

To: All Plan Holders of Record

- From: CT Consultants, Inc. For the Owner
- Re: Addendum No. 1 WTP Chlorine Building City of Painesville

Date: November 7, 2024

This Addendum forms a part of the contract documents and modifies the original bidding documents dated October 2024 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.

QUESTIONS AND ANSWERS

- Q1. See photo below. Door schedule shows 10 x 10 overhead door and drawings show 10'0" wide x 8'6" high?
- A1. Overhead coiling door is 8'-6" high. See revised elevations.
- Q2. Jamb detail J2 shows a "Z" guide mounted to steel. This is very unusual and will have the guide sticking into opening on both sides. This will result in exposing the guides to being hit and damaging the door. We would recommend an "E" type guide with a ¹/₂" set back from the opening on each side. This would make the guide-to-guide dimension 10'1".
- A2. The jamb detail for the overhead coiling door is a typical detail that has been used on numerous projects without issues.
- Q3. This is an interior mounted door, and the specification calls for a Key Switch for exterior mounted doors. What type of control station is required?
- A3. The keyed control station will be mounted on the interior side of the door.
- Q4. It is highly unusual to see a galvanized door specified in a water treatment facility. Typically, aluminum or stainless steel are specified due to the chemical environment in the facility.
- A4. *Price out as specified.*
- Q5. Even though the door is interior mounted, we would suggest a motor cover to protect the motor from the environment and pedestrians form the motor components that could hang below 8'0".
- A5. *Price out as specified.*

Addendum No. 1 Date: November 7, 2024 Page 2

PLANS

- 1. **Replace** Sheet S-01 with Revised Sheet S-01. Revised items are indicated by clouds.
- 2. **Replace** Sheet S-02 with Revised Sheet S-02. Revised items are indicated by clouds.
- 3. **Replace** Sheet A-01 with Revised Sheet A-01. Revised items are indicated by clouds.
- 4. **Replace** Sheet A-02 with Revised Sheet A-02. Revised items are indicated by clouds.
- 5. **Replace** Sheet A-03 with Revised Sheet A-03. Revised items are indicated by clouds.
- 6. **Replace** Sheet A-04 with Revised Sheet A-04. Revised items are indicated by clouds.
- 7. Replace Sheet M-01 with Revised Sheet M-01. Revised items are indicated by clouds.
- 8. **Replace** Sheet SD-02 with Revised Sheet SD-02. Revised items are indicated by clouds.
- 9. **Replace** Sheet SD-06 with Revised Sheet SD-06. Revised items are indicated by clouds.
- 10. **Replace** Sheet SD-07 with Revised Sheet SD-07. Revised items are indicated by clouds.

SPECIFICATIONS

Add: Specification Section 316615 - Helical Pile Foundations in its entirety.

ADT:mep

Enclosures

 $H:\2023\232515\SPEC\Phase 1 - Bldg Shell\Addenda\Addendum 01\Addendum 01\Doc$

SECTION 31 6615 HELICAL FOUNDATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Helical anchors used to support tension loads.
- B. Helical piles used to support compression loads.
- 1.02 RELATED REQUIREMENTS
 - A. Section 31 2316 Excavation.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 Unit Prices, for additional unit price requirements.
- B. Base bids on anchor/pile quantity and lengths as indicated.
- C. If the actual number of installed anchors/piles or the total installed length differs, an adjustment to the Contract Sum will be made .
- D. No additional payment will be made for withdrawn, damaged, rejected, or misplaced piles; for any portion of a pile remaining above the cut-off elevation; for back-driving; for cutting off piles, or for any cut off length of piles.
- E. Quantity and length measurements will be determined by Installation Logs kept and submitted by Architect and verified by Contractor, based on the following:
 - 1. Length: By the linear foot (meter) measured from point to existing site elevation as indicated.
 - 2. Test Anchors/Piles: Assume 5 feet (1.5 m) longer than longest designed length.

1.04 REFERENCE STANDARDS

- A. AISC 360 Specification for Structural Steel Buildings; 2010.
- B. ASTM A29/A29M Standard Specification for Steel Bars, Carbon Alloy, Hot-Wrought, General Requirements; 2012.
- C. ASTM A36/A36M Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2013.
- E. ASTM A325 Standard Specification for Structural Bolts, Heat Treated, 120/105 ksi Maximum Tensile Strength; 2010.
- F. ASTM A490 Standard Specification for Structural Bolts, Alloy Steel, 150 ksi Maximum Tensile Strength; 2012.
- G. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds; 2013.
- H. ASTM A572/A572M Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2015.
- I. ASTM D1143/D1143M Standard Test Method for Deep Foundations Under Static Axial Compression Load; 2007 (Reapproved 2013).
- J. DFI TM-GLOS-1 Deep Foundation Institute Technical Manual; Glossary of Foundation Terms; 1981.
- K. RCSC (HSBOLT) Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2009.
- L. SAE J429 Mechanical and Material Requirements for Externally Threaded Fasteners; 2011.

1.05 DEFINITIONS

- A. Specific terms used in this section are defined below. Terms not defined below are defined in DFI TM-GLOS-1 first and then by common usage.
- B. Extension Section: Helical foundation component installed between lead section and load transfer device.
- C. Effective Torsional Resistance: Average installation torque typically taken over a distance equal to last three diameters of penetration of largest helix plate.
- D. Geotechnical Capacity (or, Ultimate Soil Capacity): Maximum load resisted.
- E. Lead Section: First helical foundation component installed in soil.
- F. Limit State: Condition beyond which a helical foundation component is unfit for service.
 - 1. Serviceability Limit State: Foundation no longer useful for its intended function.
 - 2. Strength Limit State: Foundation is unsafe.
- G. Loads: Forces or other actions that result from weight of all building materials, occupants and their possessions, environmental effects, differential movement, and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude. All other loads are variable loads (see also Nominal Load below).
- H. Load Test: Procedure to test capacity and relation of load to movement.
- I. Mechanical Strength: Maximum tension load resisted by structural elements of helical foundation.
- J. Nominal Load: Magnitude of loads determined by Architect, including dead load, live load and other imposed by building code requirements
- K. Reveal: Distance along longitudinal axis from ground surface to end of last installed extension of a foundation.
- L. Safety Factor: Ratio of ultimate pullout resistance to nominal load.
- M. Ultimate Pullout Resistance: Limit state based on lesser of mechanical strength or geotechnical capacity and defined as point at which helical foundation can resist no additional load.
- 1.06 ADMINISTRATIVE REQUIREMENTS
 - A. Preinstallation meeting: Conduct a preinstallation meeting one week prior to start of work of this section; require attendance by all affected installers.
 - B. Scheduling: Schedule pile driving to occur between hours of 9 AM and 4 PM.

1.07 SUBMITTALS

- A. See Section 01 3000 Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement.
- C. Product Data: Product list, with manufacturer's model designations; published capacities for installed assemblies, including load transfer devices.
- D. Design Data: Submit documentation of foundation design, signed and certified by foundation designer; include:
 - 1. Statement that proposed foundations meet specified design criteria.
 - 2. Nominal load on each foundation element.
 - 3. Maximum allowable installation torque of each selected product.
 - 4. Calculated theoretical geotechnical capacity.
 - 5. Minimum effective torsional resistance requirements.
 - 6. Minimum embedment lengths and such other site specific embedment depth requirements.
 - 7. Inclination angle and location tolerance requirements.
 - 8. Pre-tensioning requirements, if any.

- E. Calibration Reports for Testing Equipment: Submit certified copies of calibration of torque measuring equipment and load test measuring equipment to be used on project, performed within one year of starting date of installation.
- F. Installer's Qualification Statement.
- G. Surveyor's Qualification Statement.
- H. Installation Logs:
- I. Field Test Reports.
- J. Project Record Documents: After work is complete, submit certification from surveyor that installed foundation locations are as shown on the drawings.

1.08 QUALITY ASSURANCE

- A. Designer Qualifications: Experienced in design of helical foundations of the type involved on this project, as evidenced by:
- B. Installer Qualifications: Experiences in installation of helical foundations of the type involved on this project, as evidenced by:
- C. Surveyor Qualifications: Engineer or land surveyor licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 HELICAL FOUNDATION DESIGN CRITERIA

- A. It is Contractor's responsibility to design, or obtain qualified design, of the helical foundations as indicated in the contract documents.
 - 1. Information necessary for design that is contained in the contract documents includes:
 - a. Locations of foundation elements.
 - b. Nominal design load for each foundation element, including dead load, live load and other loads required by building codes.
 - 2. Subsurface geotechnical data may be obtained from the soils report as noted in the construction documents.
- B. Helical Foundation Elements: One or more helical deformed plates (helix plates) attached to a central shaft with a load transfer device for attachment to a structure; entire element resisting applied loads by soil pressure.
 - 1. Design foundations to support/resist the nominal design loads shown on the drawings, in accordance with, AISC 360, Allowable Stress Design method.
 - 2. Select foundation elements based on allowable installation torque and calculated minimum embedment length; maximum embedment length, if any; and minimum effective torsional resistance.
 - 3. Corrosion Service Life: 50 years, minimum.
 - 4. Use solid square shaft helical anchors where subject to tension alone.
 - 5. Use hollow, round shaft helical foundations where subject to compression only or to alternating tension and compression.
- C. Helical Piles:
 - 1. Design with pile shaft sections in direct contact with couplings and no coupling bolts or welds in load path.
 - 2. Safety Factor: 2 times ultimate bearing resistance, minimum.
 - 3. Deflection: Axial Deflection at Nominal Axial Load: 3/8 inch
 - 4. Fit Up Tolerance: 1/16 inch (1.5 mm), maximum.
- 2.02 MATERIALS
 - A. All Components: Hot-dipped galvanized in accordance with ASTM A123/A123M.
 - B. Helical Piles: Hollow, round shaft of structural steel tube or pipe (welded or seamless) complying with ASTM A500/A500M.
 - 1. Size: 2-7/8 inches (78 mm) O.D. by 0.276 inch (7 mm) wall thickness.

