA in accordance with ABAA's Quality Assurance Program and is to employ ABAA-certified installers and supervisors on Project.

B. Testing Agency Qualifications:

1. For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that

periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

2. For testing and inspecting agency providing tests and inspections related to air-barrier and water-resistant glass-mat gypsum sheathing: an independent agency, qualified in accordance with ASTM E329 for testing indicated, and certified by Air Barrier Association of America, Inc.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested in accordance with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

B. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing Performance: Air-barrier and water-resistant glass-mat gypsum sheathing assembly, and seals with adjacent construction, are to be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies are to be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, tie-ins to other installed air barriers, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

2.2 WOOD PANEL PRODUCTS

A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

B. Factory mark panels to indicate compliance with applicable standard.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat all plywood unless otherwise indicated.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested in accordance with ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials are to comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering in accordance with ASTM D2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials are to have a moisture content of 28 percent or less when tested in accordance with ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber plywood is to be tested in accordance with ASTM D5516 and design value adjustment factors are to be calculated in accordance with ASTM D6305. Span ratings after treatment are to be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat all plywood unless otherwise indicated.

2.5 WALL SHEATHING

A. Plywood Sheathing, Walls: Exterior, Structural I sheathing.

1. Nominal Thickness: Not less than 1/2 inch.

B. Glass-Mat Gypsum Sheathing, Walls: ASTM C1177/C1177M.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed; SAINT-GOBAIN
b. Continental Building Products Inc.
c. Georgia-Pacific Gypsum LLC
d. Gold Bond Building Products, LLC provided by National Gypsum Company
e. USG Corporation

2. Type and Thickness: [Regular, 1/2 inch][Type X, 5/8 inch] thick.
3. Size: [48 by 96 inches][48 by 108 inches][48 by 120 inches][1200 by 2400 mm][1200 by 2750 mm][1200 by 3050 mm] for vertical installation.

2.6 ROOF SHEATHING

A. Plywood Sheathing, Roofs: Exterior, Structural I.

1. Nominal Thickness: Not less than 1/2 inch.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

2.8 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Paper-Surfaced and Glass-Mat Gypsum Sheathing: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturer for application indicated and complying with requirements for elastomeric sealants specified in Section 079200 "Joint Sealants."

B. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering

exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

C. Sheathing Tape for Foam-Plastic Sheathing: Pressure-sensitive plastic tape recommended by sheathing manufacturer for sealing joints and penetrations in sheathing.

2.9 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in the ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in the ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 INSTALLATION OF WOOD STRUCTURAL PANEL

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch apart at edges and ends.

3.3 INSTALLATION OF GYPSUM SHEATHING

A. Comply with GA-253 and with manufacturer's written instructions.

1. Fasten gypsum sheathing to wood framing with screws.
2. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
3. Install panels with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.

1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.
2. For sheathing under stucco cladding, panels may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

D. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.

1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.
2. For sheathing under stucco cladding, panels may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

E. Seal sheathing joints in accordance with sheathing manufacturer's written instructions.

1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.4 FIELD QUALITY CONTROL

A. ABAA Quality Assurance Program: Perform examinations, preparation, installation, testing, and inspections under ABAA's Quality Assurance Program.

B. Testing and Inspecting Agency: Engage a qualified testing agency to perform tests and inspections.

C. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:

1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
2. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
3. Termination mastic has been applied on cut edges.
4. Strips and transition strips have been firmly adhered to substrate.
5. Compatible materials have been used.
6. Transitions at changes in direction and structural support at gaps have been provided.
7. Connections between assemblies (sheathing and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
8. All penetrations have been sealed.

D. Air barriers will be considered defective if they do not pass tests and inspections.

E. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

F. Prepare test and inspection reports.

END OF SECTION 061600

SECTION 071113 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cold-applied, cut-back-asphalt dampproofing.
   2. Cold-applied, emulsified-asphalt dampproofing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. VOC Content: Products are to comply with VOC content limits of authorities having jurisdiction unless otherwise indicated.

2.2 COLD-APPLIED, CUT-BACK-ASPHALT DAMPPROOFING

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. APOC, Inc; a division of Gardner Industries.
   2. Brewer Company (The).
   3. Henry Company; a Carlisle company.
   4. W. R. Meadows, Inc.

B. Trowel Coats: ASTM D4586/D4586M, Type I, Class 1, fibered.

C. Brush and Spray Coats: ASTM D4479/D4479M, Type I, fibered or nonfibered.

2.3 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. APOC, Inc; a division of Gardner Industries.
   2. Brewer Company (The).
   3. ChemMasters, Inc.
   4. Euclid Chemical Company (The); an RPM company.
   5. Henry Company; a Carlisle company.
   6. Karnak Corporation.
   7. Mar-flex Waterproofing & Building Products.

8. Master Builders Solutions.
9. W. R. Meadows, Inc.

B. Trowel Coats: ASTM D1227, Type II, Class 1.

C. Fibered Brush and Spray Coats: ASTM D1227, Type II, Class 1.

D. Brush and Spray Coats: ASTM D1227, Type III, Class 1.

2.4 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. ASTM D6506, semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners.
1. Thickness: Nominal 1/8 inch.

PART 3 - EXECUTION

3.1 APPLICATION, GENERAL

A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless otherwise indicated.
1. Apply dampproofing to provide continuous plane of protection.
2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches over outside face of footing.
1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.
2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where indicated as "reinforced," by embedding an 8-inch- wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.

C. Where dampproofing exterior face of inner wythe of exterior masonry cavity walls, lap dampproofing at least 1/4 inch onto flashing, masonry reinforcement, veneer ties, and other items that penetrate inner wythe.
1. Extend dampproofing over outer face of structural members and concrete slabs that interrupt inner wythe.
2. Lap dampproofing at least 1/4 inch onto shelf angles supporting veneer.

3.2 COLD-APPLIED, CUT-BACK-ASPHALT DAMPPROOFING

A. Concrete Foundations: Apply two brush or spray coats at not less than 1.25 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat or one trowel coat at not less than 4 gal./100 sq. ft.

3.3 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Concrete Foundations: Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat or one trowel coat at not less than 4 gal./100 sq. ft.

3.4 PROTECTION COURSE INSTALLATION

A. Install protection course over completed-and-cured dampproofing. Comply with dampproofing-material and protection-course manufacturers' written instructions for attaching protection course.

END OF SECTION 071113

SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Cold-applied rubberized asphalt waterproofing.

B. Related Requirements:

1. Section 072100 "Thermal Insulation" for below-grade foundation insulation.
2. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.3 DEFINITIONS

A. Compatible: Material that will not adversely affect adjacent materials, is chemically compatible with adjacent materials, and where required for bond, achieves adhesive compatibility with adjacent materials.

B. Chemical Compatibility: Material that will not break down, deteriorate, degrade, or prematurely fail when in contact with another material. Material that will not cause chemical breakdown, deterioration, degradation, staining, or premature failure of another material.

C. Adhesive Compatibility: Material that will develop bond strength or provide a suitable surface for another material to develop bond strength complying with requirements when in contact with another material.

1.4 COORDINATION

A. Coordinate Work under this Section with adjacent concrete foundation work, including fill, other waterproofing systems, under-slab vapor retarders, under-slab insulation.

B. Coordinate requirements for concrete formwork to provide suitable substrate for waterproofing and to minimize penetrations in waterproofing.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by waterproofing manufacturer. Protect stored materials in accordance with manufacturer's written instructions.

B. Remove and replace materials that cannot be applied within their stated shelf life.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer.

B. Maintain adequate ventilation during application and curing of waterproofing materials.

1.10 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or remove and replace waterproofing that fails to remain watertight within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Waterproofing System: Obtain waterproofing materials, protection course, and insulation drainage panels from same manufacturer as waterproofing membrane, or manufacturer approved by waterproofing membrane manufacturer.

2.2 POLYURETHANE WATERPROOFING

A. Single-Component, Reinforced, Modified Polyurethane Waterproofing: ASTM C836/C836M, and coal-tar free.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Barrett Company
b. Carlisle Coatings & Waterproofing Inc
c. Liquid Plastics Inc.
d. Master Builders Solutions; brand of MBCC Group
e. Polycoat Products
f. Sika Corporation

2.3 ACCESSORY WATERPROOFING SYSTEM MATERIALS

A. General: Accessory materials as recommended in writing by waterproofing manufacturer for intended use and compatible with one another and with waterproofing.

B. Primer: Liquid waterborne primer as recommended in writing for substrate by waterproofing manufacturer.

C. Surface Conditioner: Liquid, waterborne surface conditioner as recommended in writing for substrate by waterproofing manufacturer.

D. Sheet Flashing: Manufacturer's standard flashing sheet.

1. Adhesive: Manufacturer's standard contact adhesive.

E. Reinforcing Fabric: Manufacturer's standard fiberglass mesh or spun-bonded polyester fabric.

F. Detailing Seam Tape: Manufacturer's standard detailing tape.

G. Joint Sealant: Single-component polyurethane sealant, compatible with waterproofing; ASTM C920, Type M, Class 25 or greater; Grade NS for sloping and vertical applications and Grade P for deck applications; Use NT exposure; and as recommended in writing by waterproofing manufacturer for substrate and joint conditions.

H. Backer Rod: Closed-cell polyethylene foam.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that concrete has cured and aged for minimum time period as recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits as recommended in writing by waterproofing manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean, prepare, and treat substrates in accordance with waterproofing manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.

D. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.

E. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

3.3 PREPARATION AT TERMINATIONS, PENETRATIONS, AND CORNERS

A. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.

3.4 TREATMENT OF JOINTS AND CRACKS

A. Prepare, treat, rout, and fill joints and cracks in substrate in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C1471/C1471M. Before coating surfaces, remove dust and dirt from joints and cracks in accordance with ASTM D4258.

1. Comply with ASTM C1193 for joint-sealant installation.
2. Apply bond breaker on sealant surface, beneath preparation strip.
3. Prime substrate along each side of joint and apply a single thickness of preparation strip at least 6 inches wide along each side of joint. Apply waterproofing in two separate applications and embed a joint-reinforcing strip in first preparation coat.

3.5 INSTALLATION OF WATERPROOFING

A. General: Apply waterproofing in accordance with manufacturer's written instructions and to recommendations in ASTM C1471/C1471M.

B. Start installing waterproofing in presence of manufacturer's technical representative.

C. Apply primer over prepared substrate at manufacturer's recommended rate and allow it to dry.

D. Reinforced Waterproofing Membrane Applications: Mix materials and apply waterproofing by roller, notched squeegee, trowel, or other suitable application method.

1. Apply first coat of waterproofing, embed membrane-reinforcing fabric, and apply second coat of waterproofing to completely saturate reinforcing fabric and to obtain a seamless reinforced membrane free of entrapped gases and pinholes, with an average dry film total thickness of 70 mils.
2. Apply reinforced waterproofing to prepared wall terminations and vertical surfaces.
3. Verify manufacturer's recommended wet film thickness of waterproofing every 100 sq. ft.

E. Cure waterproofing, taking care to prevent contamination and damage to membrane.

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a site representative qualified by waterproofing system manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components and to furnish daily reports to A/E.

1. Final Inspection: Arrange for waterproofing system manufacturer's technical personnel to inspect system installation on completion, in presence of A/E, and to prepare inspection report.
2. Repair or remove and replace components of waterproofing system where inspections indicate that they do not comply with specified requirements.

B. Additional Tests and Inspections:

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.
2. Waterproofing system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 PROTECTION AND CLEANING

A. Protect waterproofing system from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove waterproofing system that does not comply with requirements, repair substrates, and repair or reinstall waterproofing system to a condition free of damage and deterioration at time of Substantial Completion and in accordance with warranty requirements.

C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 071416

SECTION 071900 - WATER REPELLENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:

1. Cast-in-place concrete.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site .

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

A. Penetrating Low-VOC Silane Water Repellent: Clear, containing 40 percent or more active content of silane; with alcohol, mineral spirits, water, or other proprietary solvent carrier; and with 400 g/L or less of VOCs.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Euclid Chemical Company (The); a subsidiary of RPM International, Inc.
   b. Pecora Corporation.
   c. PPG Paints; PPG Industries, Inc.
   d. PROSOCO, Inc.

e. Tnemec Company, Inc.
f. W. R. Meadows, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.

1. Verify that surfaces are clean and dry in accordance with water-repellent manufacturer's requirements. Check moisture content in representative locations by method recommended by manufacturer.
2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
3. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level in accordance with water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

3.2 PREPARATION

A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, in accordance with repellent manufacturer's written instructions.

B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product in accordance with water-repellent manufacturer's written instructions.

C. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

D. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Apply coating of water repellent on surfaces to be treated using low-pressure spray to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

C. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

3.4 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 071900

SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Medium-build air barriers, vapor retarding.

B. Related Requirements:

1. Section 061600 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.
2. Section 072500 "Weather Barriers" for weather barriers, including building paper.

1.3 ACTION SUBMITTALS

A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.

1. Medium-build air barriers, vapor retarding.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.

B. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE, AND HANDLING

A. Remove and replace liquid materials that cannot be applied within their stated shelf life.

B. Protect stored materials from direct sunlight.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.

1. Protect substrates from environmental conditions that affect air-barrier performance.
2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain primary air-barrier materials and air-barrier accessories from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction to be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies to be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested in accordance with ASTM E2357.

C. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft pressure difference; ASTM E2178.

D. Ultimate Elongation: Minimum 250 percent; ASTM D412, Die C.

E. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested in accordance with ASTM D4541.

F. UV Resistance: Can be exposed to sunlight for 30 days in accordance with manufacturer's written instructions.

2.3 ACCESSORY MATERIALS

A. Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

B. Primer: Liquid primer recommended for substrate by air-barrier material manufacturer.

C. Stainless Steel Sheet: ASTM A240/A240M, Type 304, 0.0187 inch thick, and Series 300 stainless steel fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
3. Verify that substrates are visibly dry and free of moisture. Test concrete substrates for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate in accordance with manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.

B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.

E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.

F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

H. Bridge isolation joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement in accordance with manufacturer's written instructions and details.

3.3 INSTALLATION OF ACCESSORIES

A. Install accessory materials in accordance with air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.

1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.

C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.

D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.

1. Transition Strip: Roll firmly to enhance adhesion.

F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.

G. Seal top of through-wall flashings to air barrier with an additional 6-inch- wide, transition strip.

H. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.

I. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

3.4 INSTALLATION OF PRIMARY AIR-BARRIER MATERIAL

A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier in accordance with air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.

1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
3. Where multiple prime coats are needed to achieve required bond, allow adequate drying time between coats.

B. Medium-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply an increased thickness of air-barrier material in full contact around protrusions such as masonry ties.

1. Vapor-Retarding, Medium-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, applied in one or more equal coats. Apply additional material as needed to achieve void- and pinhole-free surface.

C. Do not cover air barrier until it has been tested and inspected by testing agency.

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

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Air barriers will be considered defective if they do not pass tests and inspections.

1. Apply additional air-barrier material, in accordance with manufacturer's written instructions, where inspection results indicate insufficient thickness.
2. Remove and replace deficient air-barrier components for retesting as specified above.

C. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.

D. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

A. Protect air-barrier system from damage during application and remainder of construction period, in accordance with manufacturer's written instructions.

1. Protect air barrier from exposure to UV light and harmful weather exposure as

recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials in accordance with air-barrier manufacturer's written instructions.

2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

C. Remove masking materials after installation.

END OF SECTION 072726

SECTION 074213.19 - INSULATED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Foamed-insulation-core metal wall panels.

B. Related Requirements:

1. Section 074293 "Soffit Panels" for metal panels used in horizontal soffit applications.

1.2 DEFINITIONS

A. Wall Panel Assembly: Assembly consisting of wall panels, support systems, cavities, weather barriers, air barriers, and sheathing substrate that has been shown to comply with assembly testing and performance requirements.

1.3 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site .

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.

7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review procedures for repair of field-cut metal panels or panels damaged after installation.
9. Review NFPA 285 requirements for wall assembly.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.5 ACTION SUBMITTALS

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

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: Manufacturer's standard color charts, showing full range of available colors for each type of exposed finish.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: Actual Sample of finished products for each type of exposed finish.

1. Size: Manufacturer's standard size .

E. Delegated Design Submittals: For wall panel assembly, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each specified product, for tests performed by a qualified testing agency.

B. Wall Panel Assembly Test Reports: Certified test reports showing system compliance with specific performance or third-party listing documenting compliance in accordance with the IBC.

C. Field Quality Control Reports: For specified tests and inspections.

D. Qualification Statements: For Installer and testing agency .

E. Delegated Design Engineer Qualifications: For insulated metal wall panels assembly.

F. Sample Warranties: For specified special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For insulated metal wall panels.

1.8 QUALITY ASSURANCE

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

B. Testing Agency Qualifications: An independent agency qualified to perform specified field tests.

C. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in state where Project is located and who is experienced in providing engineering services of the type indicated.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.10 FIELD CONDITIONS

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

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design insulated metal wall panel assembly.

B. Structural Performance: Provide metal panel systems, including associated support system, capable of withstanding the effects of the following loads, based on testing in accordance with ASTM E330/E330M:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings .

C. Air Infiltration: Not more than 0.06 cfm/sq. ft. when tested in accordance with ASTM E283/E283M at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. .

D. Water Penetration under Static Pressure: No water penetration when tested in accordance with ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. .

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

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

F. Fire-Test-Response Characteristics: Provide metal wall panels and system components with the following fire-test-response characteristics, as determined by testing identical panels and system components per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify

products with appropriate markings of applicable testing agency.

1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E119.

    a. Indicate design designations from UL on its "Product iQ" website or from the listings of another qualified testing agency.

2. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which wall panel is a part, complies with NFPA 285 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies.
3. Radiant Heat Exposure: No ignition when tested in accordance with NFPA 268.
4. Potential Heat: Acceptable level when tested in accordance with NFPA 259.
5. Surface-Burning Characteristics: Provide wall panels with a flame-spread index of 25 or less and a smoke-developed index of 450 or less, per ASTM E84.

2.2 FOAMED-INSULATION-CORE METAL WALL PANELS

A. General: Provide factory-formed and -assembled metal wall panels fabricated from two metal facing sheets and insulation core foamed in place during fabrication, and with joints between panels designed to form weathertight seals. Include accessories required for weathertight installation.

1. Insulation Core: Modified isocyanurate or polyurethane foam using a non-CFC blowing agent, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively.

    a. Closed-Cell Content: 90 percent when tested in accordance with ASTM D6226.
    b. Density: 2.0 to 2.6 lb/cu. ft. when tested in accordance with ASTM D1622.
    c. Compressive Strength: Minimum 20 psi when tested in accordance with ASTM D1621.
    d. Shear Strength: 26 psi when tested in accordance with ASTM C273/C273M.

B. Concealed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Formed with tongue-and-groove interlocking panel edges.

1. Basis-of-Design Product: Subject to compliance with requirements, provide CF Flute Wall Panels by the following:

    a. Metl-Span; a Nucor Brand

2. Panel Attachment Method: Designed for sequential installation by interlocking panel edges and mechanically attaching panels to supports using concealed clips or fasteners.
3. Material: Metallic-coated steel sheet.

    a. Surface Texture: Manufacturer’s standard.

4. Panel Coverage: 42 inches nominal.
5. Panel Thickness: [1.0 inch][1.5 inches][2.0 inches][2.5 inches][3.0 inches][4.0 inches][5.0 inches]<Insert dimension> .
6. Thermal-Resistance Value (R-Value): <Insert R-value> in accordance with ASTM C1363.

2.3 METAL WALL PANEL MATERIALS

A. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

1. Face Nominal Thickness: 0.034 inch.
2. Liner Nominal Thickness: 0.034 inch.
3. Exterior Finish: Three-coat fluoropolymer.
    a. Color: As selected by A/E from manufacturer's full range.
4. Interior Finish: Siliconized polyester.
    a. Color: As indicated by manufacturer's designations.

B. Aluminum Sheet: Coil-coated sheet, ASTM B209/B209M, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

1. Thickness: 0.040 inch.
2. Surface: Manufacturer’s standard finish.
3. Exterior Finish: Three-coat fluoropolymer.
    a. Color: As selected by A/E from manufacturer's full range.
4. Interior Finish: Siliconized polyester.
    a. Color: As indicated by manufacturer's designations.

2.4 ACCESSORIES

A. Structural Performance: Provide support system for metal wall panels capable of withstanding and transferring design loads to building structure within limits and under conditions indicated.

B. Metal Subframing and Furring: ASTM C955, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

C. Wall Panel Assembly Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended in writing by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

E. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

F. Panel Sealants: Provide sealant type recommended in writing by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION OF INSULATED METAL WALL PANELS

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with manufacturer's written instructions .
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

    a. Size: As recommended in writing by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Metallic-Coated Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by

weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

5. FEVE Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
6. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
7. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

D. Aluminum Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
5. FEVE Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
6. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required in writing by metal wall panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages in accordance with ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF INSULATED METAL PANELS

A. Install in accordance with manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Panel Fasteners:

1. Metallic-Coated Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
2. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated by metal panel manufacturer; or, if not indicated, provide types recommended in writing by metal wall panel manufacturer.

1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended in writing by metal wall panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

E. Weathertight Installation:

1. Apply continuous ribbon of sealant to panel joint on concealed side of insulated metal wall panels as vapor seal; apply sealant to panel joint on exposed side of panels for weather seal.
2. Apply panels and associated items true to line for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
3. Provide sealant tape at lapped joints of insulated metal wall panels and between panels and protruding equipment, vents, and accessories.
4. Apply a continuous ribbon of sealant tape to panel side laps and elsewhere as needed to make panels weathertight.

3.4 INSTALLATION OF FOAM-INSULATION-CORE METAL WALL PANELS

A. Concealed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Fasten metal wall panels to supports with concealed clips at each joint at location and spacing and with fasteners recommended in writing by manufacturer. Fully engage tongue and groove of adjacent panels.

1. Install clips to supports with self-tapping fasteners.

B. Exposed-Fastener, Foamed-Insulation-Core Metal Wall Panels: Fasten foamed-insulation-core metal wall panels to supports with fasteners at each lapped joint at location and spacing and with fasteners recommended in writing by manufacturer.

1. Provide metal-backed washers under heads of exposed fasteners on weather side of insulated metal wall panels.
2. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
3. Apply snap-on battens to exposed-fastener, insulated-core metal wall panel seams to conceal fasteners.

3.5 INSTALLATION OF ACCESSORIES

A. Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended in writing by metal panel manufacturer.

B. Flashing and Trim: Comply with performance requirements and with manufacturer's written installation instructions. Provide concealed fasteners, where possible, and set units true to line and level as indicated on Drawings. Install work with laps, joints, and seams that are permanently weathertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 ft. with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.6 INSTALLATION TOLERANCES

A. Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 ft., non-accumulative, on level, plumb, and location lines as indicated on Drawings, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

1. After testing, repair leaks, repeat tests, and make further repairs until wall panel assembly installation is watertight.

a. Cost of retesting is Contractor's responsibility.

C. Tests and Inspections:

1. Remove and replace metal wall panel assembly where tests and inspections indicate that it does not comply with specified requirements.

2. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.8 CLEANING

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

B. After installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

3.9 PROTECTION

A. Maintain metal wall panels in a clean condition during the remainder of construction.

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

END OF SECTION 074213.19

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 077100 "Roof Specialties" for manufactured copings, roof-edge specialties, roof-edge drainage systems, reglets, and counterflashings.
3. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review requirements for insurance and certificates if applicable.
3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
2. Include identification of material, thickness, weight, and finish for each item and location in Project.
3. Include details of termination points and assemblies.
4. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.

5. Include details of roof-penetration flashing.
6. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
7. Include details of special conditions.
8. Include details of connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified, 12 inches long by actual width.

D. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested.

