

10/14/2022 8:11:10 PM U:\02\_Active Projects\Red Springs Inspection\2020-10-14 Repair Plan Drawings\Working Drawings\Red Springs Filter Bldg R2.Lvt

DESIGN CRITERIA

BUILDING CODE: NORTH CAROLINA STATE BUILDING CODE, 2018 EDITION
CONCRETE DESIGN CODE: ACI 318-14, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
CONCRETE DESIGN METHOD: EQUIV. RECTANGULAR STRESS BLOCK
STEEL DESIGN CODE: AISC 360-10, SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, LRFD
STEEL DESIGN METHOD: ELASTIC ANALYSIS, PLASTIC DESIGN

WIND LOAD

BASIC WIND SPEED: 131 MPH
WIND IMPORTANCE FACTOR (Iw): 1.0
RISK CATEGORY: IV
WIND EXPOSURE CATEGORY: C
ANALYSIS PROCEDURE: DIRECTIONAL PROCEDURE - PART 1
COMPONENTS & CLADDING PRESSURES: CALCULATED PER ASCE 7-10

SNOW LOAD

GROUND SNOW LOAD (Pg): 10 PSF
RISK CATEGORY: IV
SNOW IMPORTANCE FACTOR (Is): 1.2
TERRAIN CATEGORY: C
EXPOSURE FACTOR (Ce): 1.0
THERMAL FACTOR (Ct): 1.0

SEISMIC LOAD

RISK CATEGORY: II
SEISMIC IMPORTANCE FACTOR (Ie): 1.5
MAPPED SPECTRAL RESPONSE ACCELERATION (Ss): 27.9%
MAPPED SPECTRAL RESPONSE ACCELERATION (Si): 11.4%
SITE CLASS: D
DESIGN SPECTRAL RESPONSE ACCELERATION (Sds): 29.3%
DESIGN SPECTRAL RESPONSE ACCELERATION (Sdi): 17.8%
SEISMIC DESIGN CATEGORY: D

LIVE LOADS

ROOF (MINIMUM): 20 PSF

GENERAL NOTES

- 1. THE STRUCTURAL DRAWINGS ARE TO BE USED IN CONJUNCTION WITH ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS.
2. THE CONTRACTOR SHALL COORDINATE BETWEEN ALL TRADES. CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHERS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND THE STRUCTURAL ENGINEER IN A TIMELY FASHION THAT PERMITS CLARIFICATIONS WITHOUT EFFECTING THE CONSTRUCTION SCHEDULE.
3. THESE DRAWINGS, ALONG WITH ANY SPECIFICATIONS ISSUED, CONSTITUTE THE CONTRACT DESIGN DOCUMENTS FOR THIS PROJECT. ANY DISCREPANCY BETWEEN THE TWO SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR STRUCTURAL ENGINEER FOR CLARIFICATION. FOR ESTIMATING PURPOSES THE CONTRACTOR SHALL ASSUME THE MORE COSTLY ALTERNATIVE. NO MATERIALS MAY BE ORDERED, AND NO WORK MAY PROCEED UNTIL THE DISCREPANCY IS RESOLVED BY THE DESIGN PROFESSIONAL.
4. ALTERNATES OR SUBSTITUTIONS TO STRUCTURAL MATERIALS OR DESIGN ARE AT THE SOLE DISCRETION OF THE LICENSED STRUCTURAL ENGINEER OF RECORD. ANY MODIFICATION MUST BE APPROVED IN THE MANNER SET FORTH IN THE "FRONT END" SPECIFICATIONS.
5. ALL STANDARDS REFERENCED WITHIN THESE DOCUMENTS ARE TO BE THE EDITIONS REFERENCED IN CHAPTER THIRTY-FIVE OF THE INTERNATIONAL BUILDING CODE.
6. STRUCTURAL MEMBERS, INCLUDING BEAMS, COLUMNS, JOISTS, TRUSSES, WALLS, SLABS AND BRACING ELEMENTS, ARE DESIGNED FOR THE FINAL DESIGN LOADS GIVEN ON THIS SHEET. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING. SHORING IS TO BE DESIGNED TO PRECLUDE THE OVERSTRESSING ANY STRUCTURAL ELEMENT (AS REQUIRED AT ANY STAGE OF CONSTRUCTION) UNTIL COMPLETION OF THIS PROJECT.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ON-SITE SAFETY. AT A MINIMUM, THE CONTRACTOR IS TO RESEARCH AND IMPLEMENT ALL SAFETY REGULATIONS IN FORCE IN THE JURISDICTION OF THIS PROJECT. PRIOR TO THE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL BRING TO THE ATTENTION OF THE STRUCTURAL ENGINEER ANY STRUCTURAL DETAIL THAT WOULD PRODUCE AN UNUSUALLY UNSAFE CONDITION.