- 2. Torque Strength: 8,000 foot-pounds (11,000 Nm).
- 3. Minimum Yield Strength: 60 kips per square inch (410 MPa).
- C. Helix Plates: Round steel plates formed into helical spiral on matching metal dies to true helical shape and uniform pitch; welded to central shaft with all plates tracking the same path as leading helix.
 - 1. Material: Hot rolled carbon steel sheet, strip, or plate complying with ASTM A36/A36M or ASTM A572/A572M, Grade 50.
 - 2. Thickness: 3/8 inch (10 mm)
 - 3. Profile: True helix-shaped plates, normal to shaft, leading and trailing edges within 1/4 inch (6 mm) of parallel.
 - 4. Pitch: 3 inches (76 mm) plus or minus 1/4 inch (6 mm). All helix plates shall have uniform pitch.
 - 5. Edge Profile: Circular edge.
 - 6. Spacing: Between 2.4 and 3.6 times helix diameter.
- D. Bolts: SAE J294, Grade 8, bolts with nut.
- E. Couplings: Integral to shaft.
- F. Anchor Plates: Load-transfer assembly welded from structural steel complying with ASTM A36/A36M.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protect structures near the work and underground utilities from damage.
- B. Mark underground utilities as required by authority having jurisdiction. Avoid contact with all marked underground facilities.
- C. Locate the starting point of installation in relation to existing site elevation.
- D. Notify Owner at least 24 hours prior starting to installation.
- 3.02 INSTALLATION
 - A. Install helical foundations as shown on drawings and approved design documentation. In event of conflict between drawings and approved anchorage design documentation, do not begin construction on any affected items until such conflict has been resolved.
 - B. Comply with manufacturer's written installation requirements and recommendations for specific project site and conditions.
 - C. Use installation methods that will not cause damage to existing adjacent or nearby structures.
 - D. Keep and submit a log of helical foundation installations, including the following data:
 - 1. Date and time of installation.
 - 2. Location of foundation element.
 - 3. Installed foundation type and configuration.
 - 4. Foundation reveal.
 - 5. Total length of installed foundation element.
 - 6. Installed inclination of foundation element.
 - 7. Actual effective torsional resistance.
 - 8. Calculated geotechnical capacity based on actual torsional resistance and soil parameters appropriate for subsurface conditions within three helix diameters above helix depth.
 - 9. Comments pertaining to interruptions, obstructions, or other relevant information.
 - E. If required, position inclined helical anchors perpendicular in order to assist in advancement into soil before establishing required batter angle; after initial penetration, establish required angle of inclination
 - F. Engage helical sections into soil and advance in a smooth, continuous manner at a rate of rotation of 5 to 25 RPM.

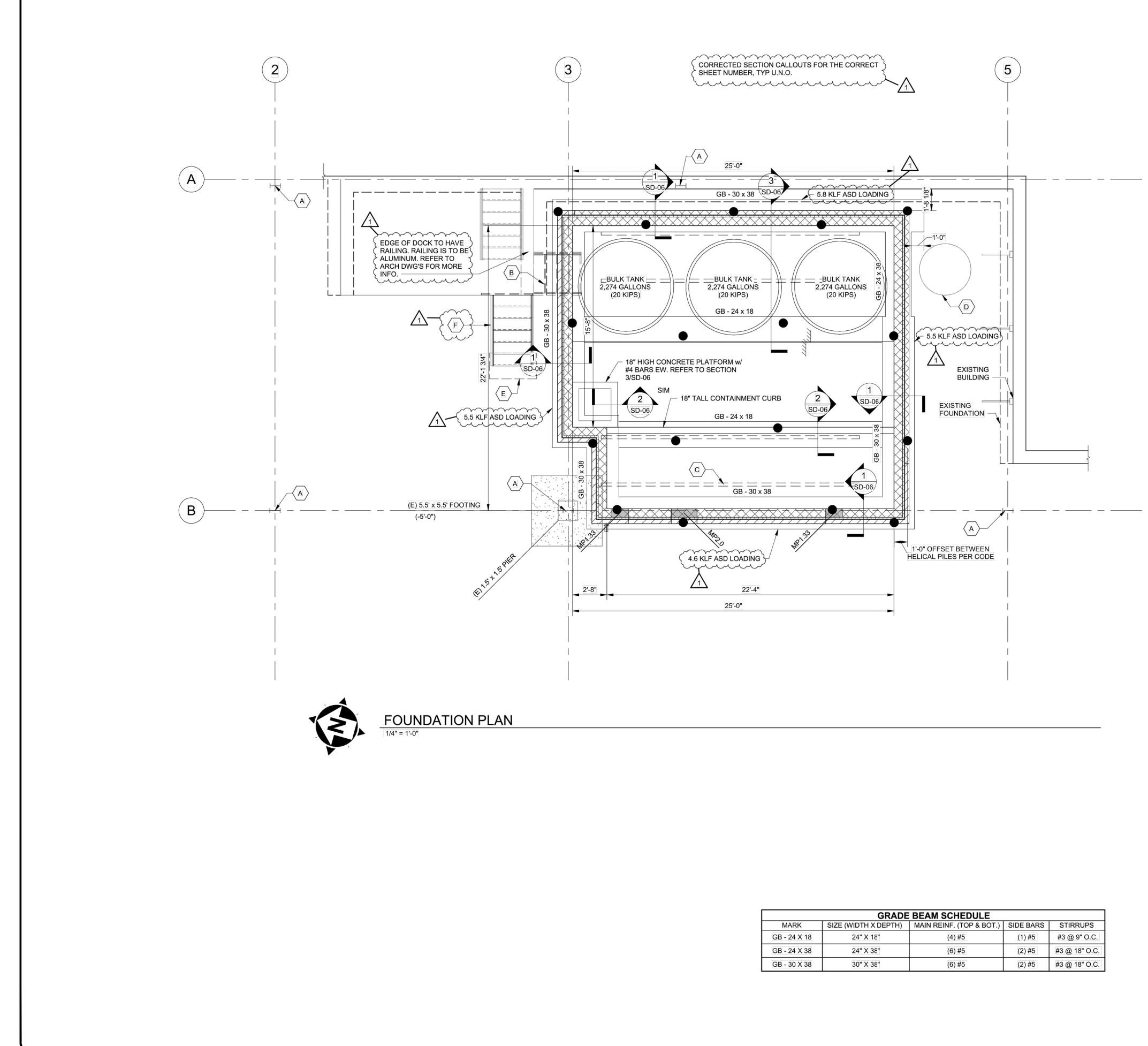
- G. Apply sufficient down pressure to uniformly advance helical sections a distance per revolution approximately equal to pitch of helix plates.
- H. Adjust rate of rotation and magnitude of down pressure for specific soil conditions and depths.
- I. Provide extension sections as required to achieve required results.
- J. Achieve both minimum embedment length and minimum effective torsional resistance prior to terminating foundation installation.
- K. Location Tolerances:

3.03 ACHIEVEMENT OF EFFECTIVE INSTALLATIONS

- A. In the event that the initial installation of a foundation element does not achieve both minimum embedment length and minimum effective torsional resistance, adjust, repair, or replace that foundation element so that it does achieve both requirements.
 - 1. The following procedures are considered acceptable and do not require prior approval unless otherwise indicated.
 - 2. All other proposed remedies must be approved by Owner prior to implementation.
- B. Minimum Embedment Length Achieved Before Achieving Minimum Effective Torsional Resistance: Use one of the following procedures:
 - 1. Continue installation to greater depths until minimum effective torsional resistance is achieved, provided that, if maximum length constraint is applicable, continued installation does not exceed said maximum length.
 - 2. Demonstrate acceptable foundation performance through testing.
 - 3. Replace foundation with one having a different helix configuration, as follows:
 - a. Embed replacement to a length placing last helix at least three times its own diameter beyond position of first helix of replaced foundation.
 - b. Achieve minimum effective torsional resistance.
 - c. Do not exceed any applicable maximum embedment length.
 - d. Test replacement.
- C. Allowable Torque Rating Reached Before Achieving Minimum Embedment Length: Use one of the following procedures:
 - 1. If permitted by Owner, terminate installation at length achieved.
 - 2. Replace foundation with one having either a higher torsional strength rating or a different helix configuration, as follows:
 - a. Achieve minimum embedment length and minimum effective torsional resistance.
 - b. Embed replacement to length that places last helix at least three times helix diameter beyond position of first helix of replaced foundation.
 - c. Do not exceed any applicable maximum embedment length limit.
 - 3. If allowed by location tolerance or approved by Owner, remove foundation section and reinstall as follows:
 - a. Position reinstalled foundation at least three times diameter of largest helix away from initial location.
 - b. Achieve original embedment length and torsional resistance criteria.
 - c. If repositioning requires installation of additional helical foundations, adjust nominal loads for spacing changes.
- D. Maximum Embedment Length Reached Before Achieving Minimum Effective Torsional Resistance: Use one of the following procedures:
 - 1. If allowed by location tolerance or approved by Owner, remove and reinstall foundation as follows:
 - a. Position reinstalled foundation at least three times diameter of largest helix away from initial location.
 - b. Achieve original minimum embedment length and minimum effective torsional resistance.
 - c. If repositioning requires installation of additional helical foundations, adjust nominal loads for spacing changes.

- 2. Demonstrate acceptable foundation performance through testing.
- 3. De-rate load capacity of helical foundation and install additional foundations as necessary; de-rated capacity and additional foundation location shall be subject to approval of Owner.
- 4. Replace foundation with one having a different helix configuration; achieve minimum embedment length and minimum effective torsional resistance.
- E. Failure of Field Quality Control Test: Use one of the following procedures:
 - 1. Install foundation to a greater depth and installation torque and re-test provided that, if a maximum embedment length constraint is applicable, continued installation will not exceed said maximum length constraint.
 - 2. Replace foundation with one having a different helix configuration. Embed last helix at least three times its own diameter beyond position of first helix of replaced foundation without exceeding any applicable maximum embedment length requirements. Re-test replacement.
 - 3. If approved by Owner, de-rate load capacity of helical foundation and install additional foundations at positions that are at least three times diameter of largest helix away from any other foundation locations; space anchors in cohesive soils not closer than four helix diameters.
- 3.04 FIELD QUALITY CONTROL
 - A. See Section 01 4000 Quality Requirements, for additional requirements.
 - B. Owner will employ independent testing agency to field test helical foundations.
 - C. Contractor shall cooperate with testing agency and provide full access to installed foundations.
 - D. Failure of Tests: Replace or re-drive, and re-test, helical foundations that any fail test and cannot be remedied using any of the procedures described above in "ACHIEVEMENT OF EFFECTIVE INSTALLATIONS" article.