B. Evaluation Reports: For copings and roof edge flashing, from ICC-ES showing compliance with ANSI/SPRI/FM 4435/ES-1.

C. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested, shop is to be listed as able to fabricate required details as tested and approved.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.9 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Manufacture and install roof edge flashings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

2.2 SHEET METALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.

1. Finish: ASTM A480/A480M, No. 2D (dull, cold rolled).

C. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 coating designation or aluminum-zinc alloy-coated steel sheet in accordance with ASTM A792/A792M, Class AZ50 coating designation, Grade 40; prepainted by coil-coating process to comply with ASTM A755/A755M.

1. Surface: Smooth, flat and with manufacturer's standard clear acrylic coating on both sides.
2. Exposed Coil-Coated Finish:
    a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    b. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
3. Color: As selected by A/E from manufacturer's full range.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.

1. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F or lower.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
   c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
2. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.

C. Solder:

1. For Zinc-Coated (Galvanized) Steel: ASTM B32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

H. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

I. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.

1. Material: Stainless steel, 0.0188 inch thick.
2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.

3. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
4. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
5. Accessories:
    a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
    b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
6. Finish: With manufacturer's standard color coating.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
5. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen.
6. Gutters with Girth up to 15 Inches: Fabricate from the following materials:
   a. Galvanized Steel: 0.022 inch thick.
7. Gutters with Girth 16 to 20 Inches: Fabricate from the following materials:
   a. Galvanized Steel: 0.028 inch thick.
8. Gutters with Girth 21 to 25 Inches: Fabricate from the following materials:
   a. Galvanized Steel: 0.034 inch thick.
9. Gutters with Girth 26 to 30 Inches: Fabricate from the following materials:
   a. Galvanized Steel: 0.040 inch thick.
10. Gutters with Girth 31 to 35 Inches: Fabricate from the following materials:
    a. Galvanized Steel: 0.052 inch thick.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricate from the following materials:
   a. Galvanized Steel: 0.022 inch thick.

C. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch- wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper. Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop): Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long sections. Furnish with 6-inch- wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Fabricate from the following materials:
   a. Galvanized Steel: 0.028 inch thick.

B. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.
2. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

C. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Galvanized Steel: 0.022 inch thick.
2. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

D. Roof-Penetration Flashing: Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.
2. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

E. Roof-Drain Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

2.8 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:

1. Galvanized Steel: 0.022 inch thick.
2. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

C. Wall Expansion-Joint Cover: Fabricate from the following materials:

1. Galvanized Steel: 0.028 inch thick.
2. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, in accordance with manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

1. Lap horizontal joints not less than 4 inches.
2. Lap end joints not less than 12 inches.

C. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.

7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum and stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.
    a. Embed hooked flanges of joint members not less than 1 inch into sealant.
    b. Form joints to completely conceal sealant.
    c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
    d. Adjust setting proportionately for installation at higher ambient temperatures.
        1) Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pretin edges of sheets with solder to width of 1-1/2 inches; however, reduce pretinning where pretinned surface would show in completed Work.
2. Do not solder metallic-coated steel and aluminum sheet.
3. Do not pretin zinc-tin alloy-coated copper.
4. Do not use torches for soldering.
5. Heat surfaces to receive solder, and flow solder into joint.
    a. Fill joint completely.

b. Completely remove flux and spatter from exposed surfaces.

6. Stainless Steel Soldering:
   a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
   b. Promptly remove acid-flux residue from metal after tinning and soldering.
   c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
7. Copper Soldering: Tin edges of uncoated sheets, using solder for copper.

H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with riveted and soldered joints or joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet apart. Install expansion-joint caps.
7. Install continuous gutter screens on gutters with noncorrosive fasteners, hinged to swing open for cleaning gutters.

C. Downspouts:

1. Join sections with 1-1/2-inch telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches o.c.
4. Provide elbows at base of downspout to direct water away from building.
5. Connect downspouts to underground drainage system.

D. Parapet Scuppers:

1. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
2. Anchor scupper closure trim flange to exterior wall and solder or seal with elastomeric sealant to scupper.
3. Loosely lock front edge of scupper with conductor head.
4. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.

E. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper or gutter discharge.

F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. Copings:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.
    a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 24-inch centers.
    b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints minimum of 4 inches.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.5 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.6 INSTALLATION TOLERANCES

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

3.7 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

3.8 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes: Manufactured units for the following applications:

1. Roof curbs.
2. Equipment supports.
3. Roof hatches.
4. Heat and smoke vents.
5. Gravity ventilators.
6. Pipe and duct supports.
7. Pipe portals.
8. Preformed flashing sleeves.
9. Roof walkways.
10. Underlayment.
11. Miscellaneous materials.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for metal vertical ladders, ships' ladders, and stairs for access to roof hatches.
2. Section 061000 "Rough Carpentry" for roof cants, nailers, blocking, and other pressure-preservative-treated wood.
3. Section 077100 "Roof Specialties" for manufactured copings, roof-edge specialties, roof-edge drainage systems, reglets, and counterflashing.
4. Section 077253 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface, allowing it to melt and drain off slowly.
5. Section 079200 "Joint Sealants" for field-applied sealants between roof accessories and adjacent materials.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples for Verification: Include Samples of each type of roof accessory to verify finish and color selection, in manufacturer's standard sizes.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not store roof accessories in contact with other materials that might cause staining, denting, or other surface damage. Store roof accessories in accordance with manufacturer's instructions.

B. Store materials off ground in dry location and in accordance with manufacturer's instructions in well-ventilated area.

C. Store and protect roof accessories from nicks, scratches, and blemishes.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify profiles and tolerances of roof-accessory substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories to withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. Wind-Restraint Performance: **As indicated on Drawings**.

2.2 METAL MATERIALS

A. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheer complying with minimum ASTM A653/A653M, G90 coating designation or aluminum-zinc alloy-coated steel sheet complying with minimum ASTM A792/A792M, Class AZ50 coating designation; structural quality.

1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.
2. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil.
3. Powder Coat Finish: After cleaning and pretreating, apply manufacturer's

standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil.

B. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

C. Steel Shapes: ASTM A36/A36M, hot-dip galvanized in accordance with ASTM A123/A123M unless otherwise indicated.

2.3 UNDERLAYMENT

A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

D. Fasteners: Roof accessory manufacturer's recommended fasteners, designed to comply with performance requirements, suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Metallic-Coated Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

E. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

F. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

G. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

H. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

I. Asphalt Roofing Cement: ASTM D4586/D4586M, asbestos free, of consistency required for application.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA AMP 500, "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 2 inches.

3.3 INSTALLATION, GENERAL

A. Install roof accessories in accordance with manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.

4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended in writing by manufacturer's written installation instructions.

1. Coat concealed side of uncoated aluminum and stainless steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

3.4 INSTALLATION OF ROOF ACCESSORIES

A. Roof Curb: Install each roof curb so top surface is level.

B. Equipment Support: Install equipment supports so top surfaces are level with each other.

C. Roof-Hatch:

1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
2. Attach safety railing system to roof-hatch curb.
3. Attach ladder-assist post in accordance with manufacturer's written instructions.

D. Heat and Smoke Vent:

1. Install heat and smoke vent so top perimeter surfaces are level.
2. Install and test heat and smoke vents and their components for proper operation in accordance with NFPA 204.

E. Gravity Ventilator: Verify that gravity ventilators operate properly and have unrestricted airflow. Clean, lubricate, and adjust operating mechanisms.

F. Pipe and Duct Support: Comply with MSS SP-58. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.

1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller-diameter pipes as specified for individual pipe hangers.

G. Preformed Flashing-Sleeve and Flashing-Pipe Portal: Secure flashing sleeve to roof membrane in accordance with flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane in accordance with roof membrane manufacturer's instructions.

3.5 CLEANING AND PROTECTION

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing in accordance with ASTM A780/A780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting in accordance with Section 099113 "Exterior Painting."

C. On completion of installation, clean exposed surfaces in according with manufacturer's written instructions. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as roof accessories are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof accessories in a clean condition during construction.

E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures, as determined by A/E.

END OF SECTION 077200

SECTION 077253 - SNOW GUARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pad-type, flat-mounted metal snow guards.

1.2 ACTION SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1. Pad-type, flat-mounted metal snow guards.

B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.

C. Samples:

1. Pad-Type Snow Guards: Full-size unit with installation hardware.

a. For units with factory-applied finishes, submit manufacturer's standard color selections.

D. Delegated Design Submittals: For snow guards, include analysis reports signed and sealed by the qualified professional engineer responsible for their preparation.

1. Include calculation of number and location of snow guards.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that the engineer is licensed in the state in which the Project is located.

B. Product Test Reports: For each type of snow guard, for tests performed by a qualified testing agency, indicating load at failure of attachment to roof system identical to roof system used on this Project.

1.4 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit adhesive-mounted snow guards to be installed, and adhesive

cured, according to adhesive manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design snow guards, including attachment to roofing material and roof deck, as applicable for attachment method, based on the following:

1. Roof snow load.
2. Snow drifting
3. Roof slope.
4. Roof type.
5. Roof dimensions.
6. Roofing substrate type and thickness.
7. Snow guard type.
8. Snow guard fastening method and strength.
9. Snow guard spacing.
10. Coefficient of Friction Between Snow and Roof Surface: 0.
11. Factor of Safety: 3.

B. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

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

C. Structural Performance: Snow guards to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.

1. Snow Loads: As indicated on Drawings.

2.2 PAD-TYPE SNOW GUARDS

A. Pad-Type, Flat-Mounted Metal Snow Guards:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Alpine SnowGuards
b. Berger; division of OmniMax International, Inc.
c. IceBlox Inc.
d. Sieger Snow Guards Inc.
e. TRA Snow and Sun, Inc.

f. Zaleski Snow-Guards for Roofs, Inc.

2. Material:

a. Aluminum Sheet: ASTM B209, not less than 0.040 inch thick.

1) Finish: Powder coat finish complying with AAMA 2603, with a minimum dry film thickness of 1.5 mils.

a) Color: Match sheet metal roofing.

b. Steel Sheet: ASTM A606/A606M, not less than 0.022 inch thick.

3. Attachment: Manufacturer's tested system, capable of resisting design loads.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare substrates for bonding snow guards.

B. Prime substrates according to snow guard manufacturer's written instructions.

3.3 INSTALLATION

A. Install snow guards according to manufacturer's written instructions.

1. Space rows as indicated on Shop Drawings.
2. Space rows as recommended by manufacturer.

B. Attachment for Standing-Seam Metal Roofing:

1. Do not use fasteners that will penetrate metal roofing or fastening methods that void metal roofing finish warranty.
2. Pad-Type, Flat-Mounted Snow Guards:

a. Mechanically attach to metal roofing in accordance with manufacturer's

written instructions.

b. Solder to copper roofing in accordance with manufacturer's written instructions.

3. Pad-Type, Seam-Mounted Snow Guards:

a. Install snow guards in straight rows.
b. Secure in place using stainless steel set screws, incorporating round nonpenetrating point.
c. Torque set screw in accordance with manufacturer's written instructions.

END OF SECTION 077253

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Glass products.
2. Insulating glass.
3. Miscellaneous glazing materials.

1.3 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For glass.

B. Product test reports.

C. Preconstruction adhesion and compatibility test report.

D. Sample warranties.

1.6 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to

manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.
2. Design Snow Loads: As indicated on Drawings.
3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

C. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996.

1. Large-Missile Test: For glazing located within 30 feet of grade.
2. Small-Missile Test: For glazing located between 30 feet and above grade.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F.
2. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
3. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.2 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: "Glazing Manual."
2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.3 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

B. Reflective- and Low-E-Coated Vision Glass: ASTM C1376.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cardinal Glass Industries, Inc.
   b. Guardian Glass LLC.
   c. Pilkington North America; NSG Group.
   d. Saint-Gobain Glass Corp.
   e. Vitro Architectural Glass.

2.4 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
        1) Saint-Gobain Glass Corp.
        2) Technoform Glass Insulation North America.
        3) Thermix; a brand of Ensinger USA.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.5 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks:

1. EPDM with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

C. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

D. Edge Blocks:

1. EPDM with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

E. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes

glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

3.2 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.3 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

3.4 INSULATING GLASS SCHEDULE

A. Low-E-Coated, Tinted Insulating Glass Type:

1. Basis-of-Design Product: Pilkington Solar-E Clear
2. Overall Unit Thickness: 1 inch.
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. U-Value: 0.38.
5. SHGC: 0.40.
6. Shading Coefficient: 0.61.

END OF SECTION 088000

SECTION 088300 - MIRRORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Silvered flat glass mirrors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified Installer, who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Avalon Glass and Mirror Company.
2. Gardner Glass, Inc.
3. Glasswerks LA, Inc.
4. National Glass Industries, Inc.
5. Trulite Glass & Aluminum Solutions, LLC.

6. Walker Glass Co., Ltd.

2.2 SILVERED FLAT GLASS MIRRORS

A. Mirrors, General: ASTM C1503; manufactured using copper-free, low-lead mirror coating process.

B. Tempered Glass Mirrors: Mirror Glazing Quality for blemish requirements and complying with ASTM C1048 for Kind FT, Condition A, tempered float glass before silver coating is applied.

1. Nominal Thickness: 4.0 mm.

C. Safety Glazing Products: For film-backed tempered mirrors, provide products that comply with 16 CFR 1201, Category II.

2.3 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.

2.4 MIRROR HARDWARE

A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.

1. Aluminum J-Channel Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch in height, respectively, and a thickness of not less than 0.04 inch.
    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
        1) Andscot Company, Inc.
        2) C.R. Laurence Co., Inc.; CRH Americas, Inc.
        3) Stylmark, Inc.
2. Finish: Clear bright anodized.

B. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

2.5 FABRICATION

A. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts, so they fit closely around penetrations in mirrors.

B. Mirror Edge Treatment: Rounded polished.

1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.

C. Film-Backed Safety Mirrors: Apply film backing with adhesive coating over mirror backing paint, as recommended in writing by film-backing manufacturer, to produce a surface free of bubbles, blisters, and other imperfections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced National Glass Association (NGA) publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.

B. Install mirrors with mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.

1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.

C. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer and NGA's publication "Proper Procedures for Cleaning Flat Glass Mirrors."

END OF SECTION 088300

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

A. Section includes room-identification signs that are directly attached to the building.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For room-identification signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.

D. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Variable Component Materials: 12 replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type.
2. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

1.6 QUALITY ASSURANCE

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

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Deterioration of finishes beyond normal weathering.
    b. Deterioration of embedded graphic image.
    c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in ICC A117.1.

2.2 SIGN MATERIALS

A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

B. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters or images as indicated on Drawings.

C. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened sign unless otherwise indicated.

4. Sign Mounting Fasteners:

a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material or screwed into back of sign assembly unless otherwise indicated.
b. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or

debris that would impair installation.

B. Accessibility: Install signs in locations on walls according to the accessibility standard.

C. Mounting Methods:

1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

    a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.

3.2 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423.16

SECTION 104300 - EMERGENCY AID SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Related Requirements:

1. Section 104413 "Fire Protection Cabinets" for fire extinguisher, fire hose, and fire valve cabinets.

1.2 DEFINITIONS

A. AED: Automated external defibrillator.

1.3 ACTION SUBMITTALS

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

1. AEDs.
2. AED Cabinets: Coordinate final AED schedule with number and type of AEDs to ensure proper fit and function.

a. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

3. SCBA and Associated Accessories: In addition to requirements specified in Section 013300 "Submittal Procedures," include the following information:

a. Product Certificates: Include product certificates stating compliance with NIOSH and NFPA 1981 certification requirements.
b. Include manufacturer's sample warranty language.

B. Field Quality Control Reports: For specified tests and inspections.

C. Sample Warranties: For specified special warranties.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturers' published instructions.

1.5 CLOSEOUT SUBMITTALS

A. Warranty documentation.

1.6 WARRANTY FOR AUTOMATED EXTERNAL DEFIBRILLATORS

A. Special Warranty: Manufacturer agrees to repair or replace AEDs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 AUTOMATED EXTERNAL DEFIBRILLATOR CABINETS

A. Cabinet Construction: Flush doors with 5/8-inch doorstop attached by continuous hinge and equipped with zinc-plated pull and roller catch.

B. Fire Rating: Nonrated.

C. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/2-inch backbend depth.

D. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

E. Cabinet Material: Cold-rolled steel sheet.

F. Door Material: Steel sheet.

G. Door Style: Fully glazed acrylic sheet with frame.

H. Finishes:

1. Steel Sheet: Manufacturer's standard baked-enamel or powder-coat finish.

a. Color: White.

I. Alarm: Actuates when fire-protection cabinet door is opened and is powered by batteries.

1. Manufacturer's standard audible alarm.

a. Alarm contacts for existing alarm systems.

J. Identification: Manufacturer's standard graphics and lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.

K. Freestanding AED Cabinet Stand: Welded steel stand designed to hold AED cabinet at 52 inches high.

PART 3 - EXECUTION

3.1 PROTECTION

A. After installation, protect emergency aid specialties from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 104300

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:

a. Portable fire extinguisher.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.

1.2 PREINSTALLATION CONFERENCE

A. Preinstallation Conference: Conduct conference at [Project site]<Insert location>.

1. Review methods and procedures related to fire-protection cabinets, including, but not limited to, the following:

a. Schedules and coordination requirements.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.
2. Show location of knockouts for hose valves.

B. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Samples for Initial Selection: For each type of exposed finish required.

E. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

F. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

2.3 FIRE-PROTECTION CABINET

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Babcock-Davis
2. Guardian Fire Equipment, Inc
3. JL Industries; Activar Construction Products Group, Inc.
4. Larsen's Manufacturing Company
5. Nystrom, Inc.
6. Strike First Corporation of America

B. Fire-Protection Cabinet Type: Suitable for fire extinguisher.

C. Cabinet Construction: Nonrated.

1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch- thick cold-rolled steel sheet lined with minimum 5/8-inch- thick fire-barrier material. Provide factory-drilled mounting holes.

D. Cabinet Material: Cold-rolled steel sheet.

1. Shelf: Same metal and finish as cabinet.

E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4- to 1-1/2-inch backbend depth.

F. Cabinet Trim Material: Same material and finish as door.

G. Door Material: Steel sheet.

H. Door Style: Fully glazed, frameless, backless, acrylic panel.

I. Door Glazing: Acrylic sheet.

1. Acrylic Sheet Color:

a. Clear transparent acrylic sheet.

J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide manufacturer's standard.
2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.

K. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
3. Break-Glass Door Handle: Manufacturer's standard, integral to glass with the words "PULL TO BREAK GLASS" applied to handle.
4. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
5. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
6. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER".

1) Location: Applied to cabinet door.
2) Application Process: Pressure-sensitive vinyl letters.
3) Lettering Color: Red.
4) Orientation: Vertical.

L. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.

a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
c. Color: White.

2. Transparent Acrylic Sheet: ASTM D4802, Category A-1 (cell-cast sheet), 3 mm thick, with Finish 1 (smooth or polished).

2.4 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Miter corners and grind smooth.
3. Provide factory-drilled mounting holes.
4. Prepare doors and frames to receive locks.
5. Install door locks at factory.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION OF FIRE-PROTECTION CABINETS

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
2. Provide inside latch and lock for break-glass panels.
3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
4. Fire-Rated Cabinets:

    a. Install cabinet with not more than 1/16-inch tolerance between pipe OD and knockout OD. Center pipe within knockout.

b. Seal through penetrations with firestopping sealant as specified in Section 078413 "Penetration Firestopping."

C. Identification:

1. Apply vinyl lettering at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 334113 - REINFORCED CONCRETE STORM SEWER PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, equipment, and incidentals necessary to provide reinforced concrete storm sewer pipe, fittings, joints, bedding, and appurtenances as indicated on the Drawings and specified herein.

B. Work includes:
   1. Reinforced concrete storm sewer pipe.
   2. Pipe bedding and embedment materials.
   3. Jointing materials.
   4. Connection to structures and appurtenances.
   5. Testing and inspection.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C76 – Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
   2. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
   3. ASTM C497 – Standard Test Methods for Concrete Pipe, Concrete Box Sections, Manhole Sections, or Tile.
   4. ASTM D698 – Laboratory Compaction Characteristics of Soil Using Standard Effort.

B. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M315 – Rubber Gaskets for Precast Concrete Sewer, Storm Drain, and Culvert Pipe.

1.3 SUBMITTALS

A. Submit manufacturer's product data for pipe, joints, and gaskets.

B. Submit certification that pipe complies with ASTM C76 requirements.

C. Submit manufacturer's recommendations for handling, storage, and installation.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in a manner that prevents damage during transportation and unloading.

B. Store pipe on firm, level ground and protect from damage.

C. Pipe exhibiting cracks, spalls, broken ends, or other defects shall be rejected.

PART 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE

A. Reinforced concrete storm sewer pipe shall conform to ASTM C76.

B. Pipe size shall be diameter as indicated on the Drawings.

C. Pipe shall be Class III unless otherwise indicated on the Drawings or determined by structural loading requirements.

D. Pipe shall be manufactured with bell-and-spigot gasketed joints.

E. Pipe shall be free from fractures, honeycombing, indications of strength failure, or other defects.

2.2 JOINTS

A. Pipe joints shall conform to ASTM C443.

B. Joints shall utilize resilient rubber gaskets specifically manufactured for the pipe supplied.

C. Joints shall provide a flexible, soil-tight connection.

2.3 BEDDING AND EMBEDMENT MATERIALS

A. Bedding and embedment material shall consist of crushed limestone, crushed gravel, or other approved granular material meeting ODOT Item 703.11, Size No. 57 or approved equal.

B. Bedding material shall be free of frozen lumps, debris, organic matter, and unsuitable material.

2.4 CONNECTION MATERIALS

A. Flexible watertight connectors for connections to precast structures shall comply with ASTM C923.

B. Pipe penetrations into precast structures shall be factory-cored or field-cored using approved methods.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify line and grade before installation.