REINFORCED MASONRY

- 1. ALL REINFORCED MASONRY WORK SHALL COMPLY WITH THE SPECIFICATIONS FOR MASONRY STRUCTURES, ACI 530.1-08 AND THE BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530-08.
2. UNLESS NOTED OTHERWISE, HOLLOW MASONRY UNITS SHALL CONFORM TO ASTM C90, LIGHTWEIGHT, WITH A MINIMUM COMPRESSIVE STRENGTH fm = 1500 PSI ON THE NET BLOCK AREA.
3. MORTAR SHALL CONFORM TO ASTM C270 CEMENT-JME TYPE M OR S, MINIMUM COMPRESSIVE STRENGTH TO BE 1800 PSI.
4. COURSE MASONRY GROUT SHALL CONFORM TO ASTM C476 WITH A MAXIMUM AGGREGATE SIZE OF 3/8". MINIMUM COMPRESSIVE STRENGTH SHALL BE 3000 PSI AT 28 DAYS, PROVIDE CLEAN OUT OPENINGS WHERE GROUT LIFTS EXCEED 48".
5. CONCRETE MASONRY QUALITY CONTROL:
A. WORK IN PROGRESS SHALL BE INSPECTED FOR CONFORMANCE WITH SPECIFIED MATERIALS AND THAT WORKMANSHIP AND CONSTRUCTION IS IN COMPLIANCE WITH PLANS, SPECIFICATIONS, AND INDUSTRY STANDARDS.
B. WORK SHALL BE SAMPLED AND TEST:
MORTAR: 2X4 CYLINDERS OR 2 INCH CUBES PER ASTM C780, 1 TEST OF 3 CYLINDERS OR CUBES PRIOR TO CONSTRUCTION, 1 TEST OF 3 CYLINDERS OR CUBES ON EACH OF THE FIRST DAYS OF CONSTRUCTION, AND 1 TEST OF 3 CYLINDERS OR CUBES FOR EACH 5000 SF OF WALL AREA OR PER WEEK, WHICHEVER OCCURS FIRST.
GROUT: TEST 3X3X6 SAMPLE CAST BETWEEN BLOCK UNITS (SEE NCMA TEK - 23A) CAP PER ASTM C617 AND TEST PER ASTM C39. TAKE 2 SPECIMENS PER TEST EACH 30 CUBIC YARDS OF GROUT OR FRACTION THEREOF PLACED EACH DAY AND WHEN MIX PROPORTIONS ARE CHANGED.
6. BOND BEAMS SHALL BE REINFORCED WITH (2) #5 CONTINUOUS (1 TOP AND 1 BOTTOM) FOR 8 INCH "U" BLOCKS, AND (2) #5 BOTTOM FOR 12 INCH "U" BLOCKS. PROVIDE CORNER BARS AT WALL CORNERS AND INTERSECTIONS.
7. ALL EXTERIOR MASONRY WALLS SHALL BE REINFORCED FULL HEIGHT WITH #6 (VERTICAL) AT 48" ON CENTER AND WITH A #6 HOOKED DOWELS INTO THE FOOTING AT EACH VERTICAL BAR, UNLESS NOTED OTHERWISE. DOWELS AND VERTICAL REBAR SHALL LAP 72 BAR DIAMETERS (MIN.), CENTER ALL REINFORCING STEEL IN THE WALL.
8. ALL MASONRY WALLS SHALL HAVE LADDER TYPE HORIZONTAL REINFORCING FABRICATED WITH GALVANIZED 9 GAUGE SIDE RODS IN ALTERNATE COURSES. HORIZONTAL REINFORCING SHALL INCLUDE CORNER AND INTERSECTING WALL PIECES.
9. ALL HORIZONTAL AND VERTICAL REBAR SHALL BE POSITIONED IN BLOCK CELL BY PREFABRICATED WIRE POSITIONER AT 48" MAXIMUM (9 GAUGE MIN.)
10. LAP REINFORCING STEEL (#3 AND LARGER) 72 BAR DIAMETERS (MIN.) UNLESS NOTED OTHERWISE.
11. ALL BLOCK CELLS SHALL BE FILLED SOLID WITH GROUT WHERE REINFORCING BARS OCCUR.
12. SEE ARCHITECTURAL DRAWINGS FOR THE LOCATION AND DETAILS OF ALL VERTICAL JOINTS IN MASONRY CONSTRUCTION.