END OF SECTION



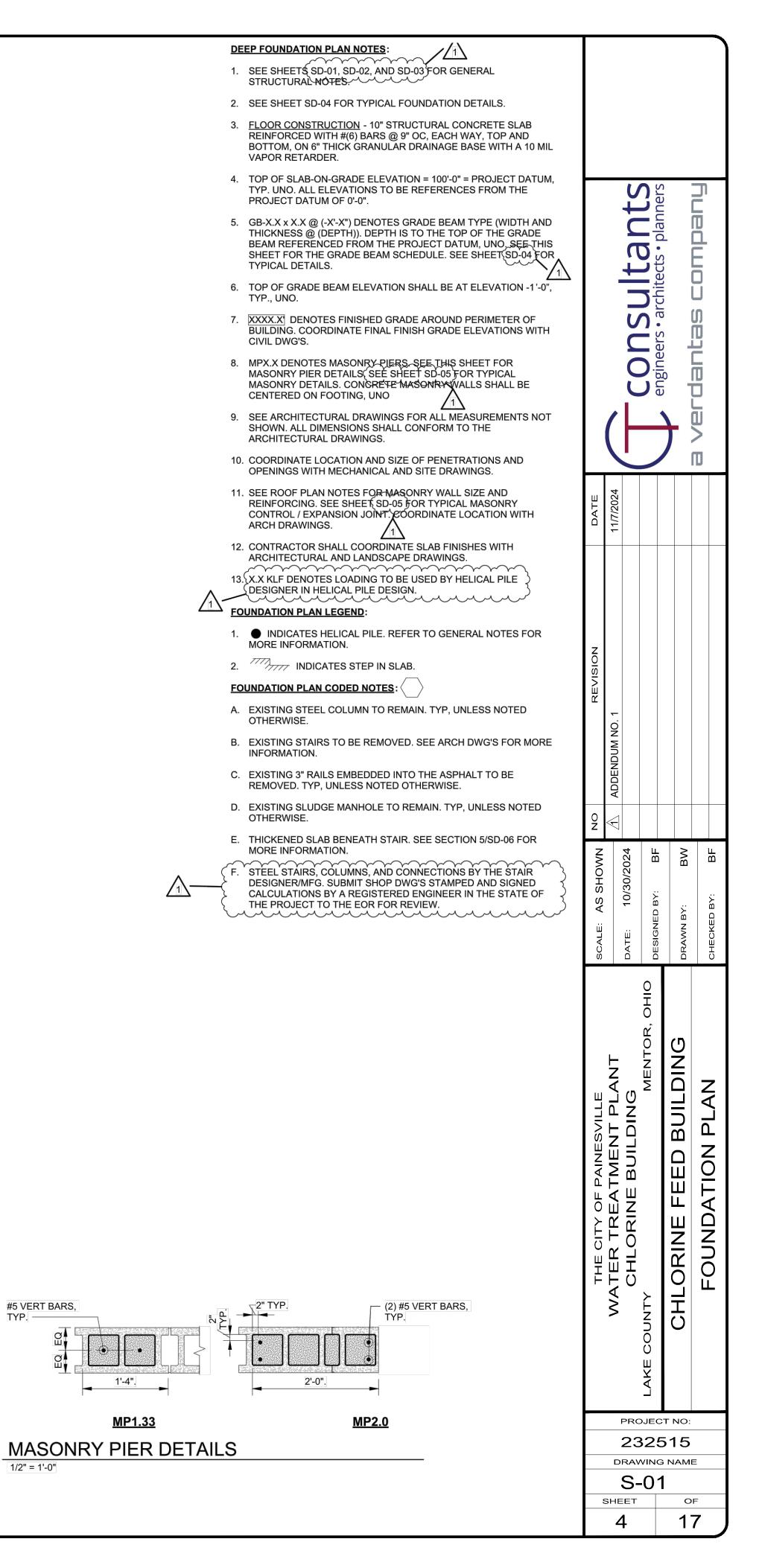
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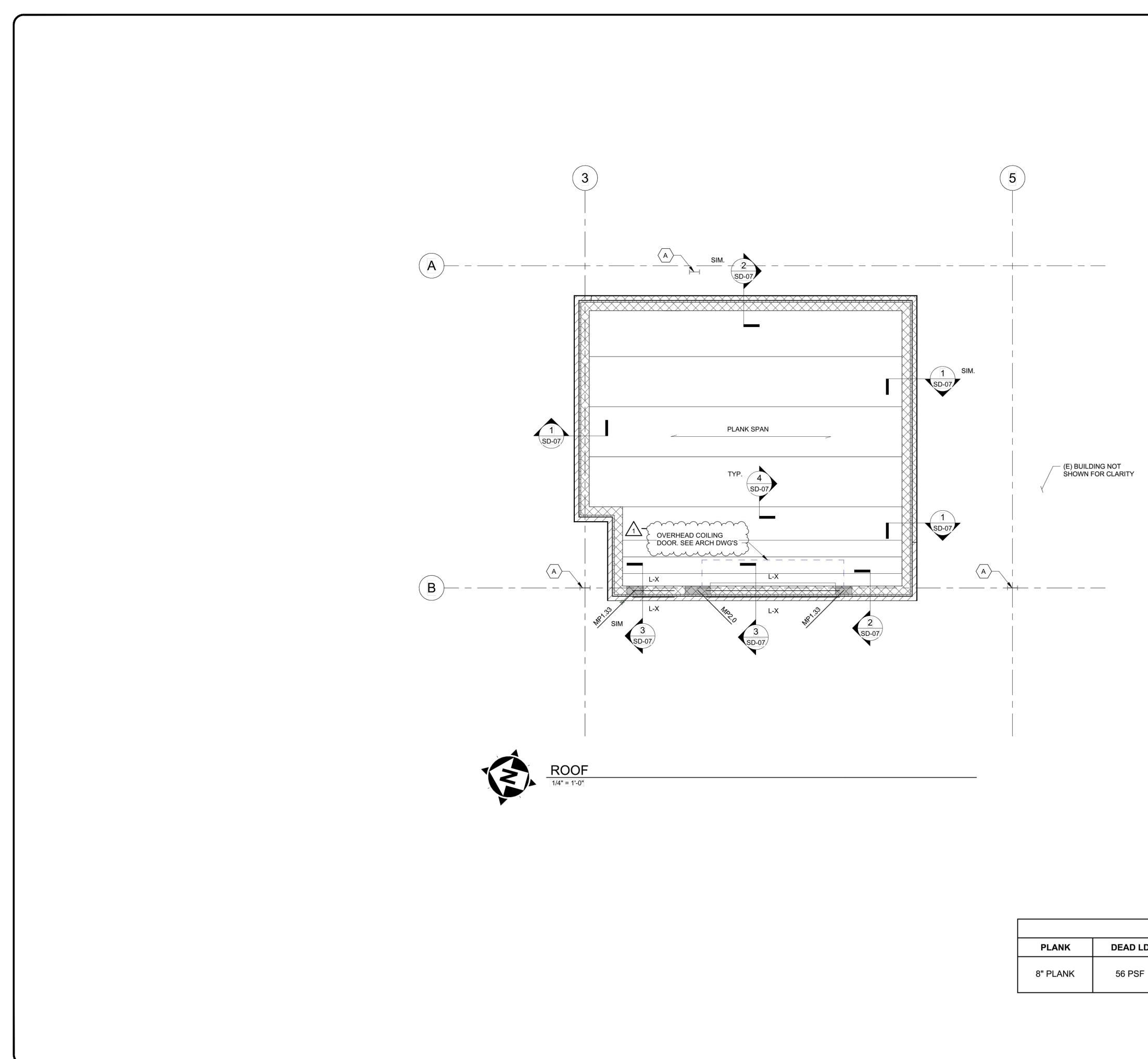
RADE	BEAM SCHEDULE		
EPTH)	MAIN REINF. (TOP & BOT.)	SIDE BARS	STIRRUPS
	(4) #5	(1) #5	#3 @ 9" O.C.
	(6) #5	(2) #5	#3 @ 18" O.C.
	(6) #5	(2) #5	#3 @ 18" O.C.

TYP.

#5 VERT BARS

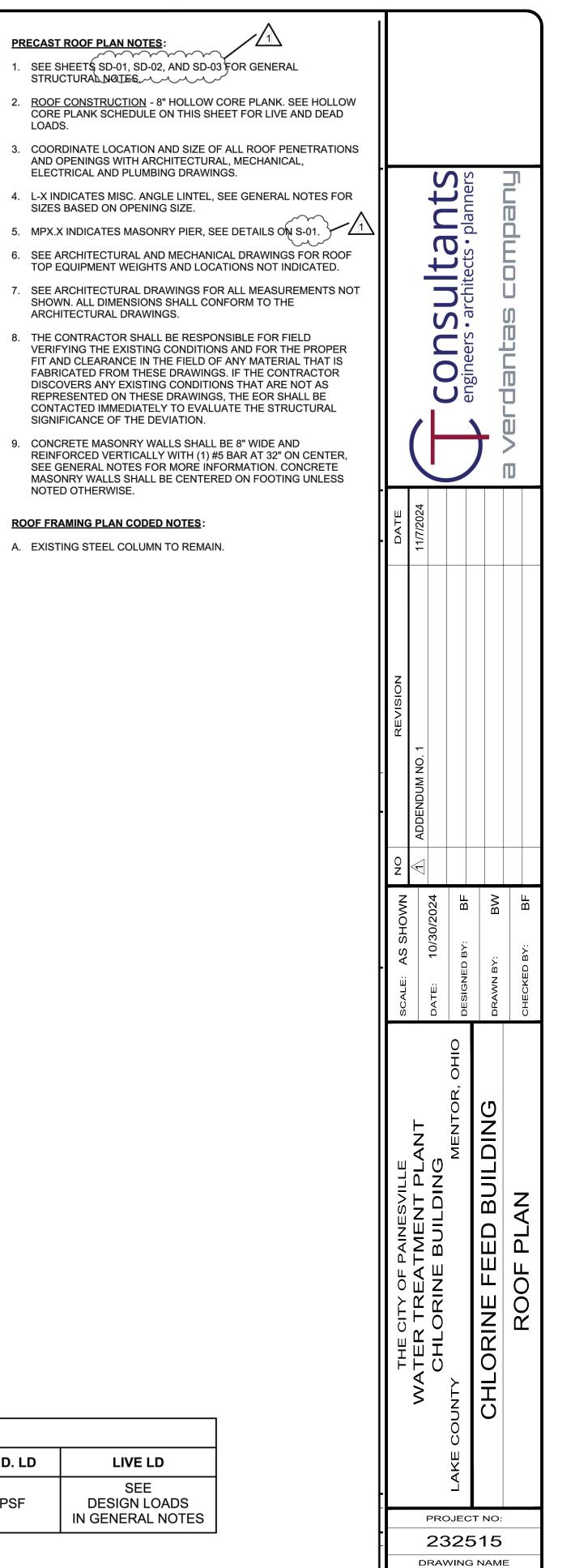
1/2" = 1'-0"





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	F	PRECAS
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8" PLANK	56 PSF	N