B. Do not install damaged pipe.

3.2 TRENCH PREPARATION

A. Excavate trenches in accordance with Section 333100.02 - Sanitary and/or Storm Sewer Construction.

B. Remove unsuitable foundation materials encountered below pipe grade.

C. Replace unsuitable materials with approved bedding material as directed by the Engineer.

3.3 BEDDING

A. Provide a minimum of 6 inches of compacted granular bedding beneath the pipe barrel.

B. Shape bedding to provide continuous support along the lower portion of the pipe.

C. Excavate bell holes as necessary to prevent support by the bells.

3.4 PIPE INSTALLATION

A. Install pipe in accordance with ASTM recommendations and the manufacturer's instructions.

B. Lay pipe true to line and grade.

C. Place pipe with bells facing upgrade.

D. Clean joint surfaces before assembly.

E. Lubricate and install gaskets in accordance with the manufacturer's instructions.

F. Protect installed pipe from displacement during backfilling activities.

3.5 EMBEDMENT AND BACKFILL

A. Place embedment material evenly on both sides of the pipe in layers not exceeding 8 inches loose thickness.

B. Compact each layer to not less than 95 percent of maximum dry density as determined by ASTM D698.

C. Continue embedment placement to at least 12 inches above the crown of the pipe.

D. Complete trench backfill in accordance with applicable earthwork specifications.

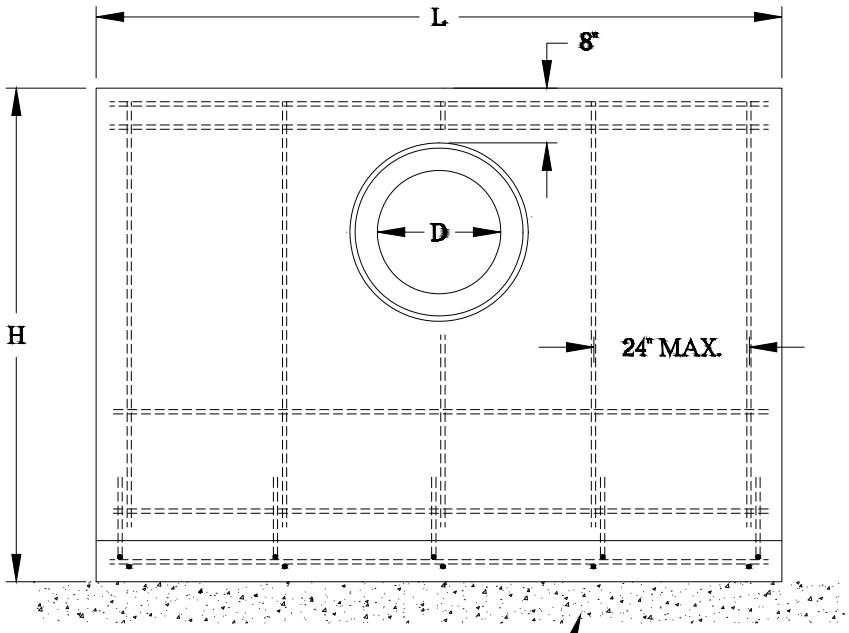
3.6 FIELD QUALITY CONTROL

A. The Engineer may inspect pipe prior to and after installation.

B. Replace damaged pipe or defective joints at no additional cost to the Owner.

C. Verify that the completed installation is clean and free of debris.

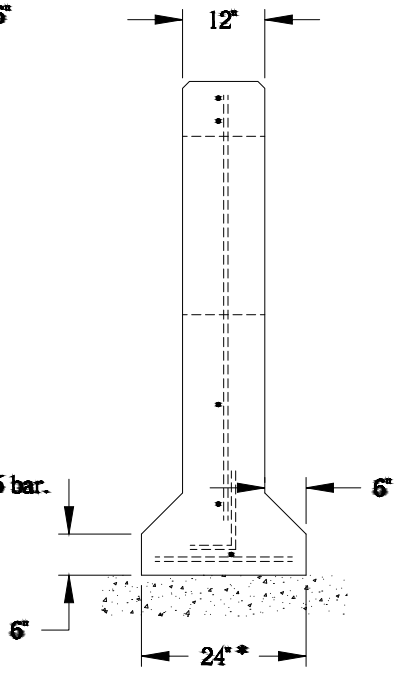
END OF SECTION



INSTALLATION INSTRUCTIONS: USE 6" BEDDING CONFORMING TO CITY OF COLUMBUS 901.11 & EXCEED FOOTER DIMENSIONS BY 6"

D	L	H
8", 10", 12" 15" & 18"	8'-4"	6'-0"
21" & 24"	11'-0"	6'-0"
27" & 30"	13'-8"	7'-0"
33" & 36"	16'-4"	7'-0"

OTHER SIZES AVAILABLE UPON REQUEST



NOTES:
1. Concrete 5,000 P.S.I. at 28 days minimum.
2. Reinforcement is Grade 60, deformed epoxy-coated #5 bar.
3. Dimensions are for round pipe only. Sizes can be calculated for elliptical or arched pipe on request.
4. Conforms to City of Columbus standard drawing AA-S168.

* Footers for 27" pipe and larger are 36" wide.

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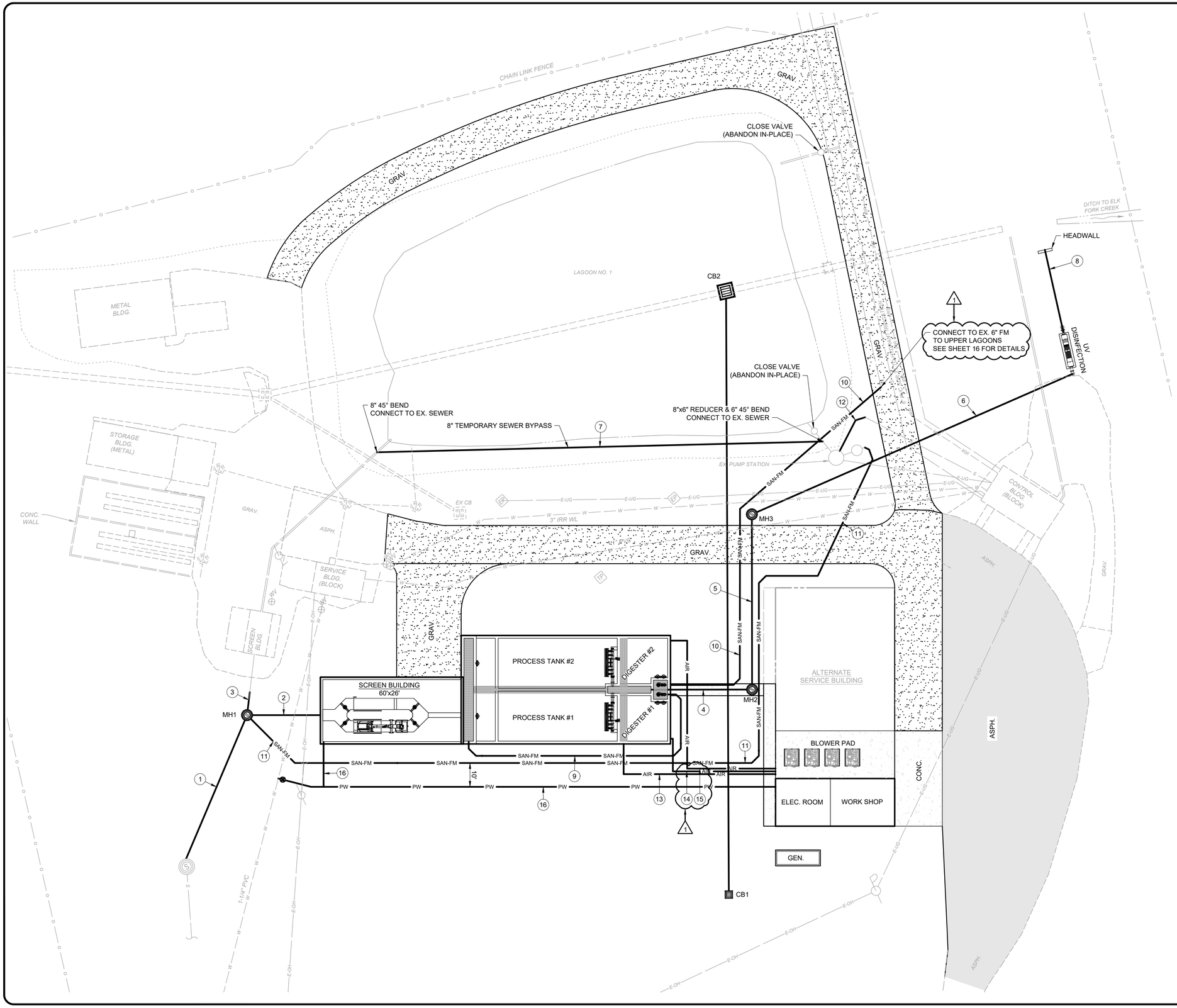
ISSUE DATE:	9/17/2026
SCALE:	NOT TO SCALE
DESIGNED BY:	AGD
DRAWN BY:	AGD
CHECKED BY:	KAB

ADAMS COUNTY
NORTH ADAMS REGIONAL WASTEWATER TREATMENT PLANT

HEADWALL DETAIL

PROJECT NO.	
200619	
DISCIPLINE	
CIVIL	
SHEET	OF
1	1

C:\CTCAD_DRIVES_H2020\200619\DWG\SHEETS\C_200619 - CONSTRUCTION DETAILS.DWG - AD2 - 9/11/2026 4:23:49 PM - ADAM DAWSON



20 ' 0 ' 20 '
SCALE: 1" = 20 '

PIPE LEGEND

1. 12" PVC SDR 35, EX. MH TO MH1 - 66'
2. 12" PVC SDR 35, MH1 TO SCREEN CHANNEL - 31'
3. 8" PVC SDR 35, MH1 TO EX. PIPE - 10'
4. 18" PVC SDR 35, EFF. CHANNEL TO MH2 - 34'
5. 18" PVC SDR 35, MH2 TO MH3 - 74'
6. 18" PVC SDR 35, MH3 TO UV - 148'
7. 8" PVC SDR 35, EX. SWR. TO EX. PS - 187'
8. 24" PVC SDR 35, UV TO HEADWALL OUTFALL - 37'
9. 6" PVC SDR 21, SUPERNATANT RETURN LINE - 125'
10. 6" PVC SDR 21, DIGESTED SLUDGE LINE - 180'
11. 4" PVC SDR 21, EX. PS TO MH1 - 355'
12. 4" PVC SDR 35, EX. CTRL. BLDG. SAN - 19'
13. 8" DIP, AIR PIPING FROM BLOWERS TO SBR TANK - 80'
14. 6" DIP, AIR PIPING TO DIGESTER #1 - 60'
15. 6" DIP, AIR PIPING TO DIGESTER #2 - 100'
16. 1-1/4" HDPE C901 DR 13.5, WATER LINE - 230'

NOTES:

1. ALL PIPING DISTANCES ARE APPROXIMATIONS.
2. SEE SHEET 8 FOR EXISTING SITE PIPING.
3. SEE SHEET 12 FOR GRADING PLAN AND STORM PIPING.
4. SEE SHEET XX FOR ELECTRICAL SITE PLAN.

BID SET

verdantas

NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
DESIGNED BY:	NLD
DRAWN BY:	AGD
CHECKED BY:	KAB

ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO

ADAMS COUNTY

SITE IMPROVEMENTS - 01 SERIES

PROPOSED SITE PIPING PLAN

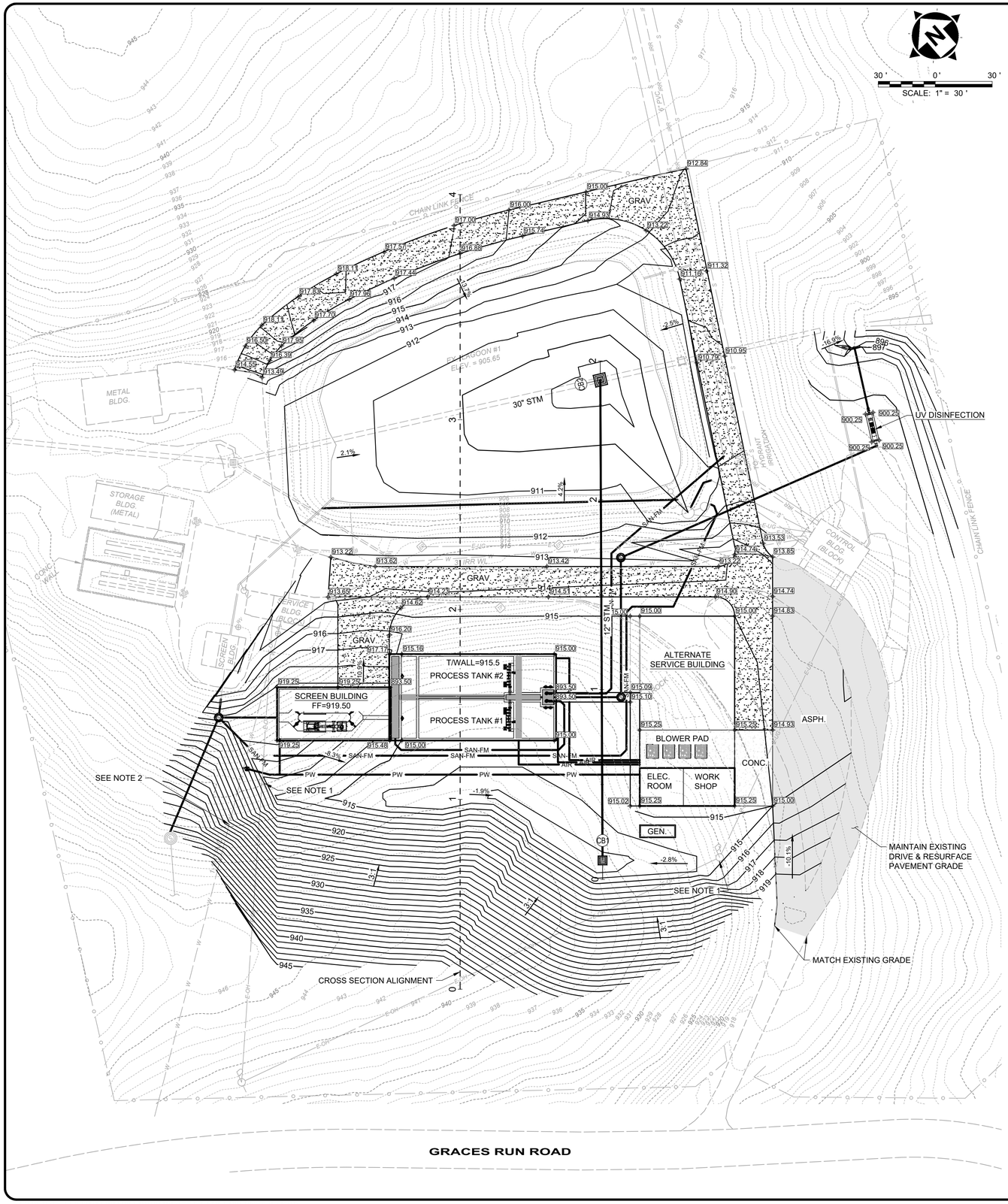
PROJECT NO.
200619

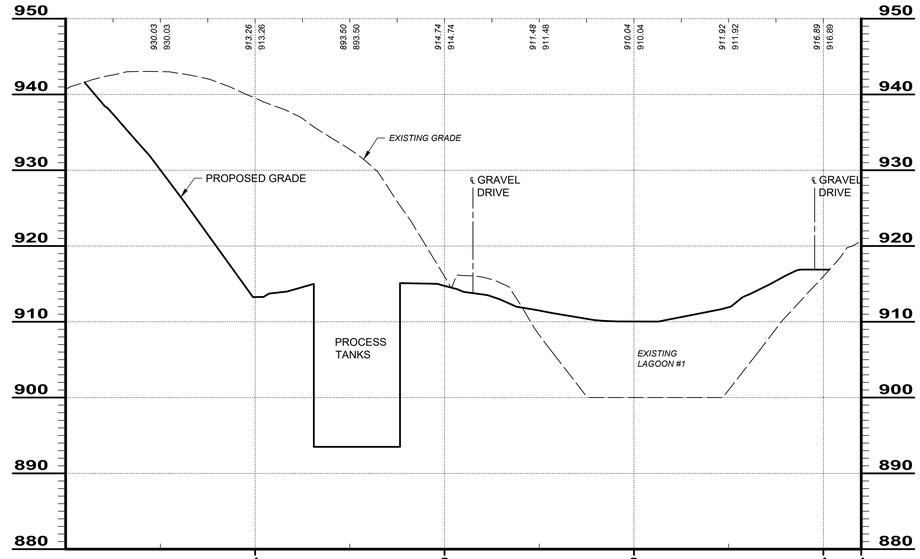
DISCIPLINE
CIVIL

SHEET NAME
01C-06

SHEET 11 OF 79

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CROSS SECTION PROFILE

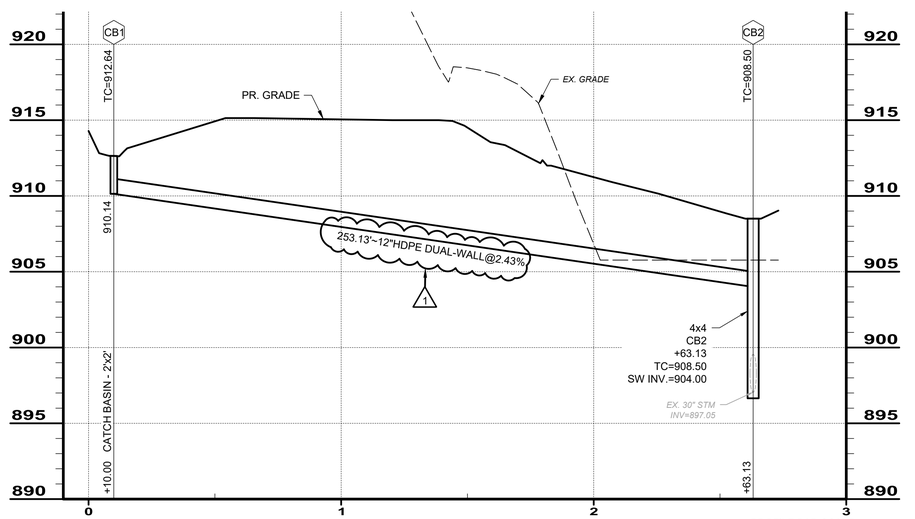
PROFILE BAR SCALE
HORIZ: 40' 20' 0' 40'
VERT: 10' 5' 0' 10'

CUT/FILL ESTIMATES (APPROX.)

LOCATION	CUT	FILL
WWTP SITE	25,000 Cu. Yd.	0.00 Cu. Yd.
LAGOON 1 & ACCESS DRIVE	0.00 Cu. Yd.	8,500 Cu. Yd.
UV DISINFECTION	0.00 Cu. Yd.	180 Cu. Yd.
LAGOONS 2 & 3	0.00 Cu. Yd.	16,320 Cu. Yd.

NOTES:

1. UTILITY POLE TO BE RELOCATED AND RESET PER NEW GRADING ELEVATIONS. PAID FOR BY ELECTRICAL ALLOWANCE.
2. CONTRACTOR TO RELAY NEW 1-1/2" WATERLINE IN GRADING CUT AREAS, WHERE WATERLINE DOES NOT MEET THE MINIMUM 4'-0" DEPTH.



STORM SEWER ALIGNMENT

PROFILE BAR SCALE
HORIZ: 40' 20' 0' 40'
VERT: 10' 5' 0' 10'

BID SET

verdantas

NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
DESIGNED BY:	NLD
DRAWN BY:	AGD
CHECKED BY:	KAB

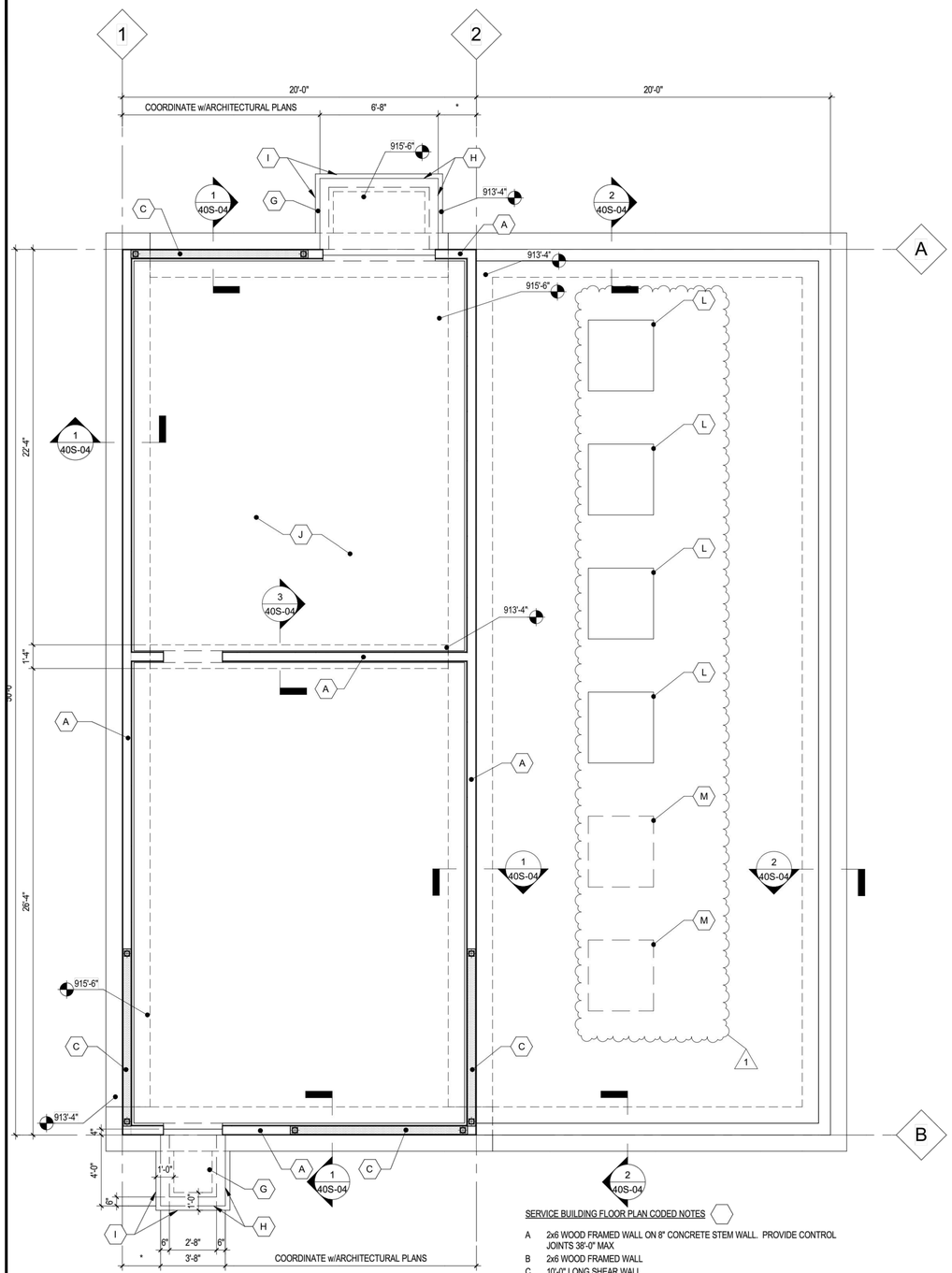
ADAMS COUNTY
NORTH ADAMS REGIONAL WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SITE IMPROVEMENTS - 01 SERIES

PROPOSED GRADING PLAN

PROJECT NO.	
200619	
DISCIPLINE	
CIVIL	
SHEET NAME	
01C-07	
SHEET	OF
12	79

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* COORDINATE w/ ARCHITECTURAL PLANS

1 40S-01 SERVICE T/SLAB SCALE: 1/4" = 1'-0"

SERVICE BUILDING FOUNDATION PLAN NOTES::