STEEL

- 1. ALL WELDS ARE TO CONFORM WITH ANSIAWS D1.1 STANDARD AND ARE TO BE MADE BY CERTIFIED WELDERS.
2. A WELD SCHEDULE FOR ALL FIELD WELDS SHALL BE FURNISHED BY THE ERECTOR. THIS SCHEDULE IS TO BE PREPARED BY A COMPETENT DESIGNER OF WELDS AND WILL INDICATE AT A MINIMUM PREHEAT, THE WELD FILLER MATERIAL, THE PROPER WELD DEPOSITION RATE AND THE WELDING MACHINE SETTINGS.
3. ALL STEEL ELEMENTS AND CONNECTIONS WHICH WILL BE PERMANENTLY EXPOSED TO EXTERIOR CONDITIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

MATERIALS

- 1. STEEL
ANGLES & CHANNELS ASTM A36, Fy = 36 KSI
PLATES & BARS (GENERAL) ASTM A36, Fy = 36 KSI
ANCHOR RODS ASTM F1554 GRADE 36
2. REINFORCING STEEL
GENERAL REINFORCING ASTM A615, Fy = 60 KSI
3. WELD ELECTRODES
GENERAL - ROLLED OR FORMED MEMBERS E70xx ELECTRODES, CVN = 20#-FT AT 40 DEG.
4. MASONRY
CONCRETE MASONRY UNITS NORMAL WEIGHT, fm = 1,500 PSI
GROUT FINE, MIN. COMPRESSIVE STRENGTH = 2000 PSI
MORTAR TYPE S



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RED SPRINGS FILTER BUILDING
REPAIR PLAN