S-02

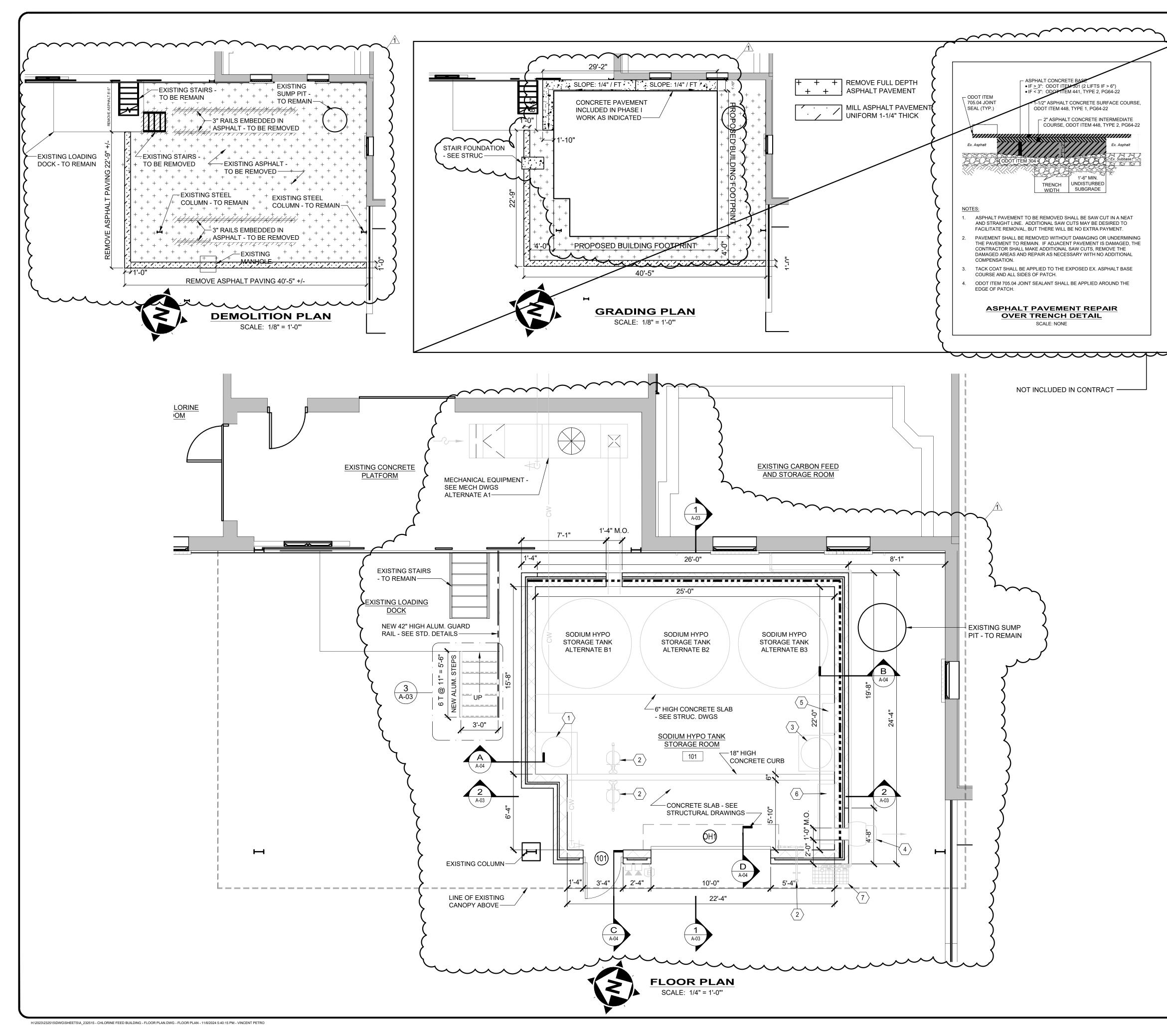
OF

17

SHEET

5

	LOADS	
OPPING	TOT D. LD	LIVE LD
N.A.	56 PSF	SEE DESIGN LOADS IN GENERAL NOTES



CHLORINE FEED BUILDING

CODE DATA:

GOVERNING CODES: 2024 OHIO BUILDING CODE (2021 IBC W/ STATE AMENDMENTS) 2024 OHIO PLUMBING CODE (2021 IPC W/ STATE AMENDMENTS) 2024 OHIO MECHANICAL CODE (2021 IMC W/ STATE AMENDMENTS) 2017 OHIO FIRE CODE (2015 IFC W/ STATE AMENDMENTS) 2017 OHIO ENERGY CODE (2012 IECC W/ STATE AMENDMENTS)

PROJECT DATA:

OCCUPANCY GROUP: H-3

CONSTRUCTION TYPE: IIB, UNPROTECTED, SPRINKLED

ALLOWABLE HEIGHT: 55'-0" ACTUAL HEIGHT: 13'-6"

ALLOWABLE NUMBER OF STORIES: 2 ACTUAL NUMBER OF STORIES: 1

ALLOWABLE AREA: 15,500 S.F. ACTUAL AREA: 649 S.F.

3 HOUR FIRE BARRIER BRICK: MIN 5.5" (TABLE 721.1(2)) CMU: MIN 5.3" (TABLE 721.1(2))

THIS BUILDING IS NOT REGULARLY OCCUPIED. SYSTEMS ARE PROVIDED FOR REMOTE MONITORING. ANY TEMPORARY OCCUPANCY WILL BE LIMITED TO MAINTENANCE OF EQUIPMENT AND PERIODIC TESTING ONLY.

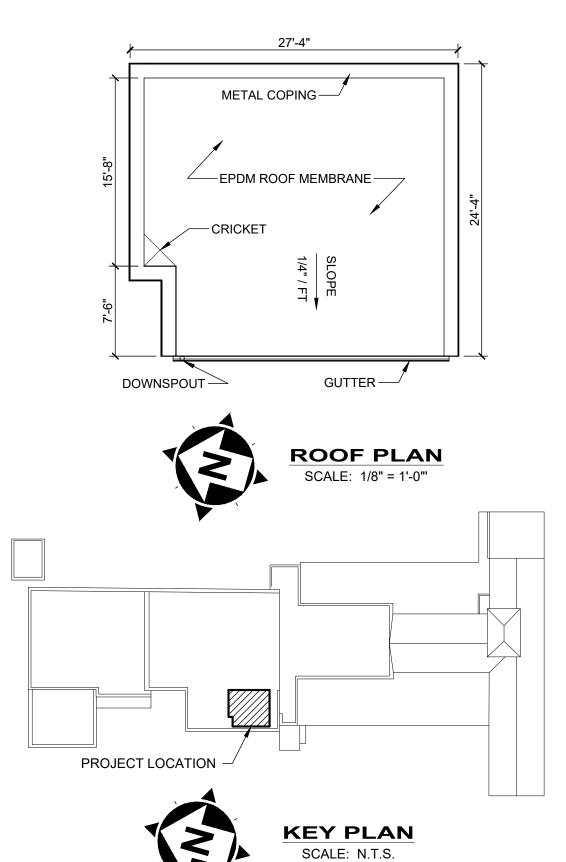
DEMOLITION NOTES:

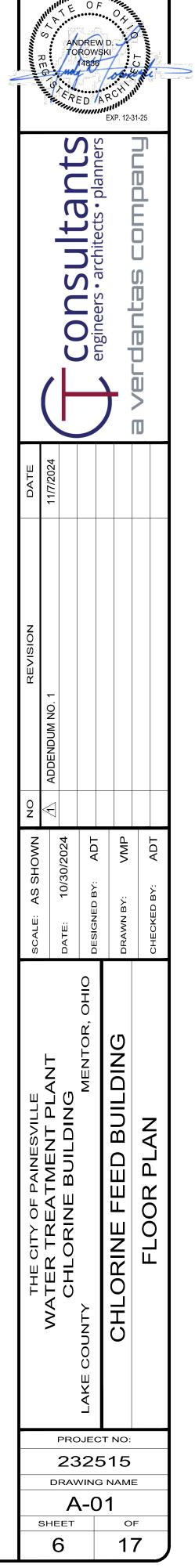
1. REMOVE EXISTING ASPHALT AS SHOWN ON PLAN

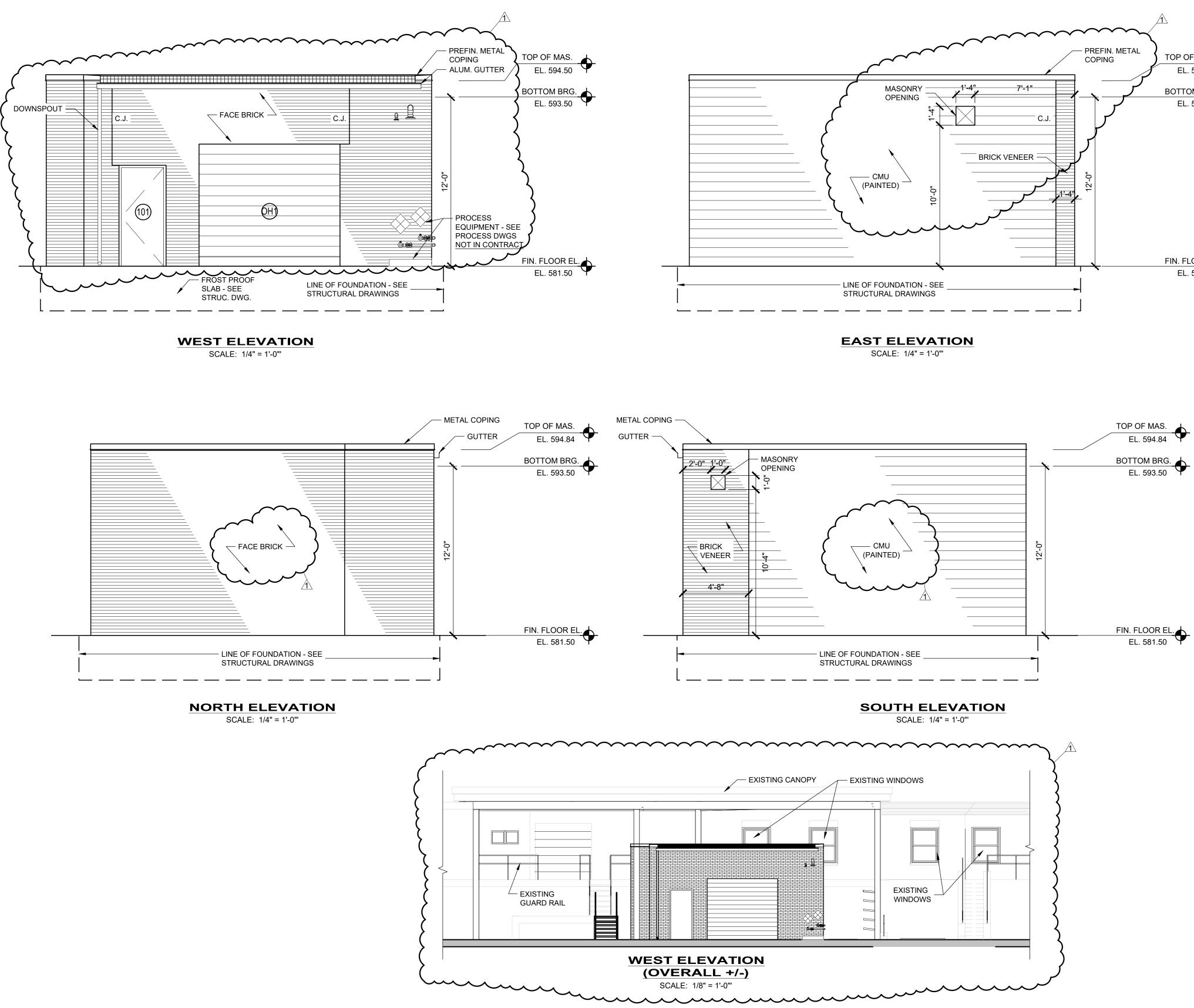
- 2. EXISTING LOADING DOCK STAIRS TO BE REMOVED
- 3. EXISTING 3" EMBEDDED RAIL SYSTEM TO BE REMOVED
- 4. EXISTING RACK STORAGE TO BE REMOVED
- 5. EXISTING MANHOLES TO REMAIN
- 6. EXISTING STEEL COLUMNS TO REMAIN