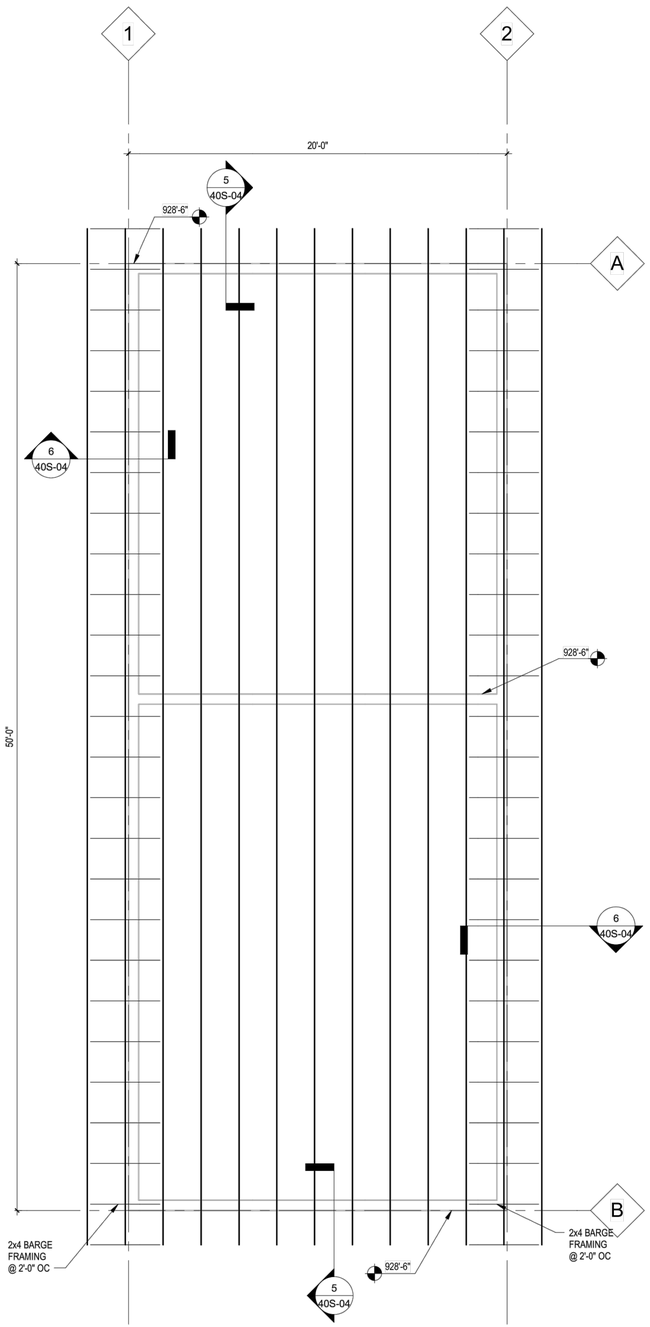
1. SEE SHEETS 50S-01 THRU 50S-02 FOR GENERAL STRUCTURAL NOTES.
2. SEE SHEETS 50S-03 THRU 50S-06FOR TYPICAL FOUNDATION DETAILS.
3. VERIFY ALL DIMENSIONS AND ELEVATIONS. SEE ARCHITECTURAL AND PROCESS DRAWINGS FOR ALL MEASUREMENTS AND ELEVATIONS. ALL DIMENSIONS SHALL CONFORM TO THE ARCHITECTURAL AND PROCESS DRAWINGS.
4. COORDINATE LOCATION AND SIZE OF PENETRATIONS AND OPENINGS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PROCESS AND SITE DRAWINGS.
5. FOUNDATION DESIGNS ARE BASED UPON FOUNDATIONS BEARING ON MATERIALS AS LISTED IN FOUNDATION GENERAL NOTES. BEARING ELEVATIONS HAVE BEEN ESTABLISHED FROM THE GRADING PLAN AND SOILS REPORT. FOUNDATION BEARING SURFACES MUST BE INSPECTED AND APPROVED IN ACCORDANCE WITH FOUNDATION GENERAL NOTES AND BOTTOM OF FOOTING ELEVATIONS ADJUSTED ACCORDINGLY.
6. ADDITIONAL BASE MATERIAL, ALL SLABS AND FOOTINGS SHALL BEAR ON, AT LEAST, 6" COMPACTED ENGINEERED GRANULAR MATERIAL OR FLOWABLE FILL.
7. STRICTLY FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT FOR SITE PREPARATION AND BACKFILLING.
8. TOP OF FOOTING ELEVATION AS NOTED ON PLAN.
9. TOP OF SLAB, FINISHED FLOOR, AS NOTED ON PLAN.
10. SEE ARCHITECTURAL, PROCESS AND MECHANICAL DRAWINGS FOR FLOOR MOUNTED EQUIPMENT WEIGHTS AND LOCATIONS NOT SHOWN.
11. EMBEDDED THREADED RODS SHALL BE STAINLESS STEEL.(ASTM 304)
12. CONCRETE WALKING SURFACES SHALL HAVE AN ANTI-SLIP SURFACE TREATMENT. CONCRETE SHALL HAVE A BROOMED FINISH, UNLESS OTHERWISE NOTED.
13. DO NOT ALLOW GROUND WATER TO ACCUMULATE WITHIN EXCAVATION.
14. PROVIDE RE-ENTRY REINFORCING AT ALL RE-ENTRY CORNERS.
15. BACKFILL THE STRUCTURE WITH COMPACTED ENGINEERED GRANULAR MATERIAL.
16. CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.
17. FLOOR CONSTRUCTION, UNLESS NOTED OTHERWISE
    A. 4" CONCRETE SLAB-ON-GRADE WITH 6x6-W2.9xW2.9 WELDED WIRE FABRIC OR #3@1'-4" OC EACH WAY, CENTERED. PROVIDE VABOR BARRIER UNDER SLAB, AT A MINIMUM (2)-6 MIL POLY SHEETS.
    B. 6" CONCRETE SLAB-ON-GRADE WITH #4@1'-2" OC EACH WAY, CENTERED.
    C. PROVIDE SAW-CUT CONTRACTION JOINTS. JOINTS SHALL FORM PANELS WITH A MAXIMUM LENGTH-TO-WIDTH RATIO OF 1.5:1. SAWCUT DEPTH SHALL BE 1/4 OF SLAB THICKNESS MINIMUM. SAWCUT JOINTS SHALL BE INSTALLED AS SOON AS PRACTICAL AFTER CONCRETE SETTING TO CONTROL SHRINKAGE CRACKING. SUBMIT JOINT LOCATION PLAN, PRIOR TO CONCRETE PLACEMENT, TO SER FOR APPROVAL. MAXIMUM SPACING CONTRACTION JOINTS: 10'-0" EACH WAY FOR 4" SLAB, AND 15'-0" EACH WAY FOR 4" SLAB.
18. CONTRACTOR SHALL COORDINATE SLAB FINISHES WITH ARCHITECTURAL AND LANDSCAPE DRAWINGS.
19. CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO UNDERMINE, DISTURB, DAMAGE OR, IN ANY WAY, CAUSE UNDESIRABLE MOVEMENT, CRACKING, AND/OR SETTLEMENT OF THE ADJACENT CONSTRUCTION.
20. THE TOP OF THE VERTICAL FOUNDATION WALL REINFORCING SHALL TERMINATE WITH A STANDARD 90-DEGREE HOOK AT 4'-0" OC AND AT THE FOLLOWING LOCATIONS:
    A. CORNERS AND WITHIN 24" OF CORNERS,
    B. ENDS OF WALLS OR AT DOORS OPENINGS LARGER THAN 5'-0" WIDE AND WITHIN 24" OF ENDS OF WALLS OR AT DOORS OPENINGS LARGER THAN 5'-0" WIDE,
    C. AT SHEAR WALL END LOCATIONS (ANCHOR BOLT LOCATION) AND WITHIN 18" OF EACH SIDE OF THE SHEAR WALL ANCHOR BOLT LOCATIONS
21. BUILT-UP (STUD PACK) COLUMN, UNLESS OTHERWISE NOTED:
    A. AT TRUSS GIRDER BEARING PROVIDE SOLID BEARING, AT LEAST, (4)-2x BUILT-UP COLUMN.
    B. AT OH DOORS PROVIDE, AT LEAST, (2)-2x JAMB KING STUDS AND (2)-2x JACK STUD.
    C. AT WALL OPENING AND/OR DOORS GREATER THEN 4'-0" AND LESS THEN 8'-0", PROVIDE, AT LEAST, (2)-2x JAMB KING STUDS AND (1)-2x JACK STUD.
    D. AT WALL OPENING AND/OR DOORS LESS THEN 4'-0", PROVIDE, AT LEAST, (1)-2x JAMB KING STUDS AND (1)-2x JACK STUD.
22. SW# INDICATES SHEAR WALL TYPE, SEE SCHEDULE AND SECTIONS ON SHEET 50S-08 FOR MORE INFORMATION.
23. WOOD ELEMENTS IN DIRECT CONTACT WITH CONCRETE OR WITHIN 6 INCHES OF EARTH OR EXPOSED TO WEATHER MUST BE PRESSURE TREATED LUMBER OR OTHER LUMBER RESISTANT TO DECAY AND INSECT DAMAGE.
24. SHEATHING IN SHEAR PANELS SHALL BE ATTACHED w/6d NAILS OR 16 GAGE STAPLES 7/16" CROWNx13/4" LONG) @3" OC ALONG EDGES AND AT 12" OC AT INTERIOR SUPPORTS. PROVIDE SOLID BLOCKING FOR JOINTS IN SHEAR PANELS. AT EACH END OF THE SHEAR WALL, PROVIDE A SIMPSON STRONG-TIE HDU5-SDS2.5, (3)-2x STUDS, AND A 5/8" DIA CONCRETE ANCHOR WITH 14" MIN EMBED.
25. REFER TO ARCHITECTURAL AND MECHANICAL DRAWING FOR TRENCH DRAINS, FLOOR DRAINS AND VENT PIPES. COORD SIZE AND LOCATION WITH ARCHITECTURAL AND MECHANICAL DRAWING.

SERVICE BUILDING FLOOR PLAN CODED NOTES

A	2x6 WOOD FRAMED WALL ON 8" CONCRETE STEM WALL. PROVIDE CONTROL JOINTS 38'-0" MAX
B	2x6 WOOD FRAMED WALL
C	10'-0" LONG SHEAR WALL
D	20'-0" LONG SHEAR WALL
E	SIMPSON STRONG-TIE HOLDOWN STHD10 ON FULL HEIGHT DOUBLE STUD
F	6" SLAB-ON-GRADE
G	4" DOOR STOOP SLAB, SEE SECTIONS FOR REINFORCIN
H	6" DOOR STOOP FND WALL BELOW, SEE SECTIONS FOR REINFORCING
I	8" x 1'-0" DOOR STOOP FOOTING BELOW, SEE SECTIONS FOR REINFORCING
J	4" DOOR STOOP SLAB, SEE SECTIONS FOR REINFORCIN
K	TRENCH DRAIN. COORD SIZE AND LOCTION WITH ARCHITECTURAL AND PLUMBING DRAWINGS. SEE TYPICAL DETAIL ON SHEET 60S-05.
L	EQUIPMENT PAD. COORDINATE w/ARCHITECTURAL AND PROCESS MECHANICAL
M	FUTURE EQUIPMENT PAD. COORDINATE w/ARCHITECTURAL AND PROCESS MECHANICAL

PLAN LEGEND

- INDICATES 4" SLAB-ON-GRADE
- INDICATES SHEAR WALL
- INDICATES SHEAR WALL END LOCATION



4 40S-01 SERVICE T/WALL SCALE: 1/4" = 1'-0"

SERVICE BUILDING ROOF FRAMING PLAN NOTES::

1. SEE SHEETS 50S-01 THRU 50S-02 FOR GENERAL STRUCTURAL NOTES.
2. SEE SHEETS 50S-03 THRU 50S-06FOR TYPICAL FOUNDATION DETAILS.
3. VERIFY ALL DIMENSIONS AND ELEVATIONS. SEE ARCHITECTURAL AND PROCESS DRAWINGS FOR ALL MEASUREMENTS AND ELEVATIONS. ALL DIMENSIONS SHALL CONFORM TO THE ARCHITECTURAL AND PROCESS DRAWINGS.
4. COORDINATE LOCATION AND SIZE OF PENETRATIONS AND OPENINGS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PROCESS AND SITE DRAWINGS.
5. TRUSS BEARING AS NOTED ON PLAN.
6. ROOF FRAMING CONSTRUCTION
   1/2 INCH CD-X PLYWOOD SHEATHING ON PRE-FABRICATED WOOD TRUSSES @2'-0" OC. C. SHEATHING ATTACHMENT: 8d COMMON OR RING-SHANK @ 12" OC AT INTERMEDIATE SUPPORTS AND 6" OC AT SUPPORTED PANEL EDGES.
   BRIDGING IS NOT SHOWN. THE TRUSS MANUFACTURER SHALL DETERMINE THE ROWS OF BRIDGING REQUIRED.
7.
8. ALL WOOD RAFTERS OR ROOF TRUSSES MUST HAVE METAL ANCHORS TO WOOD WALLS AT EACH END. ROOF TRUSSES MUST HAVE METAL TIE STRAPS AT EACH END TO ASSURE COMPLETE LOAD PATH BETWEEN TRUSSES AND WALLS OR CONNECTIONS TO GIRDER TRUSSES AND BEAMS.
9. BARGE FRAMING: BACKSPAN OF BARGE FRAMING SHALL BE AT LEAST 3 TIMES THE GABLE EAVE WIDTH. PROVIDE BARGE TRUSS AS NEEDED.
10. INTERIOR PARTITION WALLS BRACING: PROVIDE 2x4 SOLID BLOCKING @ 4'-0" OC AT BOTTOM CHORD OF TRUSSES AT EACH SIDE OF INTERIOR PARTITION WALLS PARALLEL WITH TRUSSES.
11. WALL OPENING AND/OR DOOR HEADERS
    A. EXTERIOR WALL OPENING AND/OR DOORS GREATER THEN 12'-0" WIDE: (3)-1.75x11.875 LVL
    B. EXTERIOR WALL OPENING AND/OR DOORS GREATER THEN 8'-0" WIDE: (3)-1.75x9.25 LVL
    C. EXTERIOR WALL OPENING AND/OR DOORS LESS THEN 4'-0" WIDE: (3)-2x10
    D. INTERIOR WALL OPENING AND/OR DOORS LESS THEN 4'-0" WIDE: (3)-2x4
12. BUILT-UP (STUD PACK) COLUMN, UNLESS OTHERWISE NOTED:
    A. AT TRUSS GIRDER BEARING PROVIDE SOLID BEARING, AT LEAST, (4)-2x BUILT-UP COLUMN.
    B. AT OH DOORS PROVIDE, AT LEAST, (2)-2x JAMB KING STUDS AND (2)-2x JACK STUD.
    C. AT WALL OPENING AND/OR DOORS GREATER THEN 4'-0" AND LESS THEN 8'-0", PROVIDE, AT LEAST, (2)-2x JAMB KING STUDS AND (1)-2x JACK STUD.
    D. AT WALL OPENING AND/OR DOORS LESS THEN 4'-0", PROVIDE, AT LEAST, (1)-2x JAMB KING STUDS AND (1)-2x JACK STUD.
13. WOOD ELEMENTS IN DIRECT CONTACT WITH CONCRETE OR WITHIN 6 INCHES OF EARTH OR EXPOSED TO WEATHER MUST BE PRESSURE TREATED LUMBER OR OTHER LUMBER RESISTANT TO DECAY AND INSECT DAMAGE.
14. SHEATHING IN SHEAR PANELS SHALL BE ATTACHED w/6d NAILS OR 16 GAGE STAPLES 7/16" CROWNx13/4" LONG) @3" OC ALONG EDGES AND AT 12" OC AT INTERIOR SUPPORTS. PROVIDE SOLID BLOCKING FOR JOINTS IN SHEAR PANELS. AT EACH END OF THE SHEAR WALL, PROVIDE A SIMPSON STRONG-TIE HDU5-SDS2.5, (3)-2x STUDS, AND A 5/8" DIA CONCRETE ANCHOR WITH 14" MIN EMBED.

BID SET

verdantas

NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR: BIDDING
ISSUE DATE: 7/20/2026
SCALE: AS NOTED
DESIGNED BY: BAS
DRAWN BY: BAS
CHECKED BY: CMM

ADAMS COUNTY
NORTH ADAMS REGIONAL WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SERVICE BUILDING - 40 SERIES
SERVICE BUILDING FOUNDATION PLAN

PROJECT NO. 200619
DISCIPLINE: STRUCTURAL
SHEET NAME: 40S-01
SHEET: 32
OF: 79

ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE	ID	INSIDE DIAMETER
AFF	ABOVE FINISH FLOOR	INFO	INFORMATION
ALUM.	ALUMINUM	INSUL	INSULATION OR INSULATED
ARCH	ARCHITECT / ARCHITECTURAL	INT	INTERIOR
ASPH	ASPHALT		
		JT	JOINT
BD	BOARD		
BLDG.	BUILDING	KO	KNOCKOUT
BLK	BLOCK(ING)		
BM	BEAM	LAM	LAMINATE
BRG	BEARING	LAV	LAVATORY
BRK	BRICK	LP	LOW POINT
BS	BOTTOM OF SLAB		
BTM	BOTTOM	MFGR	MANUFACTURER
		MANUF	MANUFACTURER
CJ	CONTROL JOINT	MAS	MASONRY
CLO.	CLOSET	MAX	MAXIMUM
CLG	CEILING	MECH	MECHANICAL
CLR	CLEAR	MEMB	MEMBRANE
CMU	CONCRETE MASONRY UNIT	MTL	METAL
CO	CLEAN OUT	MIN	MINIMUM
COL	COLUMN	MIR	MIRROR
CONC	CONCRETE	MISC	MISCELLANEOUS
CONT	CONTINUOUS	MO	MASONRY OPENING
CORR	CORRIDOR		
CPT	CARPET		
CT	CERAMIC TILE	N	NORTH
		NIC	NOT IN CONTRACT
D / DRN	DRAIN	NOM	NOMINAL
DBL	DOUBLE	NO	NUMBERS
DET	DETAIL	NTS	NOT TO SCALE
DF	DRINKING FOUNTAIN		
DIA	DIAMETER	OC	ON CENTER
DIM	DIMENSION	OPNG	OPENING
DN	DOWN	OPP	OPPOSITE
DP	DAMPROOF(ING)	OVHD	OVERHEAD
DR	DOOR		
DS	DOWNSPOUT	PL. LAM	PLASTIC LAMINATE
DW	DISHWASER	PTN	PARTITION
DWG	DRAWING	PL	PROPERTY LINE
		PLUM	PLUMBING
EA	EACH	PLYWD	PLYWOOD
EJ	EXPANSION JOINT	PNL	PANEL
EIFS	EXTERIOR INSUL. FINISH SYSTEM	PSF	POUNDS PER SQUARE FOOT
ELECT.	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
ELEV	ELEVATION	PTD	PAINTED
ENCL	ENCLOSURE	PTS	POINTS
EQ	EQUAL		
EQUIP	EQUIPMENT	R	RADIUS
EXIST.	EXISTING	REF	REFRIGERATOR
EX	EXISTING	REINF	REINFORCE(ING)
EXP	EXPANSION	REQ'D	REQUIRED
EXT	EXTERIOR	REV	REVISE / REVISION
		RM	ROOM
FD	FLOOR DRAIN	RSTRM	RESTROOM
FE	FIRE EXTINGUISHER		
FEC	FIRE EXTINGUISHER CABINET	SAN	SANITARY
FIN	FINISH	SECT	SECTION
FL	FLOOR	SCHED	SCHEDULE(D)
FLUOR	FLUORESCENT	SF	SQUARE FOOT (FEET)
FOS	FACE OF STUDS	SIM	SIMILAR
FR(G)	FRAME(ING)	SPLSH BLK	SPLASH BLOCK
FT	FEET OR FOOT	SPEC	SPECIFICATION
FUR	FURRING	STL	STEEL
FVC	FIRE VALVE CABINET	STRUCT	STRUCTURAL / STRUCTURE
		SUSP	SUSPEND / SUSPENDED
GA	GAGE OR GAUGE		
GALV	GALVANIZE(D)	TEMP	TEMPERED
GC	GENERAL CONTRACTOR	TH	THRESHOLD
GL	GLASS	THK	THICK / THICKNESS
GM	GALVANIZED METAL	THRU	THROUGH
GR	GRADE	TOS	TOP OF SLAB
GWB	GYPSUM WALL BOARD	TYP	TYPICAL
GYP. BD.	GYPSUM BOARD		
		UL	UNDERWRITERS LABORATORY
HC	HOLLOW CORE		
H	HANDICAPPED ACCESSIBLE	VCT	VINYL COMPOSITION TILE
HDW	HARDWARE	VEST	VESTIBULE
HM	HOLLOW METAL	VIF	VERIFY IN FIELD
HORZ	HORIZONTAL		
HT	HEIGHT	W/	WITH
HTR	HEATER	WD	WOOD
		&	AND
		@	AT
		'	FEET
		"	INCHES

GENERAL NOTES

1. CODES:
   THIS PROJECT IS DESIGNED TO BE IN COMPLIANCE WITH THE FOLLOWING APPLICABLE CODES: 2018 INTERNATIONAL BUILDING CODE (CHAPTER 27 (ELECTRICAL) REQUIRES THAT ALL ELECTRICAL COMPONENTS, EQUIPMENT AND SYSTEMS IN BUILDINGS AND STRUCTURES COVERED BY THE IBC COMPLY WITH THE REQUIREMENTS OF NFPA 70 – 2017 (NATIONAL ELECTRIC CODE)), 2018 ENERGY CONSERVATION CODE, 2018 EXISTING BUILDING CODE, 2009 INTERNATIONAL FIRE CODE (ALONG WITH AMENDED LANGUAGE CONTAINED IN THE 2013 PHILADELPHIA FIRE CODE), 2018 INTERNATIONAL FUEL GAS CODE, 2018 INTERNATIONAL MECHANICAL CODE, 2009 INTERNATIONAL PERFORMANCE CODE FOR BUILDINGS AND FACILITIES (FOR ALTERNATIVE COMPLIANCE APPROACH), 2018 INTERNATIONAL PLUMBING CODE, 2015 INTERNATIONAL RESIDENTIAL CODE, 2018 INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (SUPPLEMENTARY REQUIREMENTS THAT MAY BE USED TO MITIGATE FIRE AND LIFE-SAFETY HAZARDS IN UNIQUE WILDLAND AREAS), AND AS AMENDED AND BUY THE DEPARTMENT OF LABOR AND INDUSTRY.

2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL CONDITIONS, LAWS, RULES, REGULATIONS AND ORDINANCES OF FEDERAL, STATE, COUNTY, OR AUTHORITIES RELATING THERE-TO. NO WORK SHALL BEGIN AT THE SITE UNTIL APPLICABLE APPROVALS AND REQUIRED PERMITS HAVE BEEN OBTAINED BY THE CONTRACTOR(S) COVERING SUCH WORK. SUBCONTRACTORS ARE TO VERIFY AND ASSURE PROPER CODE COMPLIANCE FOR ALL ASPECTS OF CONSTRUCTION WITHIN THEIR RESPECTIVE TRADES. PERMITS ARE TO BE PART OF WORK.

3. SUBCONTRACTORS SHALL VERIFY AND ASSURE PROPER CODE COMPLIANCE FOR ALL ASPECTS OF CONSTRUCTION WITHIN THEIR RESPECTIVE TRADES. OBTAINING PERMITS SHALL BE PART OF THEIR RESPONSIBILITY

4. THE SCOPE OF THE PROJECT INCLUDES ALL WORK SHOWN OR INFERRED ON THE DRAWINGS AND SPECIFICATIONS TO BE PERFORMED BY THE PRIME CONTRACTOR(S) AND THEIR QUALIFIED SUBCONTRACTORS.

5. CONTRACTOR DESIGNATIONS:
   A. GENERAL CONTRACTOR - G.C.
   B. MECHANICAL CONTRACTOR - M.C.
   C. PLUMBING CONTRACTOR - P.C.
   D. ELECTRICAL CONTRACTOR - E.C.
      a. ALL CONTRACTORS WILL:
         - SAFEGUARD THE OWNER'S PROPERTY AND THE ADJACENT PROPERTIES DURING CONSTRUCTION. CONTRACTORS SHALL REPLACE ANY AND ALL MATERIALS TO THEIR ORIGINAL CONDITIONS AT THE CONTRACTOR'S EXPENSE.
         - VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOBSITE BEFORE COMMENCEMENT OF WORK; REPORT ALL ERRORS AND OMISSIONS OR DISCREPANCIES TO THE ARCHITECT / ENGINEER IN WRITING PRIOR TO THE START OF WORK. IN ALL CASES WHERE CONFLICTS MAY OCCUR THE ARCHITECT SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
         - INVESTIGATE, VERIFY AND BE RESPONSIBLE FOR ALL CONDITIONS AND DIMENSIONS OF THE PROJECT AND SHALL NOTIFY THE ARCHITECT / ENGINEER OF ANY CONDITION REQUIRING MODIFICATIONS OR CHANGES BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS.
         - PROTECT AND STORE ALL FIXTURES, HARDWARE, ETC., AS WELL AS EQUIPMENT SPECIFIED HEREIN FOR THE DURATION OF THE JOB.
         - COORDINATE WITH LOCAL UTILITIES FOR WATER, DRAINAGE, GAS, ELECTRICAL SERVICES, ETC., FOR APPLICABLE CONNECTIONS AS MAY BE REQUIRED.
         - BE RESPONSIBLE FOR SCHEDULING ALL INSPECTIONS WITH PROPER AUTHORITIES DURING CONSTRUCTION AND NOTIFYING THE ARCHITECT / ENGINEER AND OWNER OF ALL INSPECTIONS. THE G.C. IS RESPONSIBLE FOR SCHEDULING FINAL INSPECTION SO THAT OWNER MAY RECEIVE AN "OCCUPANCY PERMIT".

6. INTERIOR DIMENSIONS ARE TAKEN TO FACE OF GYPSUM BOARD, MASONRY OR COLUMN CENTER LINES UNLESS OTHERWISE NOTED.

7. ALL CONTRACTORS WILL BE REQUIRED TO OBTAIN AND EXAMINE A FULL SET OF DRAWINGS AND WILL HAVE VISITED THE JOB SITE. THEY SHALL BE FAMILIAR WITH AND BE SATISIFIED TO THE CONDITIONS UNDER WHICH THEY WILL BE OBLIGED TO OPERATE AND PERFORM PRIOR TO SUBMITTING A BID FOR THEIR TRADE FOR SPECIFIEC CONSTRUCTION.