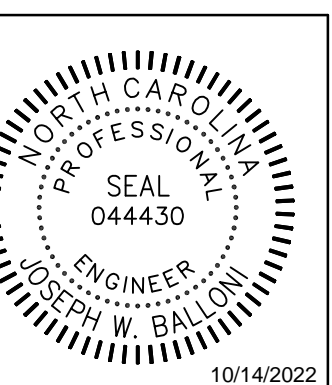


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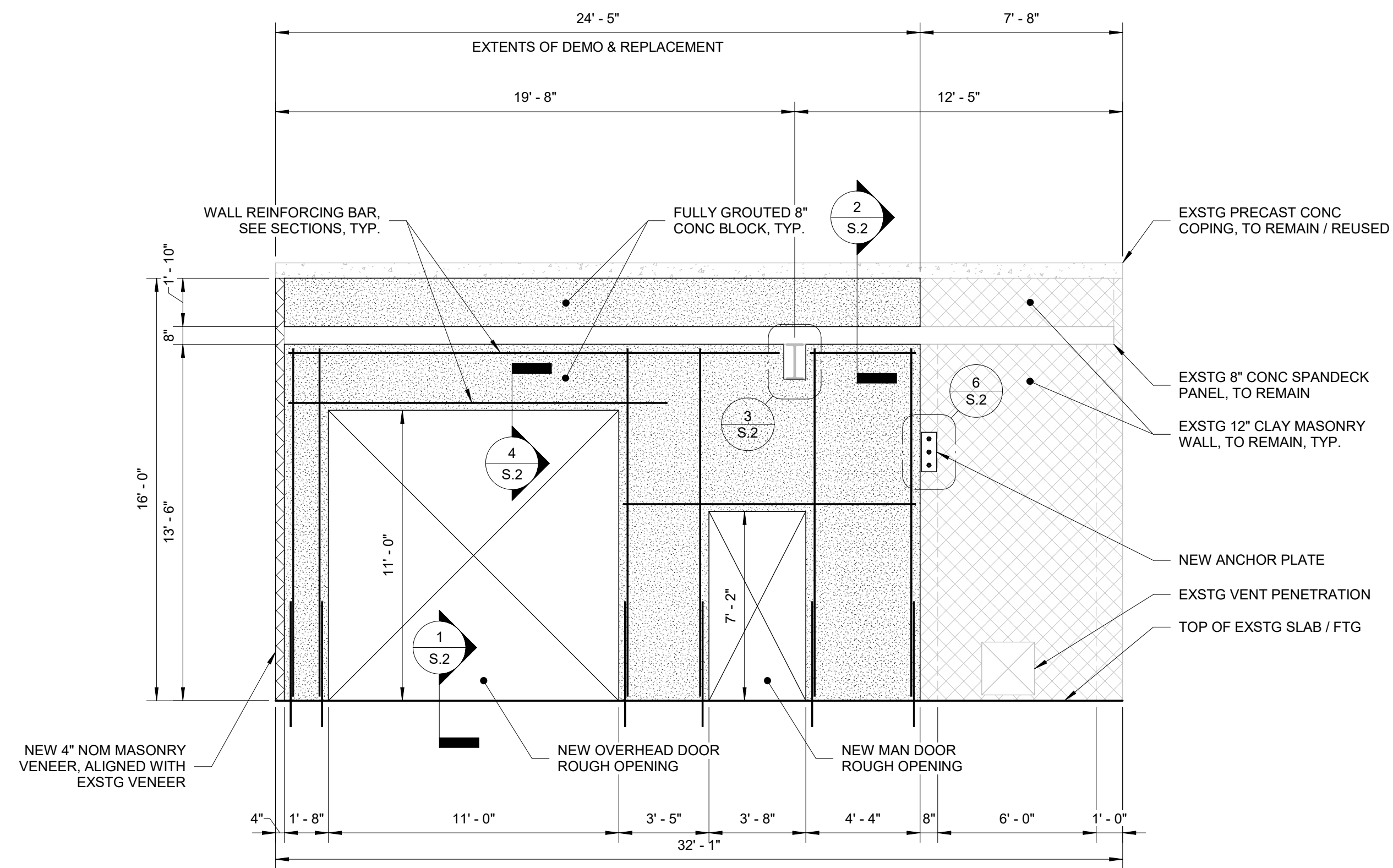
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GENERAL NOTES