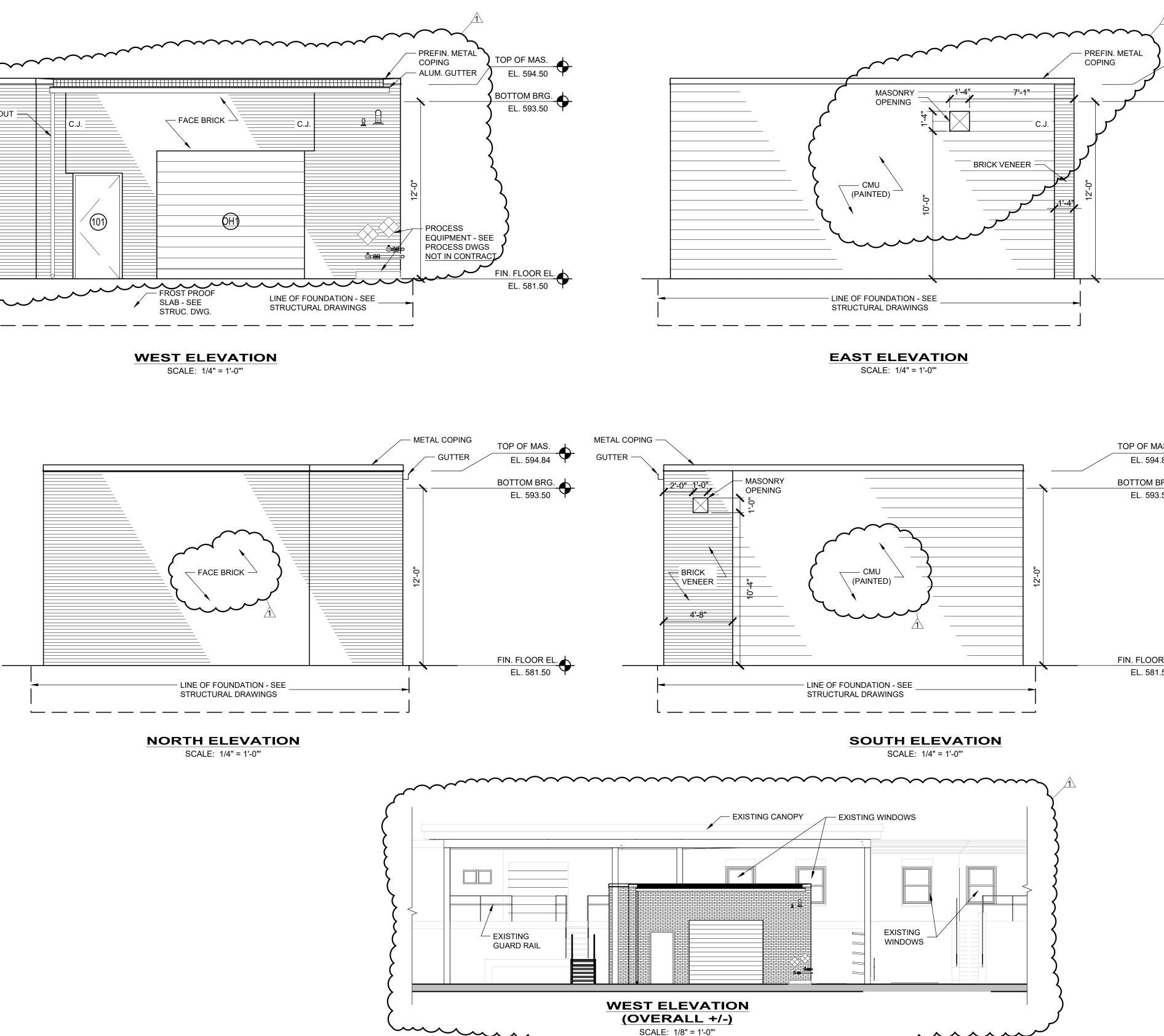
CODED NOTES:

- $\langle 1 \rangle$ WATER HEATER TANK NOT INCLUDED IN CONTRACT
- $\langle 2 \rangle$ EMERGENCY EYE WASH STATION NOT INCLUDED IN CONTRACT
- (3) DAY TANK WITH SCALE NOT INCLUDED IN CONTRACT
- 4
 EXHAUST FAN FUTURE PHASE
- $\overline{(5)}$ TRANSFER PUMPS <u>NOT INCLUDED IN CONTRACT</u>
- 6 DUPLEX PERISTALTIC PUMP SKID NOT INCLUDED IN CONTRACT
- (7) CHEMICAL CONTAINMENT PALLET NOT INCLUDED IN CONTRACT