8. THE G.C. SHALL BE RESPONSIBLE FOR COORDINATING THE CONSTRTUCTION WITH ALL CONTRACTORS.

9. THE G.C. SHALL PREPARE, IN CONJUNCTION WITH THE OTHER CONTRACTORS A CONSTRUCTION SCHEDULE INCLUDING EACH TRADE ENGAGED FOR THE DURATION OF THE WORK AND DISTRIBUTE A COPY TO OWNER AND ARCHITECT / ENGINEER.

10. ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT / ENGINEER FOR APPROVAL AS NOTED IN THE SPECIFICATIONS. MANUFACTURER'S NAMES AND MODEL NUMBERS ARE USED TO PROVIDE AN INDICATION OF QUALITY, STYLE AND SIZE DESIRED. OTHER MANUFACTURER'S MODELS, QUALITY STYLE AND SIZES MAY BE SUBMITTED BUT SHALL OTHER MANUFACTURER'S MODELS, QUALITY STYLE AND SIZES MAY BE SUBMITTED BUT SHALL PROCESS.

11. EXISTING MATERIALS SCHEDULED FOR REUSE SHALL BE STORED BY CONTRACTOR AS REQUIRED. EXISTING MATERIALS SCHEDULED FOR TURNOVER TO THE OWNER SHALL BE REMOVED BY THE CONTRACTOR; MOVED BY THE CONTRACTOR TO OWNER'S DESIGNATED AREA WITHIN THE BUILDING.

12. MATERIALS DAMAGED OR OTHERWISE DEEMED UNUSABLE BY ARCHITECT, ENGINEER OR OWNER SHALL BE DISPOSED OF BY CONTRACTOR IN A LEGAL AND SAFE MANNER.

13. INTERRUPTION OF ELECTRIC, WATER, SANITARY, GAS OR HEATING SERVICE, PHONE, CATV OR MECHANICAL EQUIPMENT TO THE BUILDING SHALL NOT BE PERMITTED WITHOUT ONE WEEK PRIOR WRITTEN NOTICE TO THE OWNER.

14. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S SHOP DRAWING APPROVAL STAMP INDICATING THAT ALL DIMENSIONS AND ASSEMBLY OF COMPONENTS HAVE BEEN CROSS-CHECKED W/ EACH RESPECTIVE TRADE FOR COMPLIANCE WITH THE PROJECT REQUIREMENTS. THE ARCHITECT / ENGINEER WILL NOT PROCESS SHOP DRAWINGS WITHOUT THE CONTRACTOR'S STAMP.

15. THE G.C. SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS THAT ARE LOCATED SUCH THAT CONSTRUCTION PERSONNEL SHALL HAVE A MAXIMUM TRAVEL DISTANCE OF 75 FEET TO OBTAIN AN EXTINGUISHER AND SHALL PROVIDE A MINIMUM OF 2 PER FLOOR INCLUDING BASEMENT. FIRE EXTINGUISHERS SHALL BE MINIMUM 10 LBS AND BE CAPABLE OF EXTINGUISHING CLASSES A, B, C AND D TYPE FIRES.

16. SPECIAL CARE IS TO BE TAKEN TO INSURE THAT RATED PARTITIONS AND OTHER ASSEMBLIES POSITIVELY SEALED AT ALL CONDUITS, DUCTWORK, PIPING OR ANY OTHER PENETRATIONS. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING THEIR PENETRATIONS TO MEET THE FIRE RATED ASSEMBLY REQUIREMENTS.

17. EACH CONTRACTOR IS RESPONSIBLE FOR CUTTING AND PATCHING THEIR OWN PENETRATIONS. MATERIALS USED FOR PATCHING SHALL THE SAME AS THE ADJACENT MATERIALS AND SHALL BE APPROVED BY THE ARCHITECT / ENGINEER.

18. THE CONTRACTOR SHALL PROVIDE MATERIAL SAFETY DATA SHEETS (M.S.D.S.) FOR ALL CHEMICALS USED AT THE SITE FOR THE REVIEW OF THE CLIENT. THIS DOCUMENTATION MUST BE KEPT ON SITE AND READILY ACCESSIBLE AT ALL TIME DURING THE PROJECT.

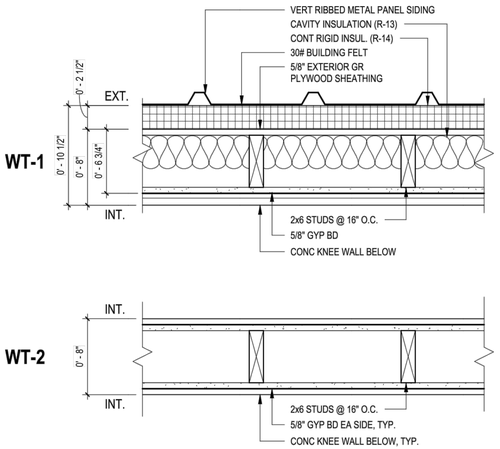
19. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT DOCUMENTS REQUIREMENTS BY THE ARCHITECT'S APPROVAL OF SHOP DRAWINGS OR OTHER SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE ARCHITECT IN WRITING OF SUCH DEVIATION AT THE TIME OF THE SUBMITTAL AND SUCH DEVIATION HAS BEEN APPROVED IN WRITING. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SUCH SUBMITTALS BY THE ARCHITECT'S APPROVAL THEREOF.

20. THE CONTRACTOR SHALL DIRECT SPECIFIC ATTENTION IN WRITING ON SHOP DRAWINGS AND SIMILAR SUBMITTALS TO REVISIONS OTHER THAN THOSE REQUESTED BY THE ARCHITECT ON PREVIOUS SUBMITTALS. IN THE ABSENCE OF THE CONTRACTOR'S WRITTEN NOTICE, THE ARCHITECT'S APPROVAL OF A RESUBMISSION SHALL NOT APPLY TO SUCH REVISIONS

DRAWING LEGEND

ANNOTATIONS

DRAWING NAME AND TAG	X / AXXX — FLOOR PLAN, SCALE : 1/4" = 1'-0" X / AXXX — SECTION, SCALE : 1/4" = 1'-0" X / AXXX — DETAIL, SCALE : 1/4" = 1'-0" X / AXXX — ELEVATION, SCALE : 1/4" = 1'-0"
SECTION TAGS	A / A100
DETAIL TAG	1 / AXXX
TEXT APPEARANCE NOTING ELEMENTS	XXXXXXXXXXXXXXXXXXXXXXXXXX
ELEVATION TAGS	X / X-XXX / X / X
BUILDING ELEVATION TAG	FIN. 1ST. FL.
SPOT ELEVATION TAG	NEW 100.00' — EXISTING 100.00'
COLUMN CENTERLINE TAG	XX
NOTE TAG	AC# CONSTRUCTION — AD# DEMOLITION
DOOR TAG	220D
WINDOW TAG	WXX
ROOM NAME / NUMBER TAG	XXXXX / 230
PARTITION TAG	X
SHELF TAG	SX
NORTH ARROW	PROJECT NORTH, Z
REVISION TAG	1
REVISION CLOUD	
ELECTRICAL PANEL OR WALL HEATER	EP WH
ELEVATION CHANGE	HIGH / LOW
MATCH LINE TAG	A MATCH LINE REF: DWG — MATCH LINE REF: DWG A



WALL TYPES

PROJECT DATA

GOVERNING CODES
2024 OHIO BUILDING CODE (IBC 2021 w/ AMENDMENTS)
2024 OHIO EXISTING BUILDING CODE (IEBC 2021 w/ AMENDMENTS)
2024 OHIO PLUMBING CODE (IPC 2021 w/ AMENDMENTS)
2024 OHIO MECHANICAL CODE (IMC 2021 w/ AMENDMENTS)
2021 OHIO ENERGY CODE (IECC 2021 w/ AMENDMENTS)

DESCRIPTION & CLASSIFICATION OF WORK
ELECTRICAL ROOM AND WORKSPACE SUPPORTING PROCESS EQUIPMENT AND SERVICES FOR THE WASTE WATER TREATMENT PLANT.

OCCUPANCY*
FACTORY GROUP F-1, MODERATE HAZARD INDUSTRIAL (2024 OBC, SECTION 304)

* *OCCUPANCY NOTE: THIS SPACE IS EQUIPPED WITH REMOTE MONITORING SYSTEMS, AND IS NOT REGULARLY OCCUPIED EXCEPT FOR OCCASIONAL MAINTENANCE AND INSPECTION.*

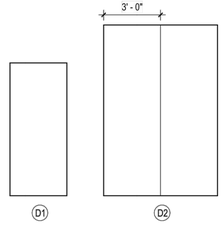
CONSTRUCTION TYPE
TYPE IVB, NON-SPRINKLERED (2024 OBC, SECTION 602.2)

RATED ASSEMBLIES
2024 OBC TABLE 601.1

PRIMARY STRUCTURAL FRAME:	0 HR
ROOF CONSTRUCTION & SECONDARY MEMBERS:	0 HR
BEARING WALLS:	0 HR
NONBEARING WALLS:	0 HR

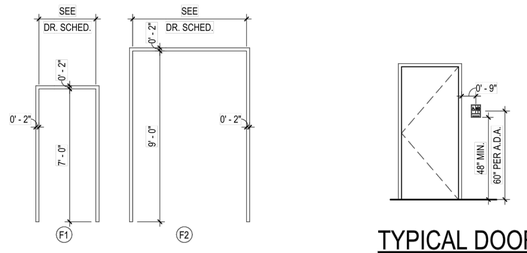
DOOR SCHEDULE

MARK	DOOR STYLE	DOOR MATERIAL	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE THICK.	DOOR CORE	FRAME MATERIAL	FRAME TYPE	HARDWARE	REMARKS
101A	D1	STL	3' - 0"	7' - 0"	0' - 1 3/4"	INSUL	STL	F1	L9	
102B	D1	STL	3' - 0"	7' - 0"	0' - 1 3/4"	(N/A)	STL	F2	L8	
102A	D2	STL	6' - 0"	9' - 0"	0' - 1 3/4"	INSUL	STL	F1	L4	



DOOR TYPES

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



DOOR FRAME TYPES

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

TYPICAL DOOR SIGN LOCATION

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

1

BID SET

verdantas

NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
DESIGNED BY:	DSS
DRAWN BY:	DSS
CHECKED BY:	DSS

ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SERVICE BUILDING - 40 SERIES
NOTES & ABBREVIATIONS

PROJECT NO.
200619
DISCIPLINE
ARCHITECTURAL
SHEET NAME
40A-00
SHEET 42 OF 79

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GENERAL FLOOR PLAN NOTES

A. FINISH FLOOR ELEVATION OF 100'-0" IS EQUAL TO USGS ELEVATION OF +XXX.XX' UNLESS NOTED OTHERWISE.
B. VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY A/E OF ANY DISCREPANCIES.
C. EXTERIOR DIMENSIONS SHOWN ARE TO OUTSIDE FACE OF FOUNDATION WALL OR ROUGH OPENINGS. TYPICAL UNLESS NOTED OTHERWISE.
D. INTERIOR DIMENSIONS SHOWN ARE TO FACE OF CMU OR CONCRETE CONSTRUCTION, UNLESS NOTED OTHERWISE.
E. ALL DOORS INSTALLED IN MASONRY PARTITIONS TO BE LOCATED 0'-8" FROM EDGE OF JAMB OF DOOR TO ADJACENT WALL. UNLESS NOTED OTHERWISE.
F. PROVIDE MASONRY ANCHORS IN WALLS AS REQUIRED FOR ATTACHMENT OF SURFACE MOUNTED ITEMS SUCH AS FIRE EXTINGUISHERS.
G. PROVIDE SEALANT AT JOINTS BETWEEN ALL DISSIMILAR MATERIALS.
H. PAINT ALL EXPOSED, UNFINISHED EXTERIOR STEEL (DOORS, FRAMES, LINTELS, BOLLARDS, ETC.).
I. COORDINATE WORK BETWEEN TRADES AND OTHER DISCIPLINES. ADDITIONAL ITEMS OF WORK MAY APPEAR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS.

RCP GENERAL NOTES

A. ALL CEILINGS SHALL BE 9'-0" ABOVE FINISH FLOOR UNLESS INDICATED OTHERWISE
B. NOTIFY ARCHITECT OF ANY DISCREPANCIES OR UN-IDENTIFIED CEILING TYPES OR HEIGHTS PRIOR TO PROCEEDING WITH THE WORK
C. CENTER TILE / GRID LAYOUT IN SPACE AS SHOWN ON PLANS UNLESS INDICATED OTHERWISE
D. WHERE MINOR DISCREPANCIES OCCUR BETWEEN MECHANICAL OR ELECTRICAL DRAWINGS AND THE ARCHITECTURAL CEILING PLAN, THE ARCHITECTURAL PLAN SHALL GOVERN. IN THE CASE OF MAJOR DISCREPANCIES, THE ARCHITECT SHALL BE NOTIFIED AS SOON AS THE DISCREPANCY IS DISCOVERED PRIOR TO PROCEEDING WITH THE WORK.
E. REFER TO SHEET I-SERIES DRAWINGS FOR ALL CEILING FINISHES AND LOCATIONS.
F. REFERENCE MECHANICAL AND ELECTRICAL DRAWINGS FOR MOUNTING LOCATIONS OF ITEMS IN SPACES WHERE NO CEILING IS INDICATED
G. ALL CEILING DEVICES ARE TO BE CENTERED IN THE CEILING TILE IN WHICH THEY ARE LOCATED, UNLESS INDICATED OTHERWISE
H. ANY NON-DIMENSIONED LIGHT FIXTURES AND OTHER CEILING DEVICES LOCATED IN GYPSUM BOARD CEILINGS SHALL BE DIMENSIONED AND COORDINATED PRIOR TO CONSTRUCTION
I. REFERENCE MEP DRAWINGS AND SPECIFICATIONS FOR ACCESS PANELS IN GYPSUM BOARD CEILINGS NOT INDICATED ON THE CEILING PLANS
J. REFERENCE ELECTRICAL DRAWINGS FOR EXIT SIGNS NOT INDICATED ON THE CEILING PLANS
K. REFERENCE FIRE PROTECTION DRAWINGS FOR SPRINKLER HEAD LOCATIONS NOT INDICATED ON THE CEILING PLANS

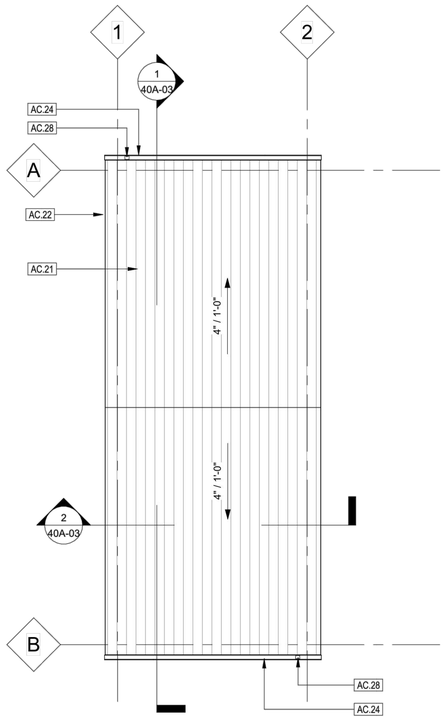
CEILING LEGEND

SEE MECHANICAL, ELECTRICAL, AND FIRE PROTECTION DRAWINGS FOR ADDITIONAL INFORMATION.

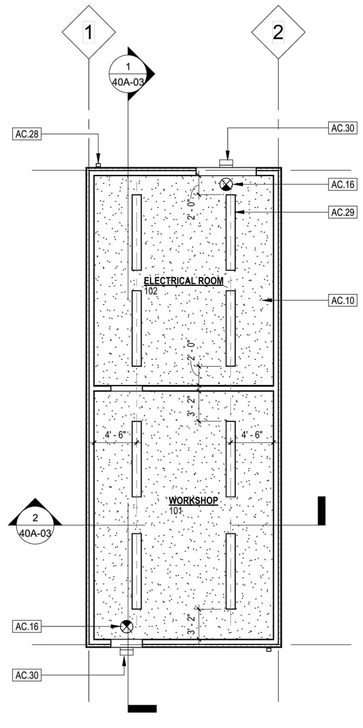
- 2'-0" x 2'-0" ACOUSTICAL CEILING TILE.
- GYPSUM BOARD CEILING, SOFFIT, OR BULKHEAD.
- EL. ACOUSTIC ACCENT CANOPY.
- RECESSED LAY-IN FIXTURE OR DOWNLIGHT (CAN LIGHT).
- PENDANT FIXTURE.
- EXIT SIGN.
- SUPPLY AIR DIFFUSER.
- RETURN AIR DIFFUSER OR EXHAUST FAN.
- SPRINKLER HEAD.

KEY NOTES

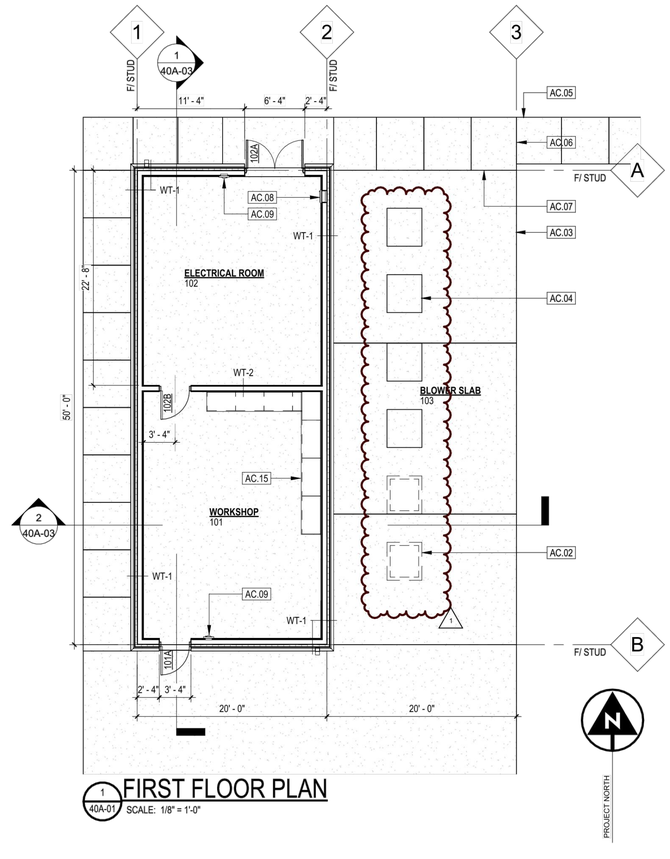
AC.02 FUTURE BLOWER LOCATION (SEE PROCESS DWGS)
AC.03 CONC SLAB (SEE STRUCTURAL DWGS)
AC.04 CONC HOUSEKEEPING PAD (SEE STRUCTURAL DWGS)
AC.05 CONC WALK (SEE CIVIL DWGS)
AC.06 CONTROL JOINT, TYP.
AC.07 EXPANSION JOINT, TYP.
AC.08 SEMI-RECESSED AED CABINET.
AC.09 SEMI-RECESSED FIRE EXTINGUISHER CABINET.
AC.10 PAINTED 5/8" GYP BD.
AC.15 WORKBENCH BY OWNER, TYP.
AC.16 EXIT SIGN & EMERGENCY LIGHT
AC.21 INSULATED METAL PANEL ROOF SYSTEM (R-38), TYP.
AC.22 PAINTED 1x FASCIA, TYP.
AC.24 CONT. 6" METAL GUTTER, TYP.
AC.28 DOWNSPOUT, TYP. (CONNECT TO DRAINAGE BELOW GRADE AND EXIT TO DAYLIGHT AWAY FROM BUILDING)
AC.29 CEILING-MOUNTED 1'-0" x 8'-0" DBL LED FIXTURE, TYP.
AC.30 LED WALL LIGHT.



3 / 40A-01 ROOF PLAN
SCALE: 1/8" = 1'-0"



2 / 40A-01 FIRST FLOOR RCP
SCALE: 1/8" = 1'-0"



1 / 40A-01 FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

BID SET

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NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

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ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SERVICE BUILDING - 40 SERIES
PROJECT NOTES AND PLANS

PROJECT NO.
200619
DISCIPLINE
ARCHITECTURAL
SHEET NAME
40A-01
SHEET 43 OF 79

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ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILE	ID	INSIDE DIAMETER
AFF	ABOVE FINISH FLOOR	INFO	INFORMATION
ALUM.	ALUMINUM	INSUL	INSULATION OR INSULATED
ARCH	ARCHITECT / ARCHITECTURAL	INT	INTERIOR
ASPH	ASPHALT		
		JT	JOINT
BD	BOARD		
BLDG.	BUILDING	KO	KNOCKOUT
BLK	BLOCK(ING)		
BM	BEAM	LAM	LAMINATE
BRG	BEARING	LAV	LAVATORY
BRK	BRICK	LP	LOW POINT
BS	BOTTOM OF SLAB		
BTM	BOTTOM	MFGR	MANUFACTURER
		MANUF	MANUFACTURER
CJ	CONTROL JOINT	MAS	MASONRY
CLO.	CLOSET	MAX	MAXIMUM
CLG	CEILING	MECH	MECHANICAL
CLR	CLEAR	MEMB	MEMBRANE
CMU	CONCRETE MASONRY UNIT	MTL	METAL
CO	CLEAN OUT	MIN	MINIMUM
COL	COLUMN	MIR	MIRROR
CONC	CONCRETE	MISC	MISCELLANEOUS
CONT	CONTINUOUS	MO	MASONRY OPENING
CORR	CORRIDOR		
CPT	CARPET		
CT	CERAMIC TILE	N	NORTH
		NIC	NOT IN CONTRACT
D / DRN	DRAIN	NOM	NOMINAL
DBL	DOUBLE	NO	NUMBERS
DET	DETAIL	NTS	NOT TO SCALE
DF	DRINKING FOUNTAIN		
DIA	DIAMETER	OC	ON CENTER
DIM	DIMENSION	OPNG	OPENING
DN	DOWN	OPP	OPPOSITE
DP	DAMPROOF(ING)	OVHD	OVERHEAD
DR	DOOR		
DS	DOWNSPOUT	PL. LAM	PLASTIC LAMINATE
DW	DISHWASER	PTN	PARTITION
DWG	DRAWING	PL	PROPERTY LINE
		PLUM	PLUMBING
EA	EACH	PLYWD	PLYWOOD
EJ	EXPANSION JOINT	PNL	PANEL
EIFS	EXTERIOR INSUL. FINISH SYSTEM	PSF	POUNDS PER SQUARE FOOT
ELECT.	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
ELEV	ELEVATION	PTD	PAINTED
ENCL	ENCLOSURE	PTS	POINTS
EQ	EQUAL		
EQUIP	EQUIPMENT	R	RADIUS
EXIST.	EXISTING	REF	REFRIGERATOR
EX	EXISTING	REINF	REINFORCE(ING)
EXP	EXPANSION	REQ'D	REQUIRED
EXT	EXTERIOR	REV	REVISE / REVISION
		RM	ROOM
FD	FLOOR DRAIN	RSTRM	RESTROOM
FE	FIRE EXTINGUISHER		
FEC	FIRE EXTINGUISHER CABINET	SAN	SANITARY
FIN	FINISH	SECT	SECTION
FL	FLOOR	SCHED	SCHEDULE(D)
FLUOR	FLUORESCENT	SF	SQUARE FOOT (FEET)
FOS	FACE OF STUDS	SIM	SIMILAR
FR(G)	FRAME(ING)	SPLSH BLK	SPLASH BLOCK
FT	FEET OR FOOT	SPEC	SPECIFICATION
FUR	FURRING	STL	STEEL
FVC	FIRE VALVE CABINET	STRUCT	STRUCTURAL / STRUCTURE
		SUSP	SUSPEND / SUSPENDED
GA	GAGE OR GAUGE		
GALV	GALVANIZE(D)	TEMP	TEMPERED
GC	GENERAL CONTRACTOR	TH	THRESHOLD
GL	GLASS	THK	THICK / THICKNESS
GM	GALVANIZED METAL	THRU	THROUGH
GR	GRADE	TOS	TOP OF SLAB
GWB	GYPSUM WALL BOARD	TYP	TYPICAL
GYP. BD.	GYPSUM BOARD		
		UL	UNDERWRITERS LABORATORY
HC	HOLLOW CORE		
"H"	HANDICAPPED ACCESSIBLE	VCT	VINYL COMPOSITION TILE
HDW	HARDWARE	VEST	VESTIBULE
HM	HOLLOW METAL	VIF	VERIFY IN FIELD
HORZ	HORIZONTAL		
HT	HEIGHT	W/	WITH
HTR	HEATER	WD	WOOD
		&	AND
		@	AT
		'	FEET
		"	INCHES

GENERAL NOTES

1. CODES:
   THIS PROJECT IS DESIGNED TO BE IN COMPLIANCE WITH THE FOLLOWING APPLICABLE CODES: 2018 INTERNATIONAL BUILDING CODE (CHAPTER 27 (ELECTRICAL) REQUIRES THAT ALL ELECTRICAL COMPONENTS, EQUIPMENT AND SYSTEMS IN BUILDINGS AND STRUCTURES COVERED BY THE IBC COMPLY WITH THE REQUIREMENTS OF NFPA 70 – 2017 (NATIONAL ELECTRIC CODE)), 2018 ENERGY CONSERVATION CODE, 2018 EXISTING BUILDING CODE, 2009 INTERNATIONAL FIRE CODE (ALONG WITH AMENDED LANGUAGE CONTAINED IN THE 2013 PHILADELPHIA FIRE CODE), 2018 INTERNATIONAL FUEL GAS CODE, 2018 INTERNATIONAL MECHANICAL CODE, 2009 INTERNATIONAL PERFORMANCE CODE FOR BUILDINGS AND FACILITIES (FOR ALTERNATIVE COMPLIANCE APPROACH), 2018 INTERNATIONAL PLUMBING CODE, 2015 INTERNATIONAL RESIDENTIAL CODE, 2018 INTERNATIONAL WILDLAND-URBAN INTERFACE CODE (SUPPLEMENTARY REQUIREMENTS THAT MAY BE USED TO MITIGATE FIRE AND LIFE-SAFETY HAZARDS IN UNIQUE WILDLAND AREAS), AND AS AMENDED AND BUY THE DEPARTMENT OF LABOR AND INDUSTRY.