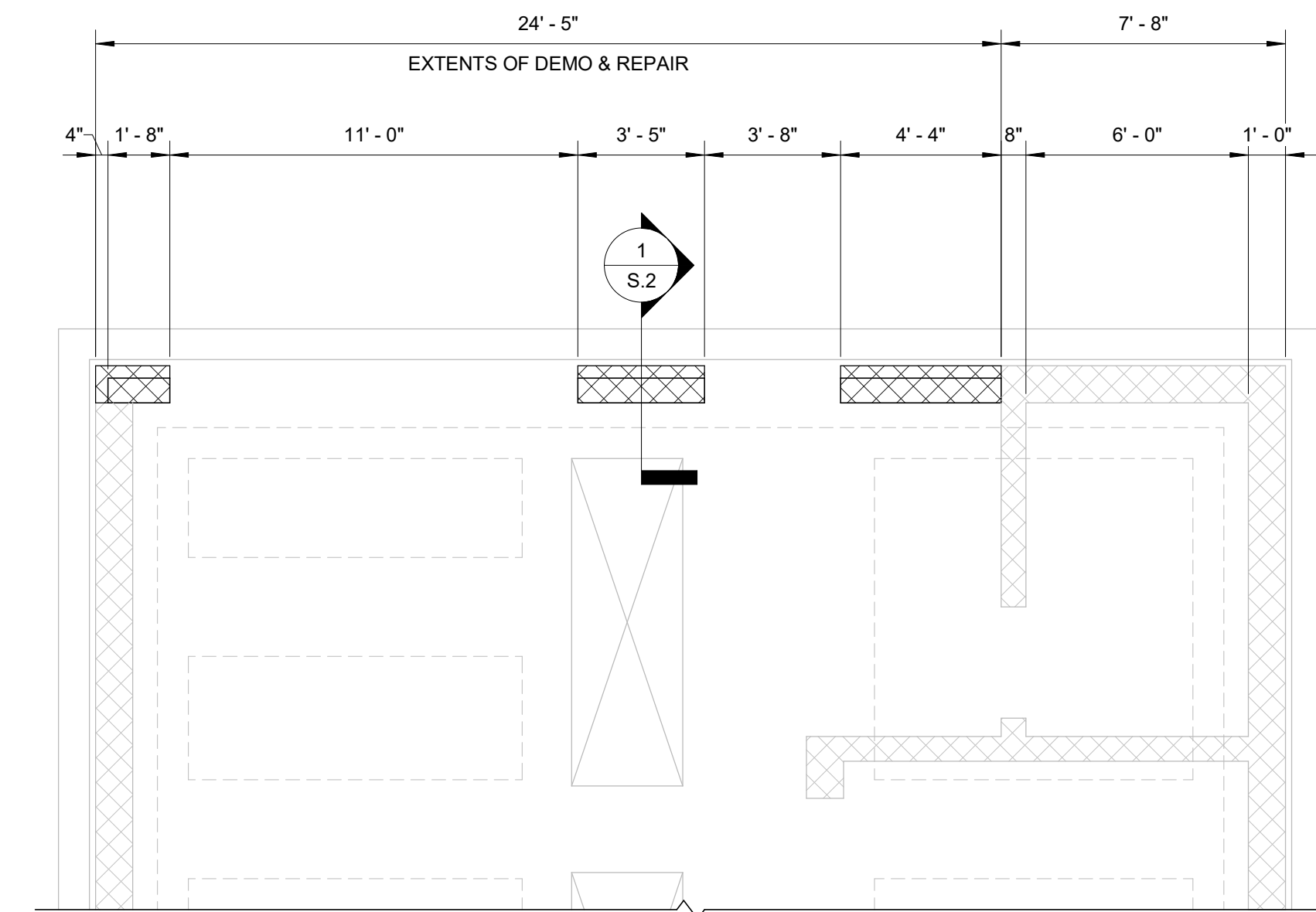
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316 BUJIE STREET, RED SPRINGS, NC 28377



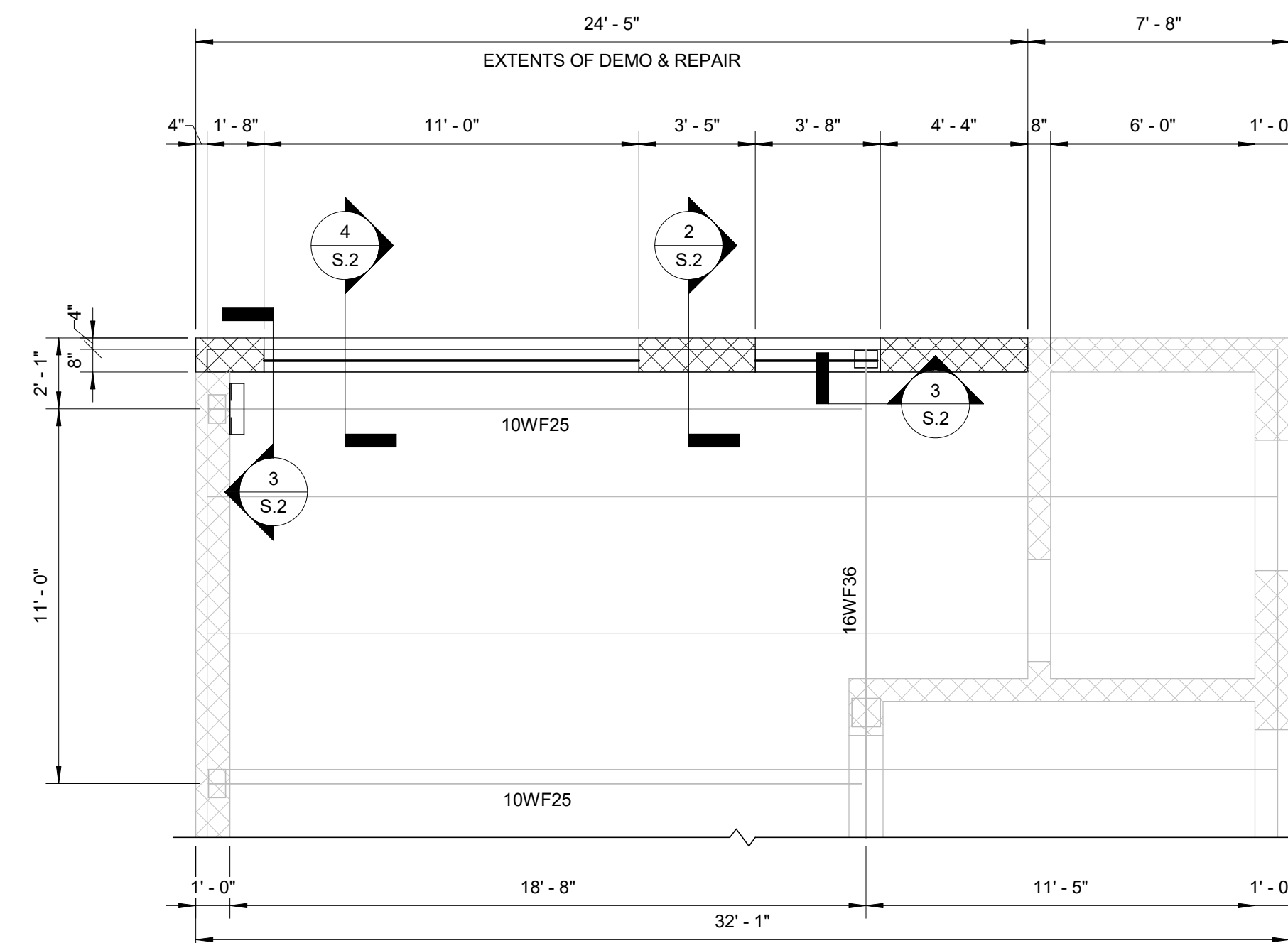
3 NEW MASONRY WALL ELEVATION  
1/4" = 1'-0"