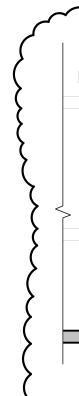




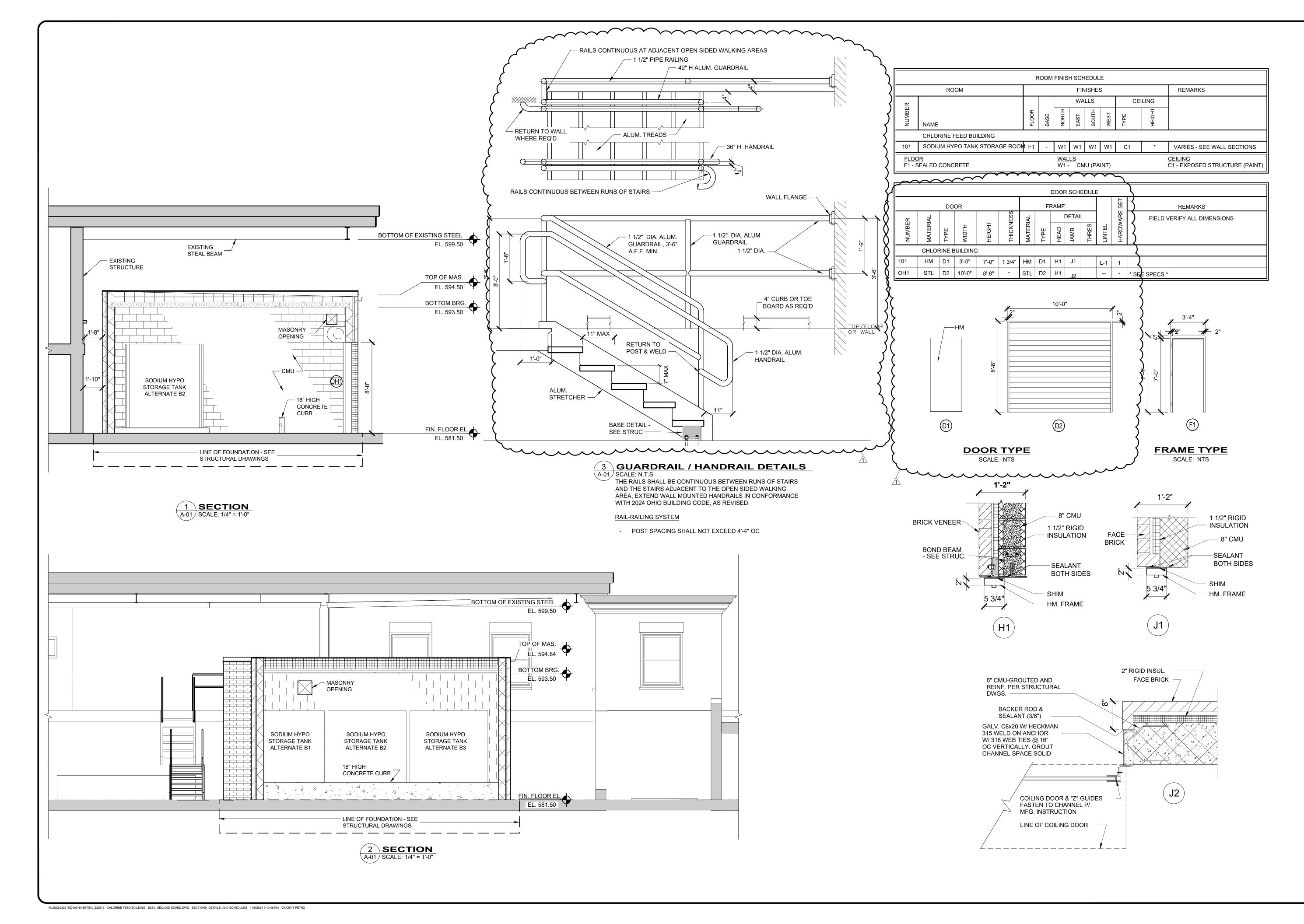


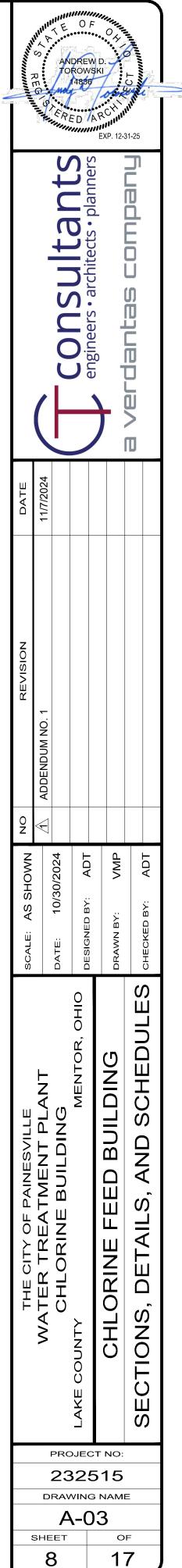


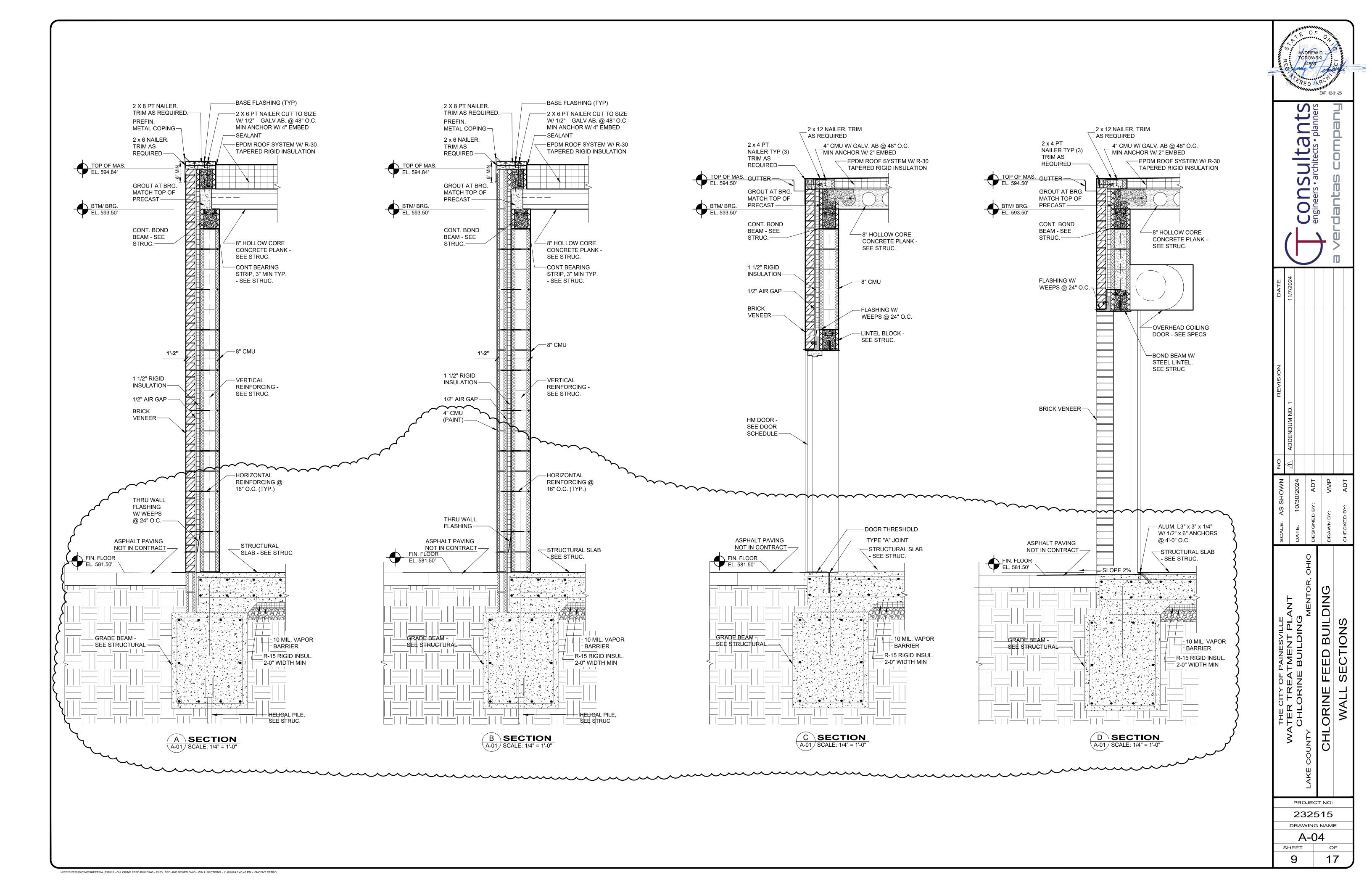
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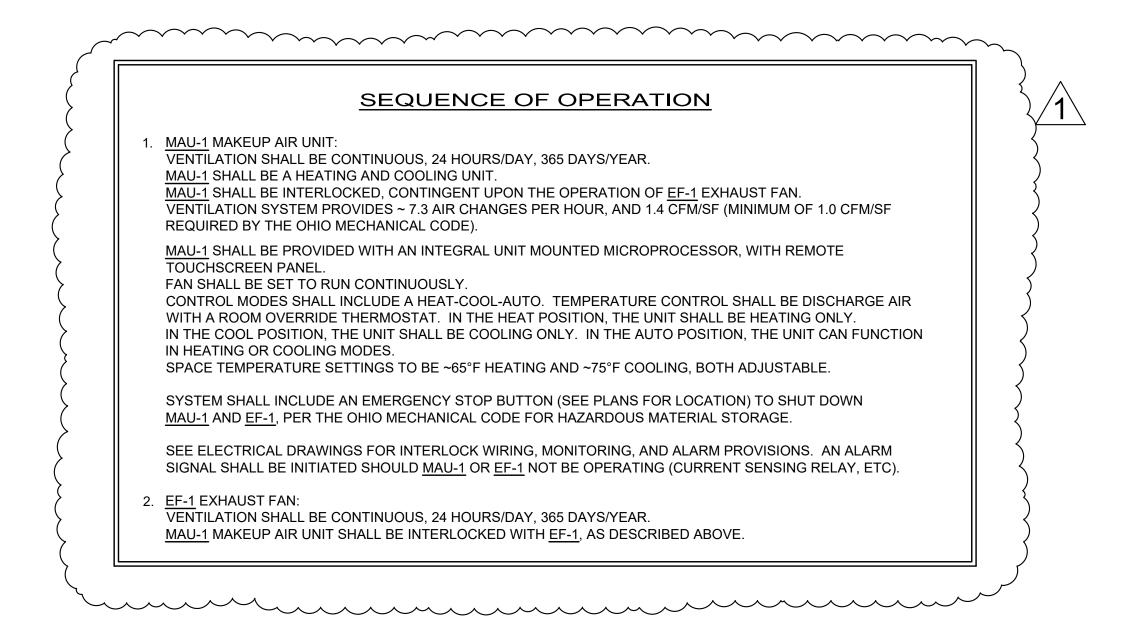


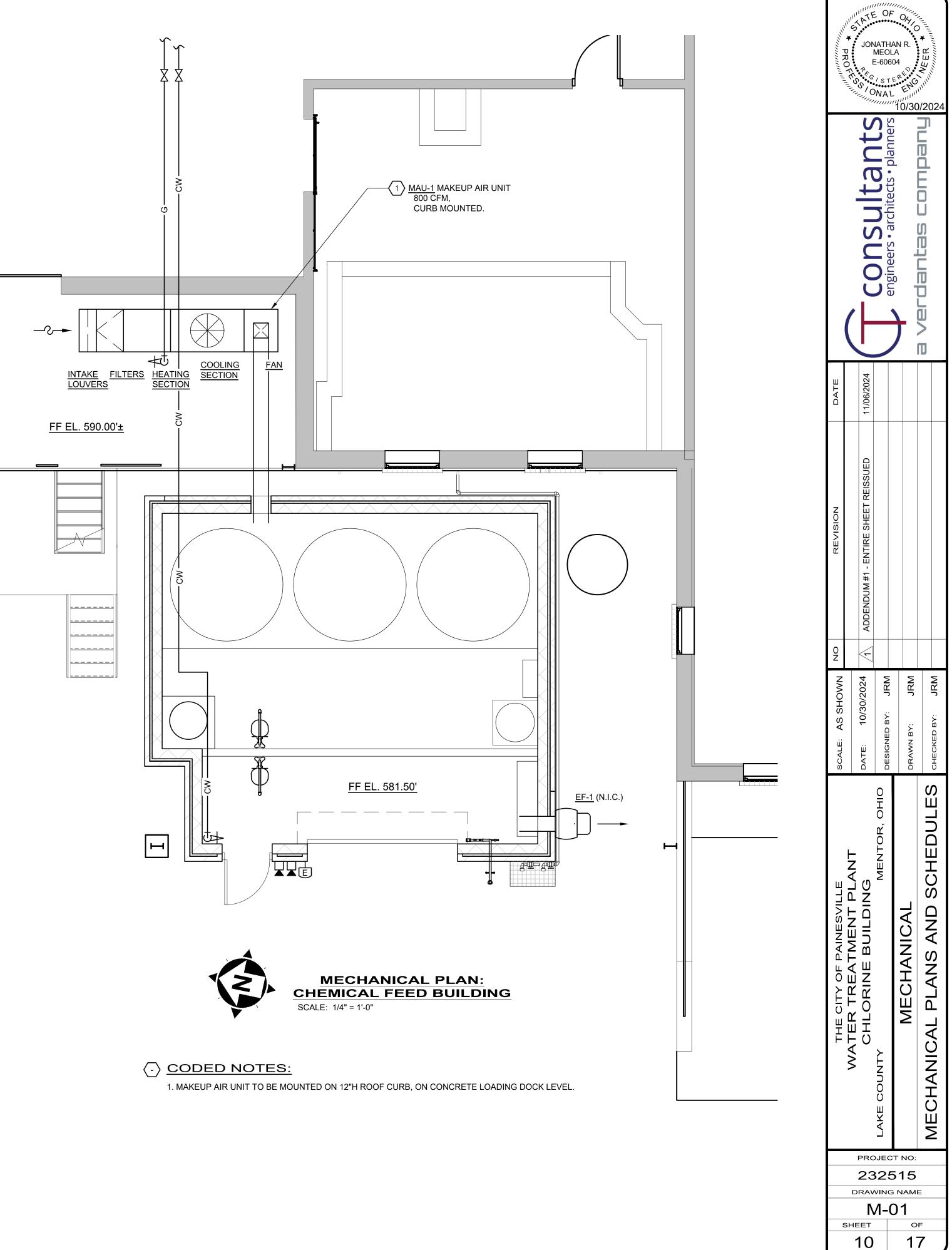
			HVAC EQUIPMENT SCHEDULE	1	
SYMBOL	QUANT.	AREA SERVED	DESCRIPTION	ACCESSORIES	ELECTRICAL REQUIREMENTS
MAU-1	1	CHEMICAL FEED BUILDING	GREENHECK #DGX-P116-H12-D1-3 MAKEUP AIR UNIT OUTDOOR, HORIZONTAL CONFIG., DIRECT-FIRED HEAT, NATURAL GAS, PACKAGED DX INTEGRAL COOLING, R-454B REFRIGERANT, RIGHT HAND ACCESS AND CONNECTIONS, TOP DISCHARGE, DIRECT-DRIVE, B.C. PLENUM FAN WITH VARIABLE FREQUENCY DRIVE(VFD), SECTIONS: INTAKE LOUVERS, FILTERS, GAS BURNER, DX COOLING, FAN. APPROX. DIMENSIONS: 159"L x 33"W x 39"H, APPROX. WEIGHT: 1,500#±. 800 CFM @ 0.50" E.S.P., 1.18" TOTAL S.P., 1,140 RPM, 0.28 BHP, 1/2 HP MOTOR, HEAT: 90 MBH INPUT, 83 MBH OUTPUT, 95°F △T AT 92% EFF., 7" BURNER OPERATING PRESSURE, 30:1 TURNDOWN RATIO. COOLING: 41 MBH TC, 22 MBH SC, 89.4/76.3 EAT, 61.9/61.8 LAT, 15.5 EER. FAN; 57 Lwa, 46 dBA, 3.5 SONES.	SEE SPEC. #237423 FOR ADDITIONAL INFO. DOUBLE WALL CONSTRUCTION (1" INSULATION) FAN AND HEAT SECTIONS HINGED ACCESS DOORS MOTORIZED OUTLET DAMPER, WITH END SWITCH HI-PRO POLYESTER COATING: ENTIRE UNIT AND ALL ACCESSORIES LOUVERED INLET HOOD WITH ALUMINUM MESH V-BANK FILTER SECTION WITH: 2" THICK, PLEATED, MERV-13 DISP. FILTERS MICROPROCESSOR UNIT CONTROLS, WITH REMOTE TOUCHSCREEN PANEL DISCHARGE AIR TEMPERATURE CONTROLS, WITH ROOM OVERRIDE THERMOSTAT FREEZE PROTECTION HEATING INLET AIR SENSOR COOLING INLET AIR SENSOR DIRTY FILTER SENSOR/SWITCH AUXILIARY CONTACTS: SUPPLY FAN STATUS, EXHAUST FAN INTERLOCK, EMERGENCY STOP. FM COMPLIANT GAS TRAIN, WITH HIGH/LOW GAS PRESSURE SWITCHES FLAME FAILURE ALARM LIGHT TEFC MOTOR, PREMIUM EFFICIENCY 12" ROOF CURB EMERGENCY STOP - SEE NOTE 2.	208/3/60 21.4 MCA 30A MOCP
EF-1 (N.I.C.)					