2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL CONDITIONS, LAWS, RULES, REGULATIONS AND ORDINANCES OF FEDERAL, STATE, COUNTY, OR AUTHORITIES RELATING THERE-TO. NO WORK SHALL BEGIN AT THE SITE UNTIL APPLICABLE APPROVALS AND REQUIRED PERMITS HAVE BEEN OBTAINED BY THE CONTRACTOR(S) COVERING SUCH WORK. SUBCONTRACTORS ARE TO VERIFY AND ASSURE PROPER CODE COMPLIANCE FOR ALL ASPECTS OF CONSTRUCTION WITHIN THEIR RESPECTIVE TRADES. PERMITS ARE TO BE PART OF WORK.

3. SUBCONTRACTORS SHALL VERIFY AND ASSURE PROPER CODE COMPLIANCE FOR ALL ASPECTS OF CONSTRUCTION WITHIN THEIR RESPECTIVE TRADES. OBTAINING PERMITS SHALL BE PART OF THEIR RESPONSIBLILITY

4. THE SCOPE OF THE PROJECT INCLUDES ALL WORK SHOWN OR INFERRED ON THE DRAWINGS AND SPECIFICATIONS TO BE PERFORMED BY THE PRIME CONTRACTOR(S) AND THEIR QUALIFIED SUBCONTRACTORS.

5. CONTRACTOR DESIGNATIONS:
   A. GENERAL CONTRACTOR - G.C.
   B. MECHANICAL CONTRACTOR - M.C.
   C. PLUMBING CONTRACTOR - P.C.
   D. ELECTRICAL CONTRACTOR - E.C.
      a. ALL CONTRACTORS WILL:
         - SAFEGUARD THE OWNER'S PROPERTY AND THE ADJACENT PROPERTIES DURING CONSTRUCTION. CONTRACTORS SHALL REPLACE ANY AND ALL MATERIALS TO THEIR ORIGINAL CONDITIONS AT THE CONTRACTOR'S EXPENSE.
         - VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOBSITE BEFORE COMMENCEMENT OF WORK; REPORT ALL ERRORS AND OMISSIONS OR DISCREPANCIES TO THE ARCHITECT / ENGINEER IN WRITING PRIOR TO THE START OF WORK. IN ALL CASES WHERE CONFLICTS MAY OCCUR THE ARCHITECT SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
         - INVESTIGATE, VERIFY AND BE RESPONSIBLE FOR ALL CONDITIONS AND DIMENSIONS OF THE PROJECT AND SHALL NOTIFY THE ARCHITECT / ENGINEER OF ANY CONDITION REQUIRING MODIFICATIONS OR CHANGES BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS.
         - PROTECT AND STORE ALL FIXTURES, HARDWARE, ETC., AS WELL AS EQUIPMENT SPECIFIED HEREIN FOR THE DURATION OF THE JOB.
         - COORDINATE WITH LOCAL UTILITIES FOR WATER, DRAINAGE, GAS, ELECTRICAL SERVICES, ETC., FOR APPLICABLE CONNECTIONS AS MAY BE REQUIRED.
         - BE RESPONSIBLE FOR SCHEDULING ALL INSPECTIONS WITH PROPER AUTHORITIES DURING CONSTRUCTION AND NOTIFYING THE ARCHITECT / ENGINEER AND OWNER OF ALL INSPECTIONS. THE G.C. IS RESPONSIBLE FOR SCHEDULING FINAL INSPECTION SO THAT OWNER MAY RECEIVE AN "OCCUPANCY PERMIT".

6. INTERIOR DIMENSIONS ARE TAKEN TO FACE OF GYPSUM BOARD, MASONRY OR COLUMN CENTER LINES UNLESS OTHERWISE NOTED.

7. ALL CONTRACTORS WILL BE REQUIRED TO OBTAIN AND EXAMINE A FULL SET OF DRAWINGS AND WILL HAVE VISITED THE JOB SITE. THEY SHALL BE FAMILIAR WITH AND BE SATISIFIED TO THE CONDITIONS UNDER WHICH THEY WILL BE OBLIGED TO OPERATE AND PERFORM PRIOR TO SUBMITTING A BID FOR THEIR TRADE FOR SPECIFIEC CONSTRUCTION.

8. THE G.C. SHALL BE RESPONSIBLE FOR COORDINATING THE CONSTRTUCTION WITH ALL CONTRACTORS.

9. THE G.C. SHALL PREPARE, IN CONJUNCTION WITH THE OTHER CONTRACTORS A CONSTRUCTION SCHEDULE INCLUDING EACH TRADE ENGAGED FOR THE DURATION OF THE WORK AND DISTRIBUTE A COPY TO OWNER AND ARCHITECT / ENGINEER.

10. ALL CONTRACTORS SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT / ENGINEER FOR APPROVAL AS NOTED IN THE SPECIFICATIONS. MANUFACTURER'S NAMES AND MODEL NUMBERS ARE USED TO PROVIDE AN INDICATION OF QUALITY, STYLE AND SIZE DESIRED. OTHER MANUFACTURER'S MODELS, QUALITY STYLE AND SIZES MAY BE SUBMITTED BUT SHALL OTHER MANUFACTURER'S MODELS, QUALITY STYLE AND SIZES MAY BE SUBMITTED BUT SHALL PROCESS.

11. EXISTING MATERIALS SCHEDULED FOR REUSE SHALL BE STORED BY CONTRACTOR AS REQUIRED. EXISTING MATERIALS SCHEDULED FOR TURNOVER TO THE OWNER SHALL BE REMOVED BY THE CONTRACTOR; MOVED BY THE CONTRACTOR TO OWNER'S DESIGNATED AREA WITHIN THE BUILDING.

12. MATERIALS DAMAGED OR OTHERWISE DEEMED UNUSABLE BY ARCHITECT, ENGINEER OR OWNER SHALL BE DISPOSED OF BY CONTRACTOR IN A LEGAL AND SAFE MANNER.

13. INTERRUPTION OF ELECTRIC, WATER, SANITARY, GAS OR HEATING SERVICE, PHONE, CATV OR MECHANICAL EQUIPMENT TO THE BUILDING SHALL NOT BE PERMITTED WITHOUT ONE WEEK PRIOR WRITTEN NOTICE TO THE OWNER.

14. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S SHOP DRAWING APPROVAL STAMP INDICATING THAT ALL DIMENSIONS AND ASSEMBLY OF COMPONENTS HAVE BEEN CROSS-CHECKED W/ EACH RESPECTIVE TRADE FOR COMPLIANCE WITH THE PROJECT REQUIREMENTS. THE ARCHITECT / ENGINEER WILL NOT PROCESS SHOP DRAWINGS WITHOUT THE CONTRACTOR'S STAMP.

15. THE G.C. SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS THAT ARE LOCATED SUCH THAT CONSTRUCTION PERSONNEL SHALL HAVE A MAXIMUM TRAVEL DISTANCE OF 75 FEET TO OBTAIN AN EXTINGUISHER AND SHALL PROVIDE A MINIMUM OF 2 PER FLOOR INCLUDING BASEMENT. FIRE EXTINGUISHERS SHALL BE MINIMUM 10 LBS AND BE CAPABLE OF EXTINGUISHING CLASSES A, B, C AND D TYPE FIRES.

16. SPECIAL CARE IS TO BE TAKEN TO INSURE THAT RATED PARTITIONS AND OTHER ASSEMBLIES POSITIVELY SEALED AT ALL CONDUITS, DUCTWORK, PIPING OR ANY OTHER PENETRATIONS. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING THEIR PENETRATIONS TO MEET THE FIRE RATED ASSEMBLY REQUIREMENTS.

17. EACH CONTRACTOR IS RESPONSIBLE FOR CUTTING AND PATCHING THEIR OWN PENETRATIONS. MATERIALS USED FOR PATCHING SHALL THE SAME AS THE ADJACENT MATERIALS AND SHALL BE APPROVED BY THE ARCHITECT / ENGINEER.

18. THE CONTRACTOR SHALL PROVIDE MATERIAL SAFETY DATA SHEETS (M.S.D.S.) FOR ALL CHEMICALS USED AT THE SITE FOR THE REVIEW OF THE CLIENT. THIS DOCUMENTATION MUST BE KEPT ON SITE AND READILY ACCESSIBLE AT ALL TIME DURING THE PROJECT.

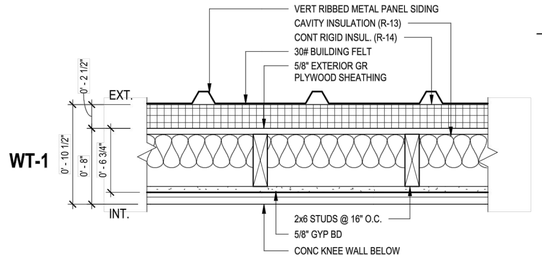
19. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT DOCUMENTS REQUIREMENTS BY THE ARCHITECT'S APPROVAL OF SHOP DRAWINGS OR OTHER SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE ARCHITECT IN WRITING OF SUCH DEVIATION AT THE TIME OF THE SUBMITTAL AND SUCH DEVIATION HAS BEEN APPROVED IN WRITING. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SUCH SUBMITTALS BY THE ARCHITECT'S APPROVAL THEREOF.

20. THE CONTRACTOR SHALL DIRECT SPECIFIC ATTENTION IN WRITING ON SHOP DRAWINGS AND SIMILAR SUBMITTALS TO REVISIONS OTHER THAN THOSE REQUESTED BY THE ARCHITECT ON PREVIOUS SUBMITTALS. IN THE ABSENCE OF THE CONTRACTOR'S WRITTEN NOTICE, THE ARCHITECT'S APPROVAL OF A RESUBMISSION SHALL NOT APPLY TO SUCH REVISIONS

DRAWING LEGEND

ANNOTATIONS

DRAWING NAME AND TAG	X / AXXX — FLOOR PLAN, SCALE : 1/4" = 1'-0" X / AXXX — SECTION, SCALE : 1/4" = 1'-0" X / AXXX — DETAIL, SCALE : 1/4" = 1'-0" X / AXXX — ELEVATION, SCALE : 1/4" = 1'-0"
SECTION TAGS	A / A100
DETAIL TAG	1 / AXXX
TEXT APPEARANCE NOTING ELEMENTS	XXXXXXXXXXXXXXXXXXXXXXXXXXX
ELEVATION TAGS	X / X X-XXX X / X
BUILDING ELEVATION TAG	FIN. 1ST. FL.
SPOT ELEVATION TAG	NEW 100.00 — EXISTING 100.00
COLUMN CENTERLINE TAG	XX
NOTE TAG	AC# CONSTRUCTION — AD# DEMOLITION
DOOR TAG	220D
WINDOW TAG	WXX
ROOM NAME / NUMBER TAG	XXXXX / 230
PARTITION TAG	X
SHELF TAG	SX
NORTH ARROW	PROJECT NORTH
REVISION TAG	1
REVISION CLOUD	
ELECTRICAL PANEL OR WALL HEATER	EP WH
ELEVATION CHANGE	HIGH / LOW
MATCH LINE TAG	A MATCH LINE REF: DWG — MATCH LINE REF: DWG A



WALL TYPES

PROJECT DATA

GOVERNING CODES
2024 OHIO BUILDING CODE (IBC 2021 w/ AMENDMENTS)
2024 OHIO EXISTING BUILDING CODE (IEBC 2021 w/ AMENDMENTS)
2024 OHIO PLUMBING CODE (IPC 2021 w/ AMENDMENTS)
2024 OHIO MECHANICAL CODE (IMC 2021 w/ AMENDMENTS)
2021 OHIO ENERGY CODE (IECC 2021 w/ AMENDMENTS)

DESCRIPTION & CLASSIFICATION OF WORK
ELECTRICAL ROOM AND WORKSPACE SUPPORTING PROCESS EQUIPMENT AND SERVICES FOR THE WASTE WATER TREATMENT PLANT.

OCCUPANCY*
FACTORY GROUP F-1, MODERATE HAZARD INDUSTRIAL (2024 OBC, SECTION 304)

* *OCCUPANCY NOTE: THIS SPACE IS EQUIPPED WITH REMOTE MONITORING SYSTEMS, AND IS NOT REGULARLY OCCUPIED EXCEPT FOR OCCASIONAL MAINTENANCE AND INSPECTION.*

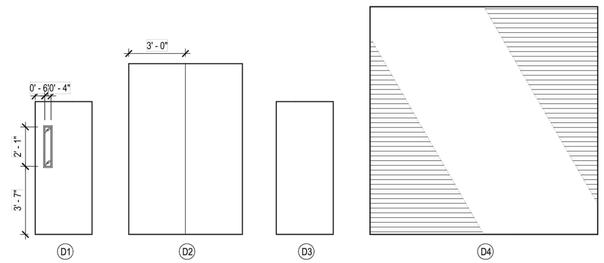
CONSTRUCTION TYPE
TYPE IVB, NON-SPRINKLERED (2024 OBC, SECTION 602.2)

RATED ASSEMBLIES
2024 OBC TABLE 601.1

PRIMARY STRUCTURAL FRAME:	0 HR
ROOF CONSTRUCTION & SECONDARY MEMBERS:	0 HR
BEARING WALLS:	0 HR
NONBEARING WALLS:	0 HR

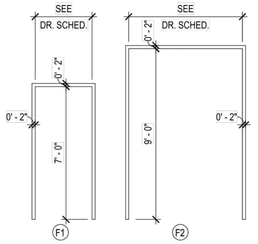
DOOR SCHEDULE

MARK	DOOR STYLE	DOOR MATERIAL	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE THICK.	DOOR CORE	FRAME MATERIAL	FRAME TYPE	HARDWARE	REMARKS
101	D1	STL	3' - 0"	7' - 0"	0' - 1 3/4"	INSUL	STL	F1	L9	
102	D4	STL	12' - 0"	12' - 0"	0' - 2"	INSUL		(N/A)	SLIDE LOCK	
103	D4	STL	12' - 0"	12' - 0"	0' - 2"	INSUL		(N/A)	SLIDE LOCK	
104	D4	STL	12' - 0"	12' - 0"	0' - 2"	INSUL		(N/A)	SLIDE LOCK	
105	D4	STL	12' - 0"	12' - 0"	0' - 2"	INSUL		(N/A)	SLIDE LOCK	
107	D1	STL	3' - 0"	7' - 0"	0' - 1 3/4"	INSUL	STL	F1	L9	
108	D1	STL	3' - 0"	7' - 0"	0' - 1 3/4"	INSUL	STL	F1	L9	
109	D2	STL	6' - 0"	9' - 0"	0' - 1 3/4"	INSUL	STL	F2	L4	
110	D3	STL	3' - 0"	7' - 0"	0' - 1 1/2"	(N/A)	STL	F1	L8	
111	D3	STL	3' - 0"	7' - 0"	0' - 1 1/2"	(N/A)	STL	F1	L6	
112	D3	STL	3' - 0"	7' - 0"	0' - 1 1/2"	(N/A)	STL	F1	L1	
113	D3	STL	3' - 0"	7' - 0"	0' - 1 1/2"	(N/A)	STL	F1	L1	



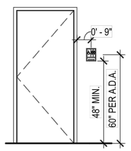
DOOR TYPES

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



DOOR FRAME TYPES

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



TYPICAL DOOR SIGN LOCATION

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

ALTERNATE 1

BID SET

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NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

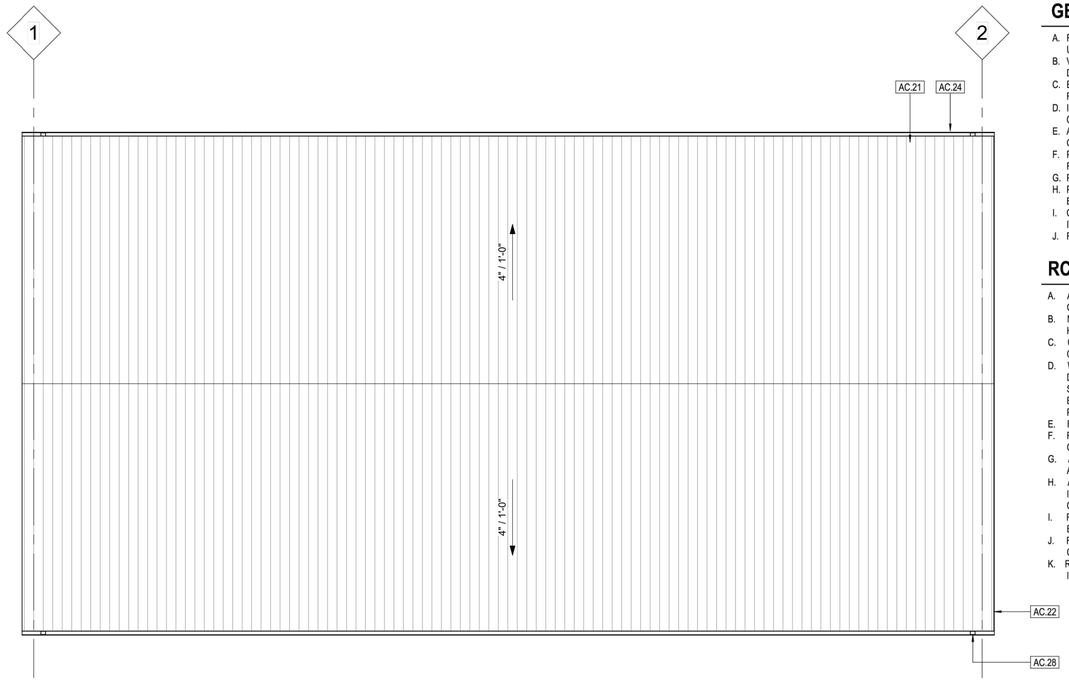
ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
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DRAWN BY:	DSS
CHECKED BY:	DSS

ADAMS COUNTY
NORTH ADAMS REGIONAL WASTEWATER TREATMENT PLANT
ADAMS COUNTY WINCHESTER, OHIO

SERVICE BUILDING - 40 SERIES
NOTES & ABBREVIATIONS

PROJECT NO.	200619
DISCIPLINE	ARCHITECTURAL
SHEET NAME	40A-00 ALT
SHEET	46
OF	79

H:\2020\200619\DWG\SHEET\A_200619 - SERVICE BUILDING PLAN.DWG - 40A-00 ALT - 9/17/2026 10:35:03 AM - ADAM DAWSON



3 / 40A-01 ALT — ROOF PLAN
SCALE: 1/8" = 1'-0"

GENERAL FLOOR PLAN NOTES

A. FINISH FLOOR ELEVATION OF 100'-0" IS EQUAL TO USGS ELEVATION OF +XXX.XX' UNLESS NOTED OTHERWISE.
B. VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
C. EXTERIOR DIMENSIONS SHOWN ARE TO OUTSIDE FACE OF FOUNDATION WALL OR ROUGH OPENINGS. TYPICAL UNLESS NOTED OTHERWISE.
D. INTERIOR DIMENSIONS SHOWN ARE TO FACE OF CMU OR CONCRETE CONSTRUCTION, UNLESS NOTED OTHERWISE.
E. ALL DOORS INSTALLED IN MASONRY PARTITIONS TO BE LOCATED 0'-8" FROM EDGE OF JAMB OF DOOR TO ADJACENT WALL. UNLESS NOTED OTHERWISE.
F. PROVIDE MASONRY ANCHORS IN WALLS AS REQUIRED FOR ATTACHMENT OF SURFACE MOUNTED ITEMS SUCH AS FIRE EXTINGUISHERS.
G. PROVIDE SEALANT AT JOINTS BETWEEN ALL DISSIMILAR MATERIALS.
H. PAINT ALL EXPOSED, UNFINISHED EXTERIOR STEEL (DOORS, FRAMES, LINTELS, BOLLARDS, ETC.).
I. COORDINATE WORK BETWEEN TRADES AND OTHER DISCIPLINES. ADDITIONAL ITEMS OF WORK MAY APPEAR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS.
J. REFER TO AXXXX FOR THE FINISH SCHEDULE.