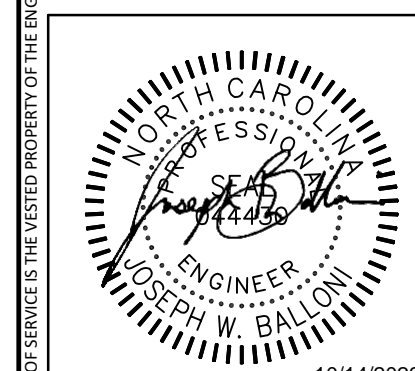
1 FOUNDATION PLAN  
1/4" = 1'-0"

**ADDITIONAL NOTES & SCOPE ITEMS:**

1. IN ACCORDANCE WITH SECTION 606.2.1 OF THE 2018 NORTH CAROLINA STATE BUILDING CODE: EXISTING BUILDING CODE, THE REPAIR PRESENTED QUALIFIES AT LESS THAN SUBSTANTIAL DAMAGE. DAMAGED ELEMENTS ARE BEING RESTORED TO THEIR PREDAMAGED CONDITION.
2. BUILDING STRUCTURAL METAL COMPONENTS WITH PREVIOUS PROLONGED EXPOSURE TO CHLORINE SHALL BE ANALYZED BY A METALLURGICAL TESTING FACILITY. THE TESTING SCOPE AND QUANTITIES SHALL BE DETERMINED BY THE METALLURGICAL AGENT(S). A FINAL REPORT OF FINDINGS SHALL BE FURNISHED TO BUILDING OWNER FOR REVIEW. THE REPORT SHALL INCLUDE AN ESTIMATED REMAINING USEFUL LIFESPAN OF METAL COMPONENTS TESTED.
3. DURING DEMOLITION AND CONSTRUCTION, EXISTING WALLS AND ROOF SHALL BE SHORED. SHORING PLAN TO BE FURNISHED BY THE CONTRACTOR.
4. THE EXISTING 16WF36 BEAM FRAMING INTO THE NEW MASONRY WALL SHALL BE CLEANED FREE OF CORROSION AND PAINTED TO MATCH EXISTING.
5. NEW MAN DOOR, NEW OVERHEAD DOOR, AND FLASHING REQUIREMENTS TO BE SPECIFIED BY OTHERS.