<u>NOTES:</u>

1. CHARACTERISTICS (RPM, HP, IMPELLERØ, PRESSURE DROP) SHALL NOT VARY BY MORE THAN 10% OF SPEC'D UNITS. SOUND VALUES SHALL NOT EXCEED THE VALUES INDICATED.

2. CONTRACTOR TO PROVIDE A MANUAL EMERGENCY SHUTOFF TO DE-ENERGIZE MAU-1 AND EF-1 EXHAUST FAN. EMERGENCY SHUTOFF TO BE MODEL #HVAC-120 AS MANUFACTURED BY PILLA ELECTRICAL PRODUCTS, INC., OR EQUAL. SHUTOFF TO BE 120-VOLT, RED PUSH BUTTON TYPE, PULL RESET, METALLIC NEMA 4, 4X, 12 ENCLOSURE, WITH LABEL TO READ: "VENTILATION SYSTEM EMERGENCY SHUTOFF". PROVIDE WITH #PILCLHCOV1 CLEAR HINGED COVER.





OST-INSTALLED FASTENERS CONT:

- FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING IN COORDINATION WITH INFORMATION HEREIN. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF CONFLICTS EXIST BETWEEN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND THE REQUIREMENTS HEREIN.
- REINFORCEMENT STEEL SHALL NOT BE CUT. PRIOR TO DRILLING THE CONCRETE, THE CONTRACTOR SHALL BE LOCATED WITH A MAGNETIC BAR LOCATOR POST-INSTALLED BOLTS AND FASTENERS SHALL BE INSTALLED TO MISS REINFORCEMENT STEEL IN CONCRETE. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
- DRILL HOLES USING ROTARY PERCUSSION DRILL WITH A DEPTH GAGE. DO NOT DRILL THROUGH FULL THICKNESS OF CONCRETE, USE OF A DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, ALL HOLES SHALL BE DRILLED PERPENDICULAR TO THE CONCRETE SURFACE. CLEAN HOLES IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. IF CONCRETE IS DAMP. BLOW DRY HOLE WITH OIL-FREE COMPRESSED AIR. CLEAN HOLE WITH WATER ONLY IF RECOMMENDED BY MANUFACTURER. ADHESIVE ANCHORS MAY NOT BE SET IF WATER IS SEEPING INTO HOLE AND THE STRUCTURAL ENGINEER. OF RECORD SHALL BE NOTIFIED.
- ANCHOR SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE SUBMITTED AND APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE DOUCMENTATION DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR ITS USE, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.
- THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER 'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.
- ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. CONTRACTOR SHALL CONTACT STRUCTURAL ENGINEER SHOULD THE LAYOUT OF THE ANCHOR, EMBEDMENT, SPACING OR EDGE DISTANCES, IS MODIFIED.
-). EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES:
- a. ANCHORAGE TO CONCRETE:
- ADHESIVE ANCHORS: HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD
- 2. HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND
- VACUUM WITH HAS-V-36 GRADE 36 THREADED ROD 3. HILTI HIT-RE 500v3 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS THREADED ROD
- 4. SIMPSON SET-XP WITH ASTM A36 THREADED ROD
- 5. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH ASTM A36 THREADED ROD APPROVED EQUAL
- MECHANICAL ANCHORS:
- 1. HILTI KWIK HUS-EZ (KH-EZ), KH-EZ CRC, KH-EZ SS316, KH-EZ C, KH-EZ E, KH-EZ I, AND KH-EZ P SCREW ANCHOR SAFE SET SYSTEM INSTALLED USING HOLLOW DRILL BIT AND VACUUM
- 2. HILTI KWIK BOLT-1 EXPANSION ANCHOR
- 3. HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR
- SIMPSON TITEN HD SCREW ANCHOR 5. SIMPSON STRONG-BOLT 2 WEDGE ANCHOR
- APPROVED EQUAL
- REBAR DOWELING INTO CONCRETE: 1. HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND
- VACUUM WITH CONTINUOUSLY DEFORMED REBAR 2. HILTI HIT-HY 500v3 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND
- VACUUM WITH CONTINUOUSLY DEFORMED REBAR 3. SIMPSON SET-XP WITH CONTINUOUSLY DEFORMED REBAR
- 4. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH
- CONTINUOUSLY DEFORMED REBAR
- 5. APPROVED EQUAL b. ANCHORAGE TO SOLID GROUTED MASONRY:
- ADHESIVE ANCHORS:
- 1. HILTI HIT-HY 270 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND
- VACUUM WITH HILTI HAS CONTINUOUSLY THREADEDED ROD OR DEFORMED REBAR. 2. SIMPSON SET-XP WITH ASTM A36 THREADED ROD OR CONTINUOUSLY DEFORMED REBAR
- 3. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH ASTM A36 THREADED ROD OR CONTINUOUSLY DEFORMED REBAR
- 4. APPROVED EQUAL MECHANICAL ANCHORS USE:
- 1. HILTI KWIK BOLT-1 EXPANSION ANCHOR
- 2. HILTI KWIK BOLT-TZ2 EXPANSION ANCHOR
- . HILTI KH-EZ, KH-EZ CRC, KH-EZ SS316, KH-EZ C, AND KH-EZ P SCREW ANCHORS SIMPSON STRONG-BOLT 2 WEDGE ANCHOR
- 5. SIMPSON WEDGE-ALL WEDGE ANCHOR
- 6. APPROVED EQUAL

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- c. ANCHORAGE TO HOLLOW / MULTI-WYTHE MASONRY:
- ADHESIVE ANCHORS USE: 1. HILTI HIT-HY 270 SAFE SET SYSTEM INSTALLED USING THE APPROPRIATE SIZE SCREEN TUBE PER THE ADHESIVE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND A HILTI HOLLOW DRILL BIT AND VACUUM WITH HILTI HAS CONTINUOUSLY THREADEDED ROD OR DEFORMED REBAR
 - SIMPSON SET-XP THE APPROPRIATE SIZE SCREEN TUBE PER THE ADHESIVE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS WITH ASTM A36 THREADED
- ROD 2. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH ASTM A36 THREADED ROD

d. APPROVED EQUAL

IELICAL PILES:

- 1. HELICAL PILES SHALL BE INSTALLED TO MEET THE MINIMUM TORQUE REQUIRED TO PROVIDE THE LOAD CAPACITIES SHOWN ON THE PLANS. THE MINIMUM TORQUE SHALL BE ENOUGH TO ACHIEVE THE REQUIRED BEARING CAPACITY, INCLUDING A SAFETY FACTOR OF 2. INSTALLATION TORQUE SHALL BE MONITORED THROUGHOUT THE INSTALLATION PROCESS.
- 2. HELICAL PILES ARE TO BE DESIGNED AND MANUFACTURED TO RESIST THE STRESSES INDUCED BY THE INSTALLATION OF THE HELICAL PILES INTO THE SOILS AND RESULTING FROM THE APPLIED LOADS.
- 3. HELICAL PILES ARE TO BE DESIGNED AND MANUFACTURED TO MEET THE CURRENT INTERNATIONAL BUILDING CODE (IBC) USED BY THE STATE IN WHICH THE PROJECT RESIDES. HELICAL PILES SHALL COMPLY WITH 2018 IBC SECTION 1810 AND ARE TO BE DESIGNED AND MANUFACTURED TO RESIST THE STRESSES INDUCED BY THE INSTALLATION OF THE HELICAL PILES AND RESULTING FROM THE APPLIED LOADS.
- 4. HELICAL PILES MANUFACTURE SHALL POSSES ICC ESR REPORT SHOWING THE HELICAL PILES MEET THE REQUIREMNTS OF THE INTERNATIONAL BUILDING CODE. HELICAL PILES SHALL CONFORM TO ICC-AC358 ACCEPTANCE CRITERIA FOR HELICAL FOUNDATION SYSTEMS.
- 5. SHOP DRAWINGS SHALL BE SUBMITTED TO THE AOR AND EOR FOR REVIEW 14 DAYS PRIOR TO INSTALLIOIN DATE FOR REVIEW. SHOP DRAWINGS ARE TO BE SUBMITTED WITH STAMPED AND SIGNED CALCULATIONS BY AN ENGINEER IN THE STATE OF THE PROJECT. SUBMITTAL SHALL INCLUDE, BUT IS NOT LIMITED TO, HELICAL PILE PLAN SHOWING LOCATIONS OF PILES, SHAFT SIZES, CONNECTIONS BETWEEN PILE SHAFTS, PLATE BEARING VALUES AND CAPACITIES, HELICAL PILE DESIGN LOADS (COMPRESSION, TENSION, LATERAL, BENDINGS), TYPE AND DIMENSIONS OF CENTRAL STEEL SHAFT, DIMENSIONS OF THE SHAFT, QUANTITY, SIZE, THICKNESS, AND SPACING OF THE HELICAL PLATES, MATERIAL TYPE AND STRENGTH, PROTECTION FROM CORROSION, EMBEDMENT DEPTHS, AND MINIMUM AND MAXIMUM TORGUE CAPACITIES.
- 6. LOCATIONS OF HELICAL PILES MAY NOT BE CHANGED WITHOUT WRITTEN APPROVAL FROM THE

- MET. THE SPECIAL INSPECTOR SHALL RECORD THE FOLLOWING: A. INSTALLATION DATE.
 - B. PILE MANUFACTURER.

 - TYPE INSTALLATION CONTRACTOR.
- ACHIEVED DURING INSTALLIZATION.
- - F. ACTUAL EMBEDMENT OF EACH PILE.
 - 9. SEE BOOK SPECIFICATION FOR ADDITIONAL INFORMATION AND SPECIFICATIONS.
 - 10. GENERAL CONTRACTOR SHALL COORDINATE ALL UTILITIES, UNDERGROUND HAZARDS, AND OR OBSTRUCTION
 - 11. ALLOWABLE TOLERANCES: CENTERLINE OF HELICAL PILES SHALL NOT BE MORE THAN 3 INCHES FROM INDICATED PLAN LOCATION, HELICAL PILE PLUMBNESS SHALL BE WITHIN 2 DEGREES OF INCHES OF THE DESIGN VERTICAL ELEVATION.