RCP GENERAL NOTES

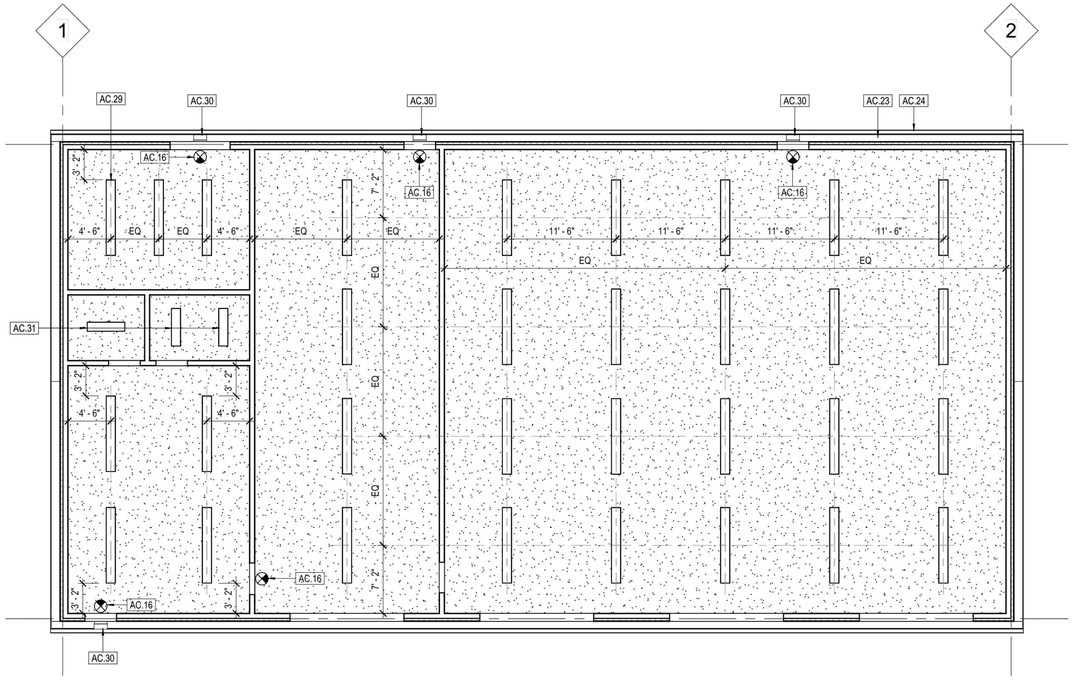
A. ALL CEILINGS SHALL BE 9'-0" ABOVE FINISH FLOOR UNLESS INDICATED OTHERWISE
B. NOTIFY ARCHITECT OF ANY DISCREPANCIES OR UN-IDENTIFIED CEILING TYPES OR HEIGHTS PRIOR TO PROCEEDING WITH THE WORK
C. CENTER TILE / GRID LAYOUT IN SPACE AS SHOWN ON PLANS UNLESS INDICATED OTHERWISE
D. WHERE MINOR DISCREPANCIES OCCUR BETWEEN MECHANICAL OR ELECTRICAL DRAWINGS AND THE ARCHITECTURAL CEILING PLAN, THE ARCHITECTURAL PLAN SHALL GOVERN. IN THE CASE OF MAJOR DISCREPANCIES, THE ARCHITECT SHALL BE NOTIFIED AS SOON AS THE DISCREPANCY IS DISCOVERED PRIOR TO PROCEEDING WITH THE WORK.
E. REFER TO SHEET I-SERIES DRAWINGS FOR ALL CEILING FINISHES AND LOCATIONS.
F. REFERENCE MECHANICAL AND ELECTRICAL DRAWINGS FOR MOUNTING LOCATIONS OF ITEMS IN SPACES WHERE NO CEILING IS INDICATED
G. ALL CEILING DEVICES ARE TO BE CENTERED IN THE CEILING TILE IN WHICH THEY ARE LOCATED, UNLESS INDICATED OTHERWISE
H. ANY NON-DIMENSIONED LIGHT FIXTURES AND OTHER CEILING DEVICES LOCATED IN GYPSUM BOARD CEILINGS SHALL BE DIMENSIONED AND COORDINATED PRIOR TO CONSTRUCTION
I. REFERENCE MEP DRAWINGS AND SPECIFICATIONS FOR ACCESS PANELS IN GYPSUM BOARD CEILINGS NOT INDICATED ON THE CEILING PLANS
J. REFERENCE ELECTRICAL DRAWINGS FOR EXIT SIGNS NOT INDICATED ON THE CEILING PLANS
K. REFERENCE FIRE PROTECTION DRAWINGS FOR SPRINKLER HEAD LOCATIONS NOT INDICATED ON THE CEILING PLANS

PARTITION NOTES

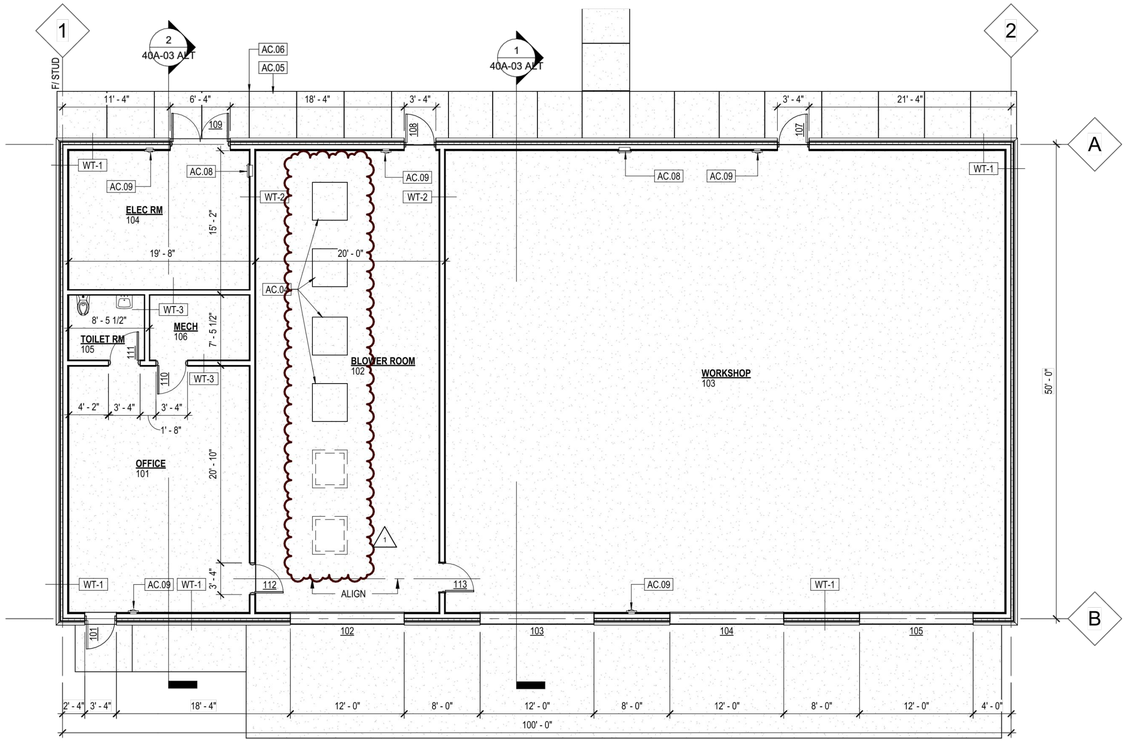
A. "LINE OF STRUCTURE" AND "SCHEDULED CEILING" INDICATED ON PARTITION TYPES ARE DIAGRAMATIC AND DO NOT INDICATE EXACT CONSTRUCTION CONDITIONS
B. PROVIDE TYPE 'X' GYP BOARD IN LIEU OF NON-TYPE-X GYP BOARD AT ALL FIRE-RATED WALLS
C. PROVIDE MOLD & MILDEW RESISTANT GYP BOARD AT ALL INTERIOR WALLS
D. PROVIDE CEMENT BACKER BOARD AT ALL WALLS WITH TILE FINISH
E. NON-RATED PARTITIONS AND SMOKE PARTITIONS TO USE ACOUSTICAL SEALANT
F. FIRE RESISTANT RATED PARTITIONS TO USE RATED FIRE/SMOKE RESISTANT FILL MATERIAL TOGETHER WITH COMPATIBLE RATED FIRE/SMOKE FIRESTOPPING
G. PROVIDE FIRESTOPPING SYSTEM AT ALL PENETRATIONS THROUGH FIRE RESISTANT RATED PARTITIONS, AT PARTITION/DECK CONDITION, AND ELSEWHERE AS REQUIRED TO MAINTAIN THE FIRE RESISTIVE INTEGRITY OF THE ASSEMBLY
H. FOR PARTITIONS TO RECEIVE SOUND ATTENTUATION INSULATION, EXTEND INSULATION FULL HEIGHT OF PARTITION UNLESS INDICATED OTHERWISE. FLOOR TRACK TO BE SET IN CONTINUOUS BEAD OF SEALANT
I. FOR NON-RATED PARTITONS INDICATED TO RECEIVE SOUND ATTENUATION, USE SOUND ATTENUATION BLANKETS (SAB)
J. FOR FIRE RESISTANT RATED PARTITIONS INDICATED TO RECEIVE SOUND ATTENUATION, USE MINERAL WOOL SOUND ATTENUATION FIRE BLANKETS (SAFB)
K. FIRE AND SMOKE RESISTANT RATED PARTITIONS SUCH BE IDENTIFIED AS SUCH WITH A LABEL PLACED ON EACH WALL SEGMENT ABOVE THE CEILING ON BOTH SIDES AT 6'-0" MAX
L. PROVIDE FULL THICKNESS OF INSULATION IN ALL STUD BOX BEAMS AND HEADERS
M. PROVIDE BLOCKING IN PARTITIONS FOR ALL WALL SUPPORTED ITEMS. COORDINATE WITH OWNER FOR TYPE, SIZE, AND LOCATION REQUIREMENTS OF OWNER FURNISHED ITEMS
N. PROVIDE 4'x8'x3/4" FIRE RESISTANT PLYWOOD BACK BOARDS IN ELECTRICAL CLOSETS, DATA/COMM ROOMS, AND WHERE REQUIRED OTHERWISE. MOUNT BOARDS VERTICALLY,4" ABOVE FLOOR AND TIGHT TO PARTITION FACE. COORDINATE WITH ELECTRICAL CONTRACTOR FOR LOCATIONS.
O. CLEAN INSIDE OF ALL STUD CAVITIES BEFORE ENCLOSING WALL

KEY NOTES

AC.04	CONC HOUSEKEEPING PAD (SEE STRUCTURAL DWGS)
AC.05	CONC WALK (SEE CIVIL DWGS)
AC.06	CONTROL JOINT, TYP.
AC.08	SEMI-RECESSED AED CABINET.
AC.09	SEMI-RECESSED FIRE EXTINGUISHER CABINET.
AC.16	EXIT SIGN & EMERGENCY LIGHT
AC.21	INSULATED METAL PANEL ROOF SYSTEM (R-38), TYP.
AC.22	PAINTED 1x FASCIA, TYP.
AC.23	PAINTED, VENTED SOFFIT.
AC.24	CONT. 6" METAL GUTTER, TYP.
AC.28	DOWNSPOUT, TYP. (CONNECT TO DRAINAGE BELOW GRADE AND EXIT TO DAYLIGHT AWAY FROM BUILDING)
AC.29	CEILING-MOUNTED 1'-0" x 8'-0" DBL LED FIXTURE, TYP.
AC.30	LED WALL LIGHT.
AC.31	CEILING-MOUNTED 1'-0" x 4'-0" DBL LED FIXTURE, TYP.



2 / 40A-01 ALT — REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"



1 / 40A-01 ALT — FLOOR PLAN
SCALE: 1/8" = 1'-0"

ALTERNATE 1

BID SET

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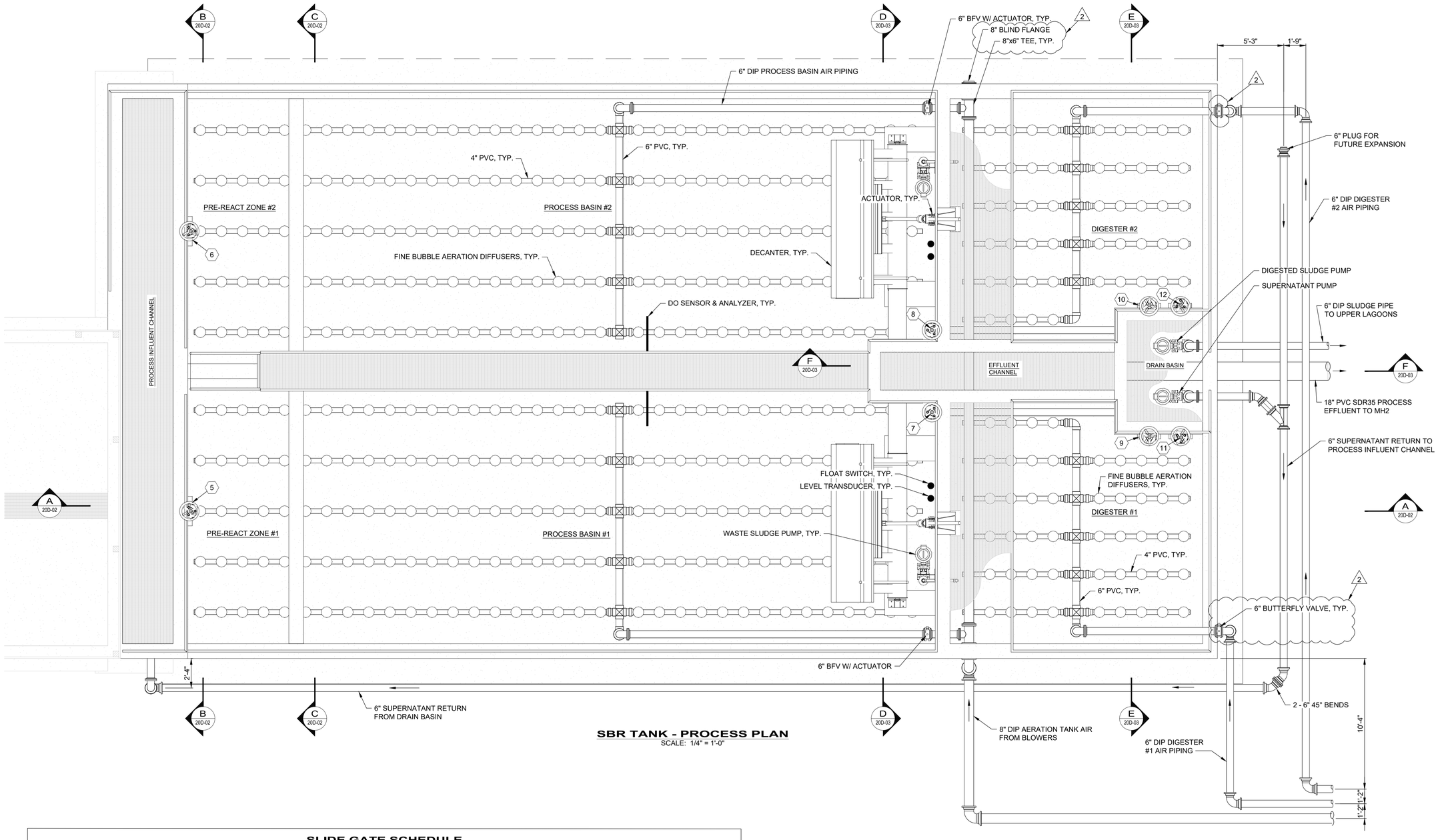
NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	ISSUE DATE:	SCALE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:
BIDDING	7/20/2026	AS NOTED	DSS	DSS	DSS

ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY
SERVICE BUILDING - 40 SERIES
PLANS

PROJECT NO.
200619
DISCIPLINE
ARCHITECTURAL
SHEET NAME
40A-01 ALT
SHEET 47 OF 79

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SBR TANK - PROCESS PLAN

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

SLIDE GATE SCHEDULE

GATE NO. (X)	LOCATION	GATE TYPE	SIZE		OPERATING HEAD IN FEET OF WATER		GATE/FRAME MATERIAL	TYPE OF FRAME	STEM LENGTH	OPERATOR TYPE	OPEN DIRECTION
			WIDTH (A)	HEIGHT (B)	SEATING	UNSEATING					
5	PROCESS INFLUENT CHANNEL	WEIR	2'-0"	3'-0"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	DOWNWARD
6	PROCESS INFLUENT CHANNEL	WEIR	2'-0"	3'-0"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	DOWNWARD
7	PROCESS AERATION #1 DRAIN	SLUICE	6"Ø	~	~	~	CI	FLANGED	~	H'WHEEL	UPWARD
8	PROCESS AERATION #2 DRAIN	SLUICE	6"Ø	~	~	~	CI	FLANGED	~	H'WHEEL	UPWARD
9	DIGESTER #1 SLUDGE DRAIN	SLUICE	1'-6"	1'-6"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	UPWARD
10	DIGESTER #2 SLUDGE DRAIN	SLUICE	1'-6"	1'-6"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	UPWARD
11	DIGESTER #1 SUPERNATANT DRAIN	SLUICE	1'-6"	4'-0"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	DOWNWARD
12	DIGESTER #2 SUPERNATANT DRAIN	SLUICE	1'-6"	4'-0"	~	~	316 SS	WALL MOUNT	~	H'WHEEL	DOWNWARD

BID SET

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NO	REVISION	DATE
1	REVISED PER OEPA COMMENTS	9/11/2026
2	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
DESIGNED BY:	NLD
DRAWN BY:	AGD
CHECKED BY:	KAB

ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

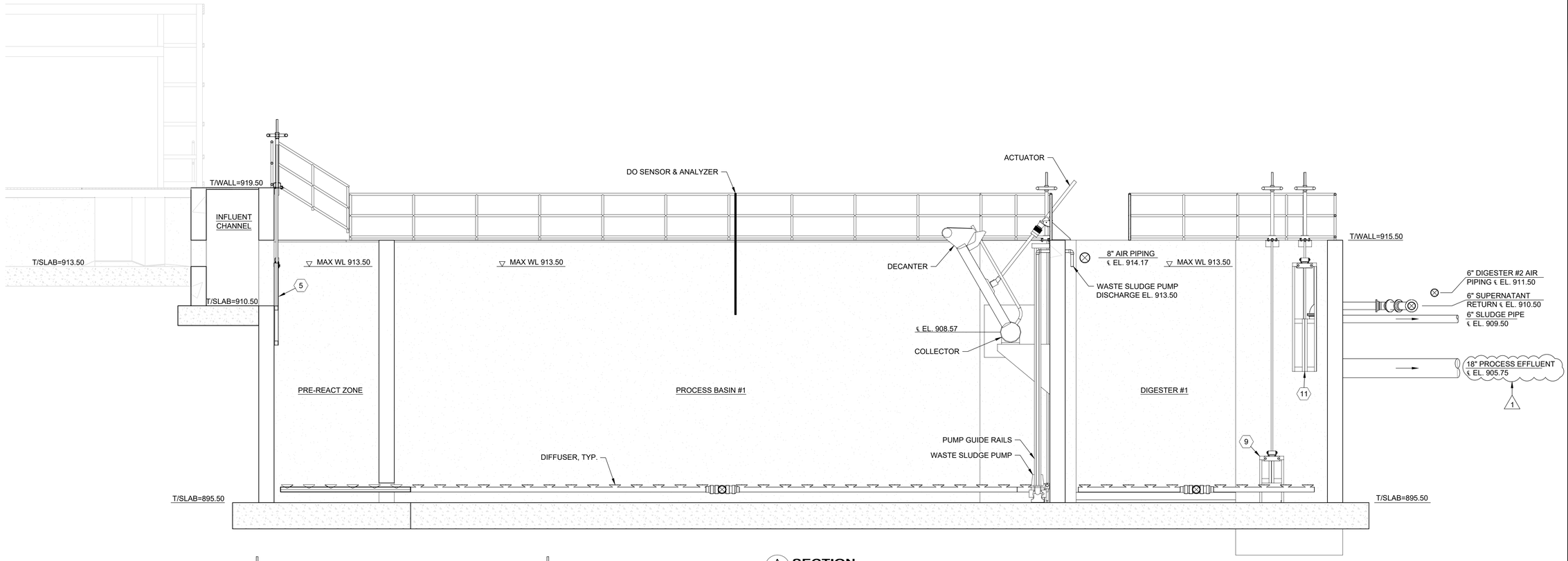
SBR TANKS - 20 SERIES
SBR TANK - PROCESS PLAN

PROJECT NO.
200619

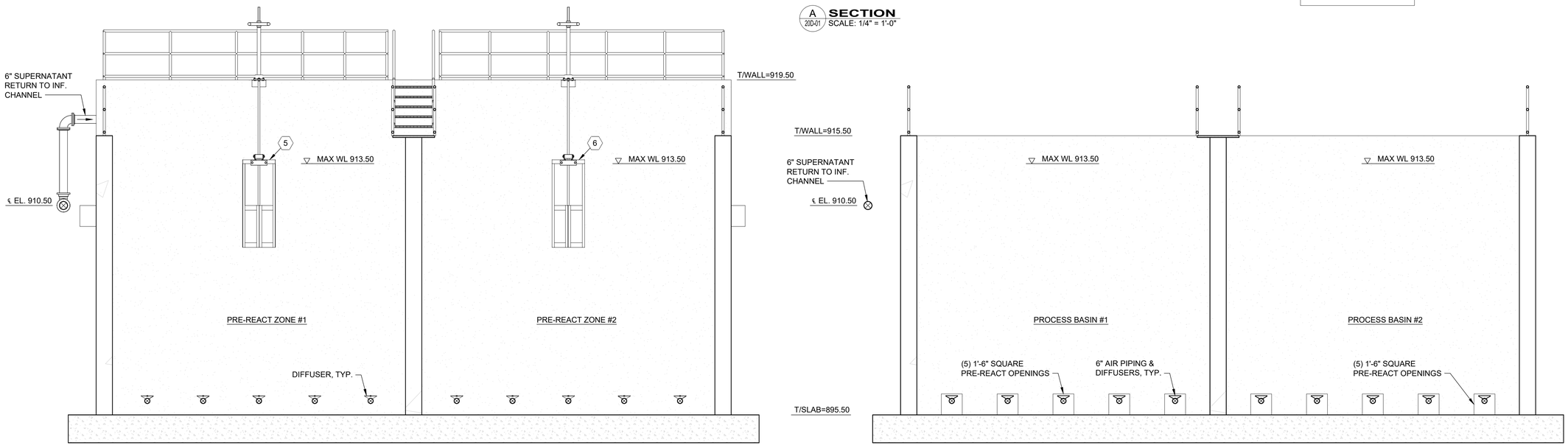
DISCIPLINE
PROCESS

SHEET NAME
20D-01

SHEET 52 OF 79



A 20D-01 **SECTION**
SCALE: 1/4" = 1'-0"



B 20D-01 **SECTION**
SCALE: 1/4" = 1'-0"

C 20D-01 **SECTION**
SCALE: 1/4" = 1'-0"

BID SET

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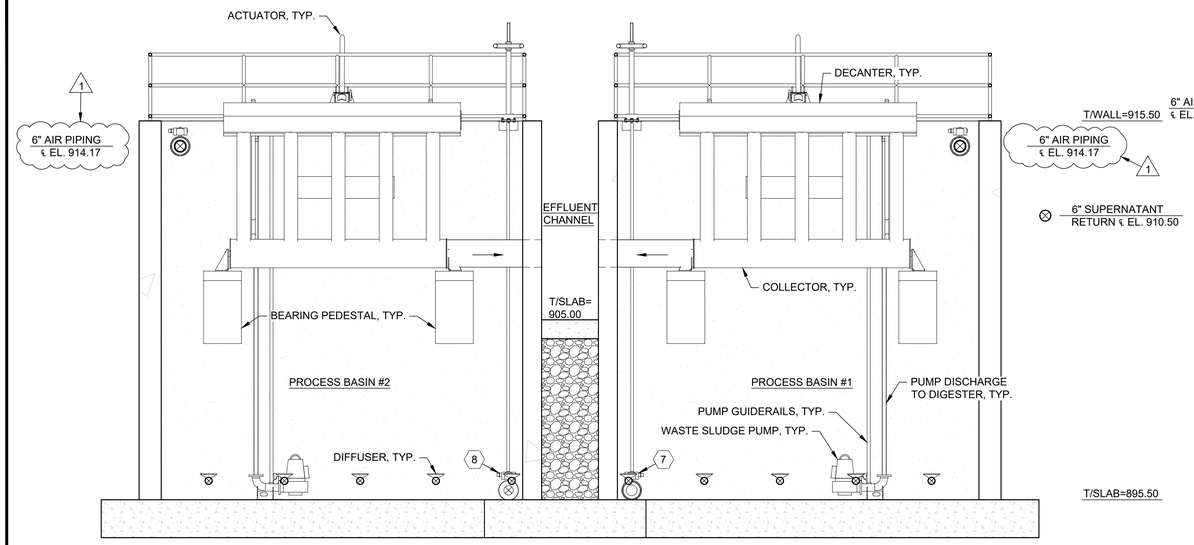
NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
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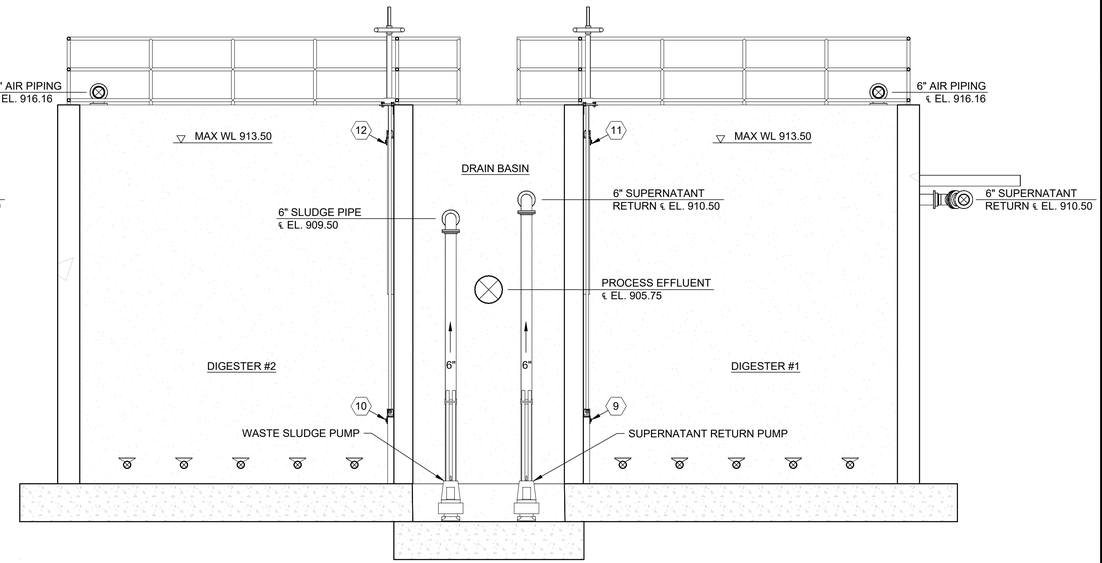
ADAMS COUNTY
NORTH ADAMS REGIONAL WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SBR TANKS - 20 SERIES
SBR TANK - SECTIONS A-C