SPECIAL INSPECTIONS:

- 1. GENERAL SPECIAL INSPECTION REQUIREMENTS:
- REPORTS AND TEST RESULTS ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL.
- CONSTRUCTION. THE GENERAL CONTRACTOR OR CONTRACTOR SHALL NOT INCLUDE ANY COST FOR THE SPECIAL INSPECTIONS IN THE BID.
- ALONG WITH THE PERMIT APPLICATION. THE STATEMENT OF SPECIAL INSPECTIONS SHALL BE IN ACCORDANCE WITH IBC SECTION 1704.3.
- TESTING. 2. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:
- a. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK DESIGNATED TO ASSURE IT IS CONSTRUCTED IN CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS.
- b. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND TESTS TO THE BUILDING
- CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE WORK
- d. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND TESTS, AND CORRECTION OF OF OCCUPANCY
- e. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A STATEMENT OF CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
- 3. CONCRETE:
- (PERIODIC) b. REINFORCING BAR WELDING:
- VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706. (PERIODIC) INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" (PERIODIC)
- INSPECT ALL OTHER WELDS (CONTINUOUS) INSPECT ANCHORS CAST IN CONCRETE (PERIODIC) d. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS:
- RESIST SUSTAINED TENSION LOADS. (CONTINOUS) MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED ABOVE. (PERIODIC) VERIFY USE OF REQUIRED MIX DESIGN. (PERIODIC)
- q. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES. (CONTINUOUS)
- h. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES. (PERIODIC) i. INSPECT PRESTRESSED CONCRETE FOR: APPLICATION OF PRESTRESSING FORCES. (CONTINUOUS)
- GROUTING OF BONDED PRESTRESSING TENDONS. (CONTINUOUS) INSPECT ERECTION OF PRECAST CONCRETE MEMBERS. (PERIODIC)
- VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED SLABS, (PERIODIC),
- FORMED. (PERIODIC). m. NO INSPECTION IS REQUIRED FOR SLABS-ON-GRADE.
- 4. MASONRY: (LEVEL C) a. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS. (PERIODIC) b. VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:
 - TENDONS. (PERIODIC)

 - TENDONS AND ANCHORAGES (PERIODIC)
 - (CONTINUOUS) GROUT SPACE PRIOR TO GROUTING (CONTINUOUS)

 - TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF
 - MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION. (CONTINUOUS) WELDING OF REINFORCEMENT (CONTINUOUS)

 - APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE. (CONTINUOUS)

 - (CONTINUOUS) PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY (CONTINUOUS)

c. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS. (CONTINUOUS)

5. SOILS:

- BEARING CAPACITY. (PERIODIC)
- (PERIODIC)
- COMPACTION OF COMPACTED FILL. (CONTINUOUS)

BEEN PROPERLY PREPARED. (PERIODIC)

INSTALLTION TORQUE (CONTINUOUS)

6. HELICAL PILE FOUNDATIONS:

(CONTINUOUS)

REQUIRED. (CONTINUOUS)

7.	ALL HELICAL PILES, PLATES AND CONNECTIONS MUST BE CORROSION PROTECTED BY HOT DIP

8. SPECIAL INSPECTIONS OF THE HELICAL PILE INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 1705.9 OF THE 2018 IBC UNLESS EXCEPTIONS NOTED IN SECTION 1704.2 OF IBC ARE

C. ALLOWABLE AND ULTIMATE CAPACITY NOTED ON THE SHOP DRAWINGS FOR EACH PILE

D. MINIMUM & MAXIMUM ALLOWABLE INSTALLATION TORQUES, AND ACTUAL TORQUE

E. SHAFT DIAMETER AND THE CONFIGURATION OF HELICAL PLATES ON EACH PILE.

OBSTRUCTIONS. ENGINEER/DESIGNER DOES NOT HAVE INFORMATION TO LOCATE / COORDINATE OBSTRUCTIONS AND DOES NOT TAKE RESPONSIBILITY FOR ANY UTILITY, UNDERGROUND HAZARD,

DESIGN ALIGNMENT, AND THE TOP ELEVATION OF HELICAL PILE SHALL BE WITHIN +1 INCH TO -2

PER THE IBC SECTION 1705, SPECIAL INSPECTIONS ARE REQUIRED FOR THE FOLLOWING ITEMS

a. SPECIAL INSPECTIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE REQUIRED BY THE BUILDING CODE AND ARE TO BE COMPLETED AS NOTED ON THE CONSTRUCTION DOCUMENTS AND THE IBC. b. THE OWNER SHALL CONTRACT / EMPLOY THE 3RD PARTY INSPECTION AGENCY TO PERFORM THE 3RD PARTY SPECIAL INSPECTIONS AND TO ACT AS THE OWNER'S AUTHORIZED AGENT FOR PERFORMING THE SPECIAL INSPECTIONS. THE OWNER IS RESPONSIBLE FOR HIRING AND PAYING THE 3RD PARTY SPECIAL INSPECTION AGENCY DIRECTLY AS STATED IN SECTION 13.4, TEST AND INSPECTIONS, OF THE AIA DOCUMENT A201 – 2017 – GENERAL CONDITIONS OF THE CONTRACT FOR

THE OWNER SHALL SUBMIT THE STATEMENT OF SPECIAL INSPECTIONS PER IBC SECTION 107.1

d. THE INDEPENDENT AGENCY SHALL BE ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION AND SHALL BE QUALIFIED IN ACCORDANCE WITH ASTM C1077 AND ASTM E329 FOR SPECIAL INSPECTION

OFFICIAL AND REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR

BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE

ANY DISCREPANCIES NOTED IN THE INSPECTIONS OR TESTS, SHALL BE SUBMITTED WITHIN THE AGREED UPON TIME TO THE BUILDING OFFICIAL PRIOR TO THE START ISSUANCE OF A CERTIFICATE

RESPONSIBILITY ACKNOWLEDGING THE AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS

a. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.

ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO

PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. (CONTINUOUS)

CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL

INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING

PROPORTIONS OF SITE-MIXED MORTAR, GROUT AND PRESTRESSING GROUT FOR BONDED

GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING

 PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS. (PERIODIC) PLACEMENT OF REINFORCEMENT, CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES.

 PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS (CONTINUOUS) SIZE AND LOCATION OF STRUCTURAL ELEMENTS (PERIODIC)

 PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F). (PERIODIC)

PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS

a. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN

b. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.

c. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS. (PERIODIC) d. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND

e. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS

a. VERIFY INSTALLATION EQUIPMENT USED, PILE DIMENSIONS, TIP ELEVATIONS, FINAL DEPTH, FINAL

b. VERIFY ELEMENT MATERIALS, SIZES AND LENGTHS COMPLY WITH THE REQUIREMENTS

c. DETERMINE THE CAPACITIES OF TEST ELEMENTS AND CONDUCT ADDITIONAL LOAD TESTS, AS

d.	INSPECT DRIVING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH	STRUCTU	RAL DRAWING ABBREVIATIONS		
e.	ELEMENT. (CONTINUOUS) VERIFY PLACEMENT LOCATIONS AND PLUMBNESS. DETERMINE REQUIRED PENETRATIONS TO ACHIEVE DESIGN CAPACITY, RECORD TIP AND BUTT ELEVATIONS AND DOCUMENT ANY DAMAGE TO FOUNDATION ELEMENT. (CONTINUOUS)	ADDL ADJ ALT & APPROX ARCH @	ADDITIONAL ADJACENT ALTERNATE AND APPROXIMATELY ARCHITECT or ARCHITECTURAL AT or SPACING	SCHED SECT SF SIM SOG SPA SPEC(S) SQ	SCHEDULE SECTION SQUARE FOOT SIMILAR SLAB-ON-GRADE SPACING SPECIFICATION(S) SQUARE
		B/ BL BLDG BM BRG BTWN BOT	BOTTOM OF BUILDING LINE BUILDING BEAM BEARING BETWEEN BOTTOM	STD STL STR STRUCT SYM T	STANDARD STEEL STRUCTURAL STRUCTURAL SYMMETRICAL TOP
		CL CLR CTR COL CONC CONST CONT CJ CMU CONT CUFT CY	CENTERLINE CLEAR CENTER COLUMN CONCRETE CONSTRUCTION CONTINUOUS CONTROL/CONSTRUCTION JOINT CONCRETE MASONRY UNIT CONCRETE MASONRY UNIT CONTINUOUS CUBIC FEET CUBIC YARDS	T/ T&B TEMP THRU TRANS TYP UN or UNO VERT VIF w/ w/o	TOP OF TOP AND BOTTOM TEMPERATURE STEEL THROUGH TRANSVERSE TYPICAL UNLESS NOTED (OTHERWISE) VERTICAL VERIFY IN FIELD WITH WITHOUT
5 1 1 1 THE 1		DEMO DIAG DIA or ø DIM DN DWG DWL	DEMOLITION DIAGONAL DIAMETER DIMENSION DOWN DRAWING DOWEL	WP WT WWF	WORKPOINT WEIGHT WELDED WIRE FABRIC
		EA EF EJ ELEC EMBED EQ EQUIP ES EW EX EXIST EXP EXT	EACH EACH FACE EXPANSION JOINT ELEVATION ELECTRICAL EMBEDDED, EMBEDMENT EQUAL EQUIPMENT EACH SIDE EACH WAY EXISTING EXISTING EXPANSION EXTERIOR		
OF		FAB FDN FIN FLG FLR FS FT FTG	FABRICATE FOUNDATION FINISH FLANGE FLOOR FARSIDE FOOT, FEET FOOTING		
S		GA GAL GALV GC GEN GLB GR GYP BD	GAGE GALLON GALVANIZED GENERAL CONTRACTOR GENERAL GLUE LAMINATED BEAM GRADE GYPSUM BOARD		
D		HC HORIZ HT HVY	HOLLOW CORE HORIZONTAL HEIGHT HEAVY		
MP S)		ID IF IN INFO INT INV	INSIDE DIAMETER INSIDE FACE INCH INFORMATION INTERIOR INVERT		
		JST JT	JOIST JOINT		
		K KSF KSI	KIPS KIPS PER SQUARE FOOT KIPS PER SQUARE INCH		
3		L LBS LF LG LL LLH	ANGLE POUNDS LINEAL FEET LONG LIVE LOAD LONG LEG HORIZONTAL		

LLV LONG LEG VERTICAL LOC LOCATION LONG LONGITUDINAL MAX MAXIMUM MECH MECHANICAL MFR MANUFACTURER MIN MINIMUM MISC MISCELLANEOUS MK MARK MO MASONRY OPENING MTL METAL NO or # NUMBER NOM

NOMINAL NEARSIDE NOT TO SCALE ON CENTER

NS

OC

OD

OF

PC

OPNG

REQD

NTS

OUTSIDE FACE OPENING PRECAST

PERPENDICULAR
PLATE
POUNDS PER LINE
PLY WOOD
PREFABRICATED
POUNDS PER SQU
POUNDS PER SQU
QUANTITY
RADIUS
REFERENCE
REINFORCEMENT,

REQUIRED

STRUCTURAL DRAWING ABBREVIATIONS

OUTSIDE DIAMETER

ULAR R LINEAL FOOT

ATED R SQUARE FOOT R SQUARE INCH

REINFORCING, REINFORCED

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THE CITY OF PAINESVILLE	WATER TREATMENT PLANT	CHLORINE BUILDING	LAKE COUNTY MENTOR, OHIO DESIGNED BY:	ľ		CENEDAL NOTES	
	WATER TREATMENT PLANT		LAKE COUNTY MENTOR, OHIO				
THE CITY OF PAINESVILLE	WATER TREATMENT PLANT						