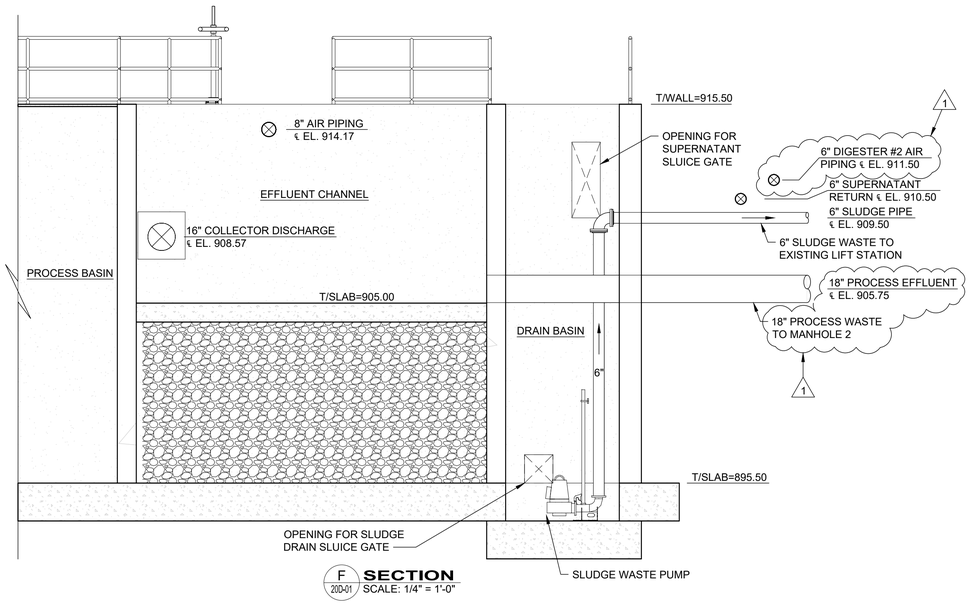
PROJECT NO.
200619
DISCIPLINE
PROCESS
SHEET NAME
20D-02
SHEET **53** OF **79**



D 200-01 **SECTION**
SCALE: 1/4" = 1'-0"



E 200-01 **SECTION**
SCALE: 1/4" = 1'-0"



F 200-01 **SECTION**
SCALE: 1/4" = 1'-0"

BID SET

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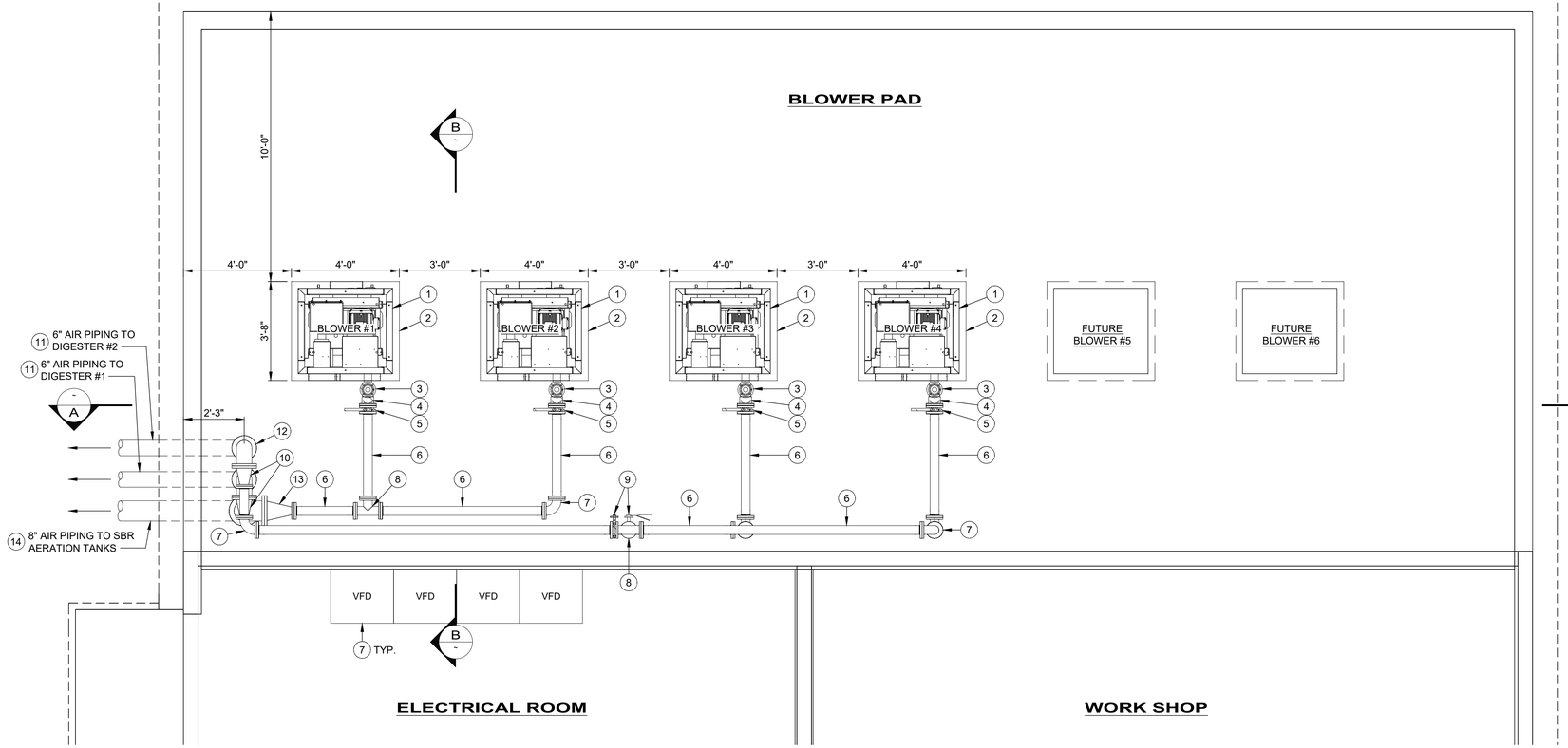
NO	REVISION	DATE
1	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
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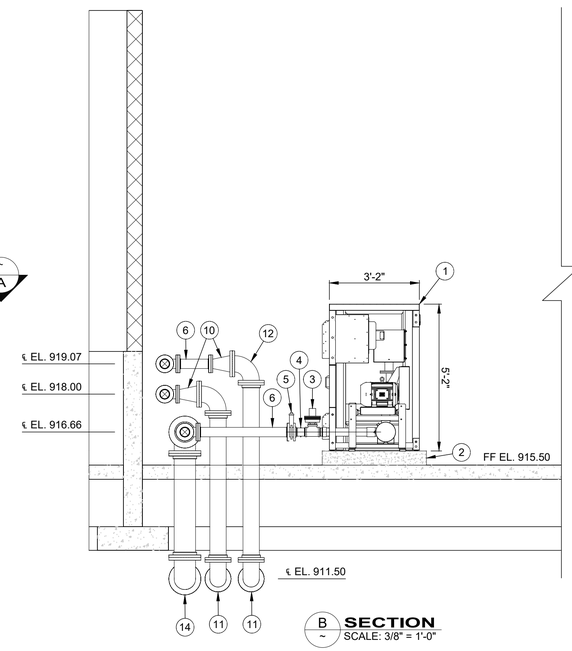
ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SBR TANKS - 20 SERIES
SBR TANK - SECTIONS D-F

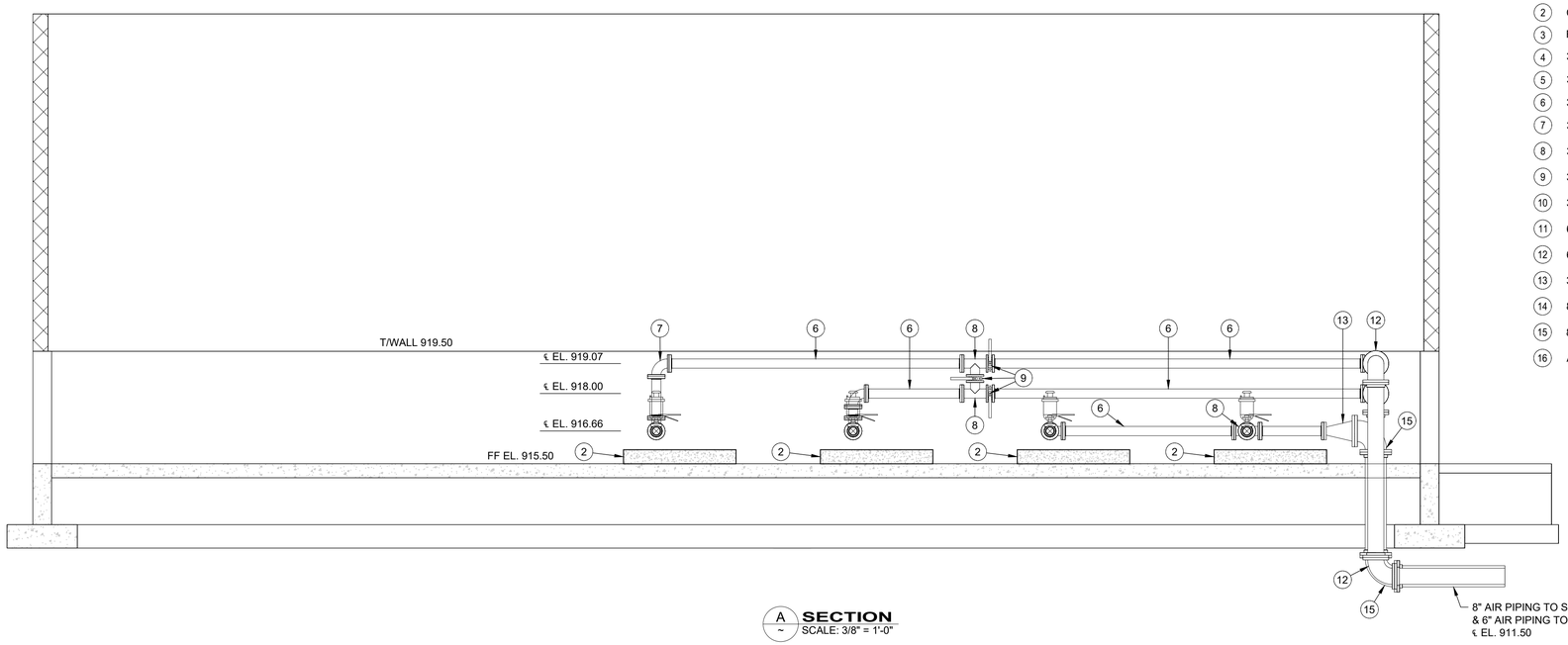
PROJECT NO.
200619
DISCIPLINE
PROCESS
SHEET NAME
20D-03
SHEET **54** OF **79**



SERVICE BUILDING - BLOWER ROOM
SCALE: 3/8" = 1'-0"



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



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

CODED NOTES:

1. EXCELSIOR BLOWER OR EQUAL, TYP. OF 4
2. CONCRETE HOUSEKEEPING PAD: 48"x44"x6"
3. RELIEF VALVE, (BY MANUF.)
4. 3" CHECK VALVE, (BY MANUF.)
5. 3" BUTTERFLY VALVE, (BY MANUF.)
6. 3" DIP DISCHARGE AIR PIPING.
7. 3" 90° ELBOW
8. 3"x3"x3" TEE
9. 3" BUTTERFLY VALVE
10. 3"x6" REDUCER
11. 6" DIP DISCHARGE PIPING TO DIGESTER
12. 6" 90° ELBOW
13. 3"x8" REDUCER
14. 8" DIP DISCHARGE PIPING TO AERATION TANKS
15. 8" 90° ELBOW
16. ANTICIPATED VFD PANEL FOOTPRINT

GENERAL NOTES:

1. BLOWER WEIGHT: 1,000 LB
2. CONTRACTOR SHALL ONLY INSTALL BLOWERS, PADS, PIPING & ELECTRICAL EQUIPMENT RELATED TO BLOWERS #1, #2, #3 & #4.
3. BLOWER #5 & #6 ARE FUTURE.

2 - REVISED ENTIRE SHEET

BID SET

verdantas

NO	REVISION	DATE
1	REVISED PER OEPA COMMENTS	9/11/2026
2	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
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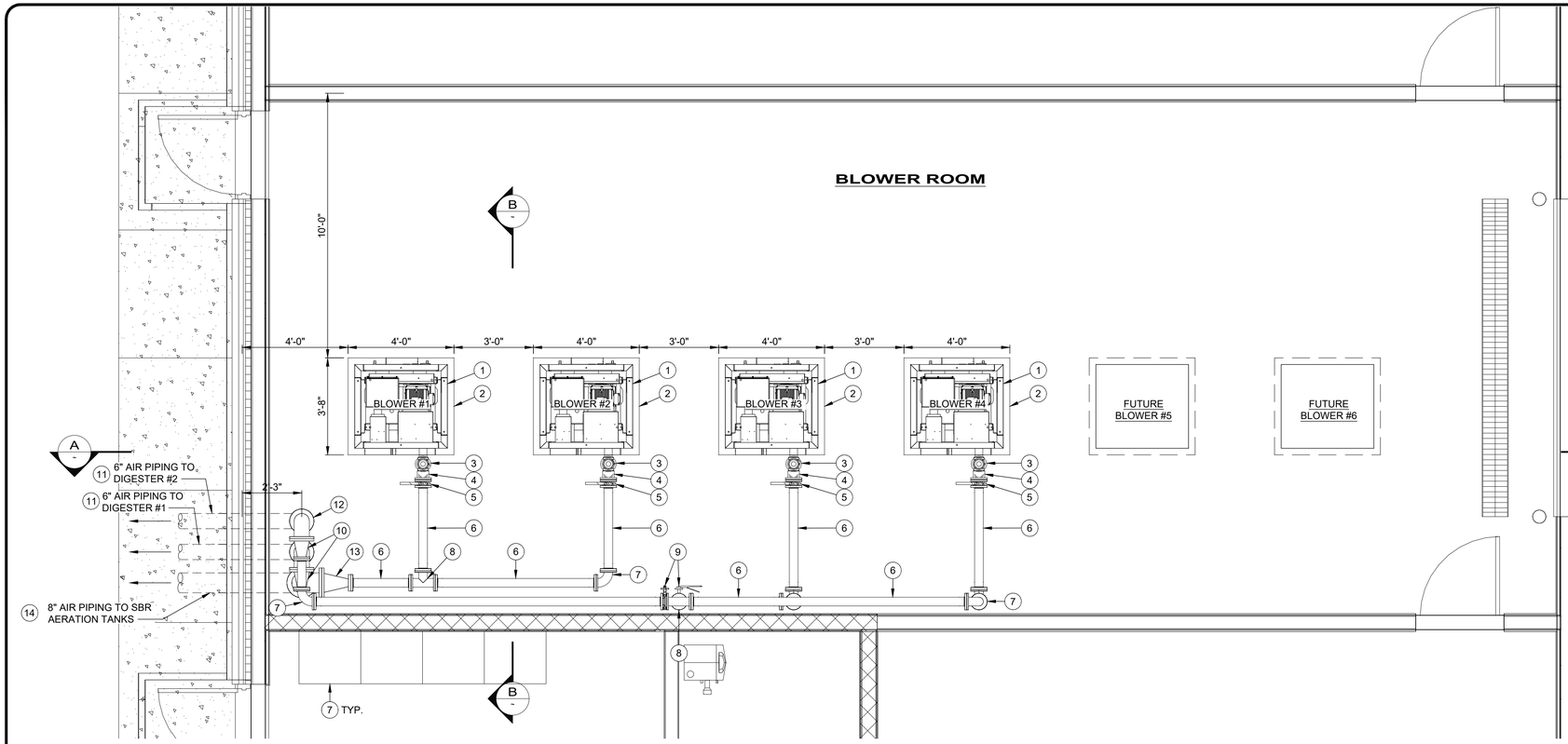
ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SERVICE BUILDING - 40 SERIES

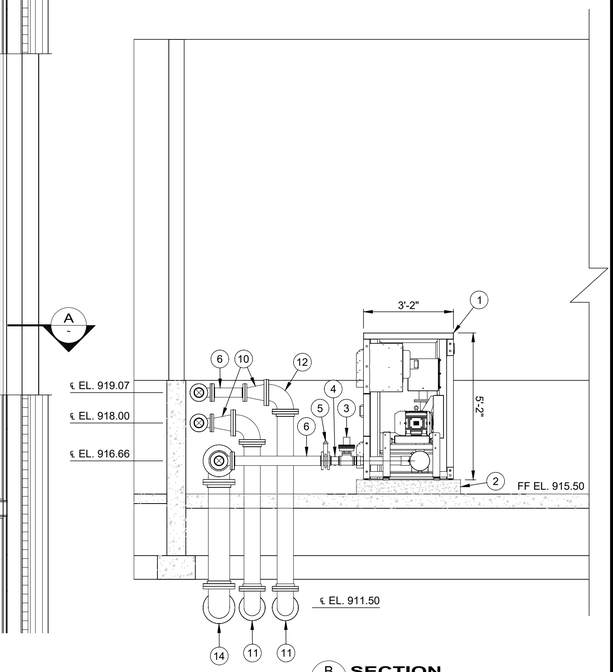
SERVICE BUILDING - BLOWER PAD

PROJECT NO.
200619
DISCIPLINE
PROCESS
SHEET NAME
40D-01
SHEET 56 OF 79

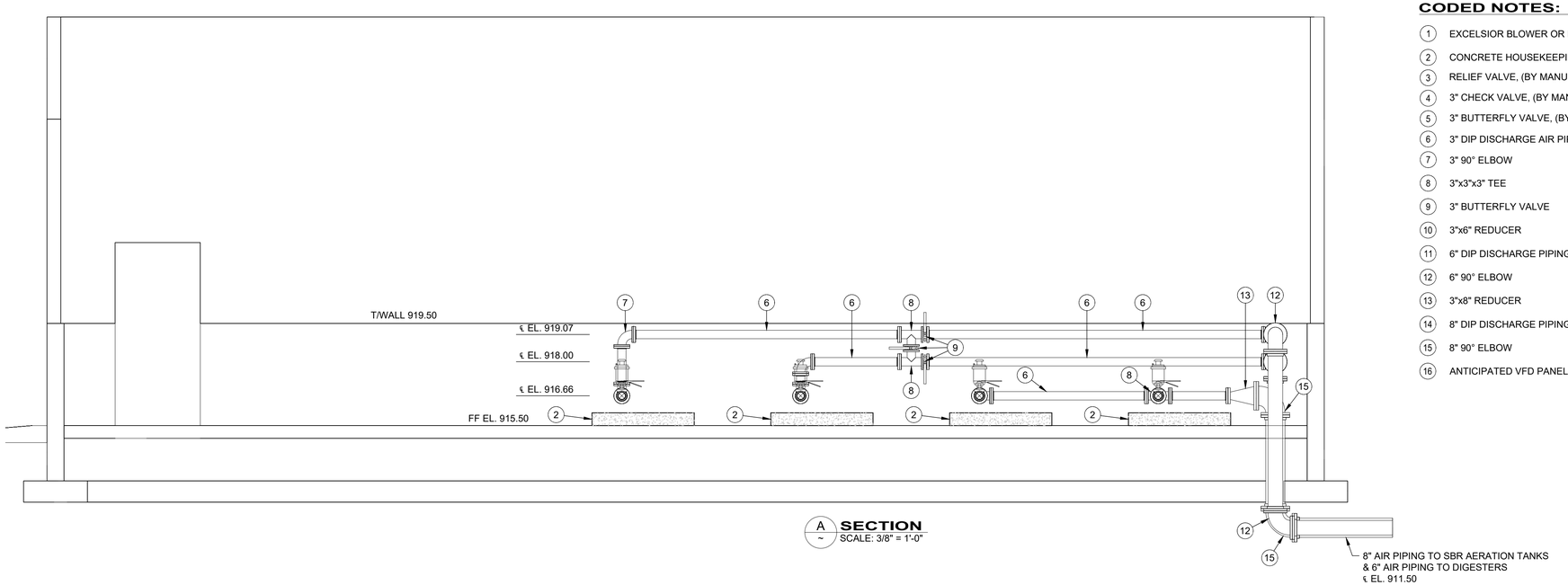
C:\CT\CAD_DRIVES_H\2020\200619\DWG\SHEETS\D_200619 - BLOWER ROOM.DWG - 40D-01 - 9/17/2026 10:36:37 AM - ADAM DAWSON



SERVICE BUILDING - BLOWER ROOM
SCALE: 3/8" = 1'-0"



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



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

CODED NOTES:

1. EXCELSIOR BLOWER OR EQUAL, TYP. OF 4
2. CONCRETE HOUSEKEEPING PAD: 48"x44"x6"
3. RELIEF VALVE, (BY MANUF.)
4. 3" CHECK VALVE, (BY MANUF.)
5. 3" BUTTERFLY VALVE, (BY MANUF.)
6. 3" DIP DISCHARGE AIR PIPING.
7. 3" 90° ELBOW
8. 3"x3"x3" TEE
9. 3" BUTTERFLY VALVE
10. 3"x6" REDUCER
11. 6" DIP DISCHARGE PIPING TO DIGESTER
12. 6" 90° ELBOW
13. 3"x8" REDUCER
14. 8" DIP DISCHARGE PIPING TO AERATION TANKS
15. 8" 90° ELBOW
16. ANTICIPATED VFD PANEL FOOTPRINT

GENERAL NOTES:

1. BLOWER WEIGHT: 1,000 LB
2. CONTRACTOR SHALL ONLY INSTALL BLOWERS, PADS, PIPING & ELECTRICAL EQUIPMENT RELATED TO BLOWERS #1, #2, #3 & #4.
3. BLOWER #5 & #6 ARE FUTURE.

2 - REVISED ENTIRE SHEET

BID SET

verdantas

NO	REVISION	DATE
1	REVISED PER OEPA COMMENTS	9/11/2026
2	ADDENDUM #2	9/17/2026

ISSUED FOR:	BIDDING
ISSUE DATE:	7/20/2026
SCALE:	AS NOTED
DESIGNED BY:	NLD
DRAWN BY:	AGD
CHECKED BY:	KAB

ADAMS COUNTY
NORTH ADAMS REGIONAL
WASTEWATER TREATMENT PLANT
WINCHESTER, OHIO
ADAMS COUNTY

SERVICE BUILDING - 40 SERIES

SERVICE BUILDING - BLOWER ROOM - ALTERNATE

PROJECT NO.
200619
DISCIPLINE
PROCESS
SHEET NAME
40D-02
SHEET 57 OF 79

ALTERNATE 1

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