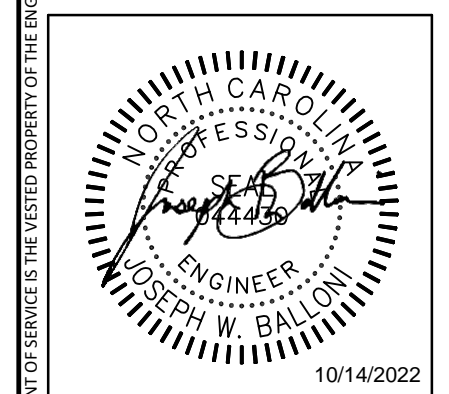
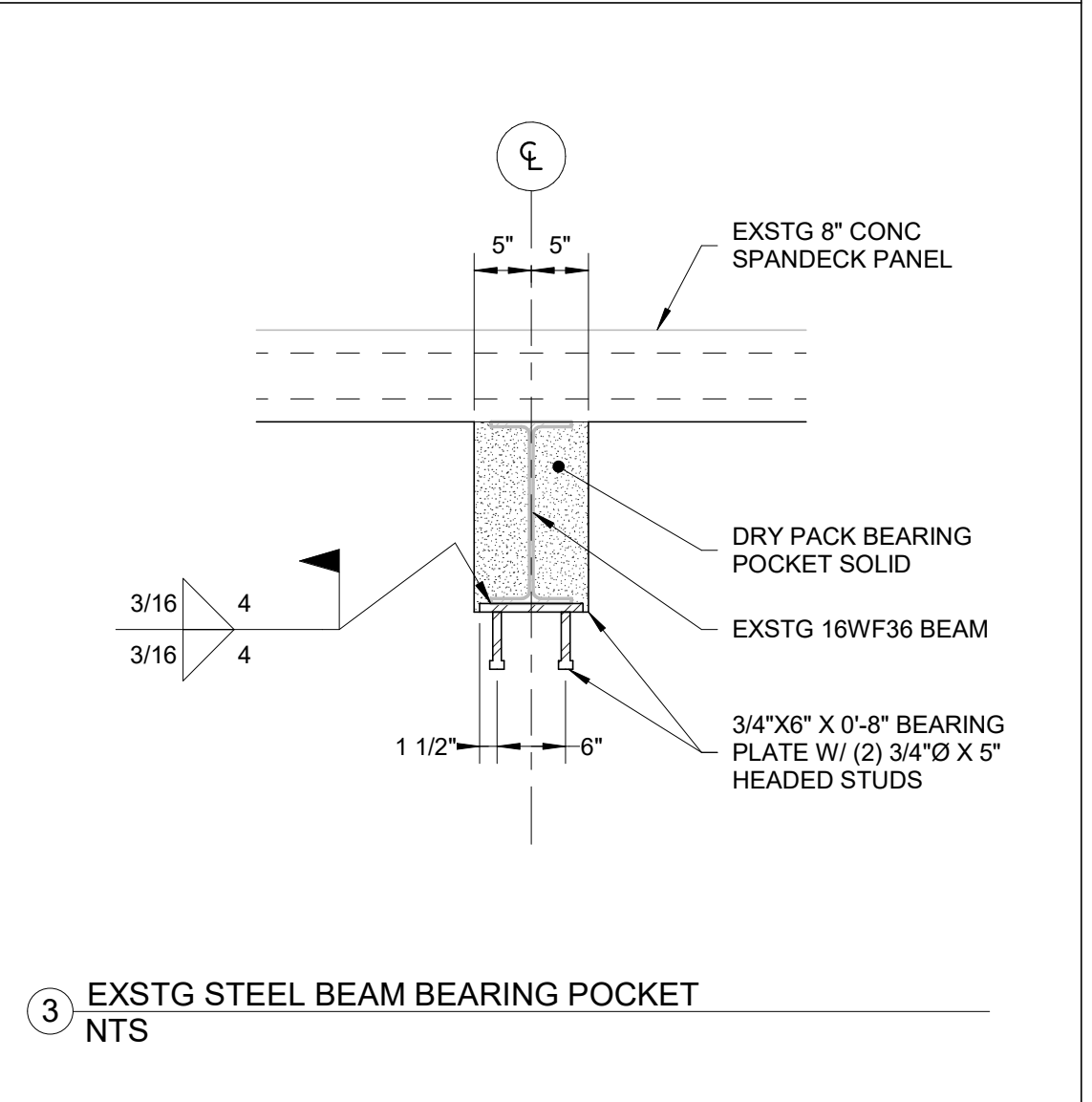
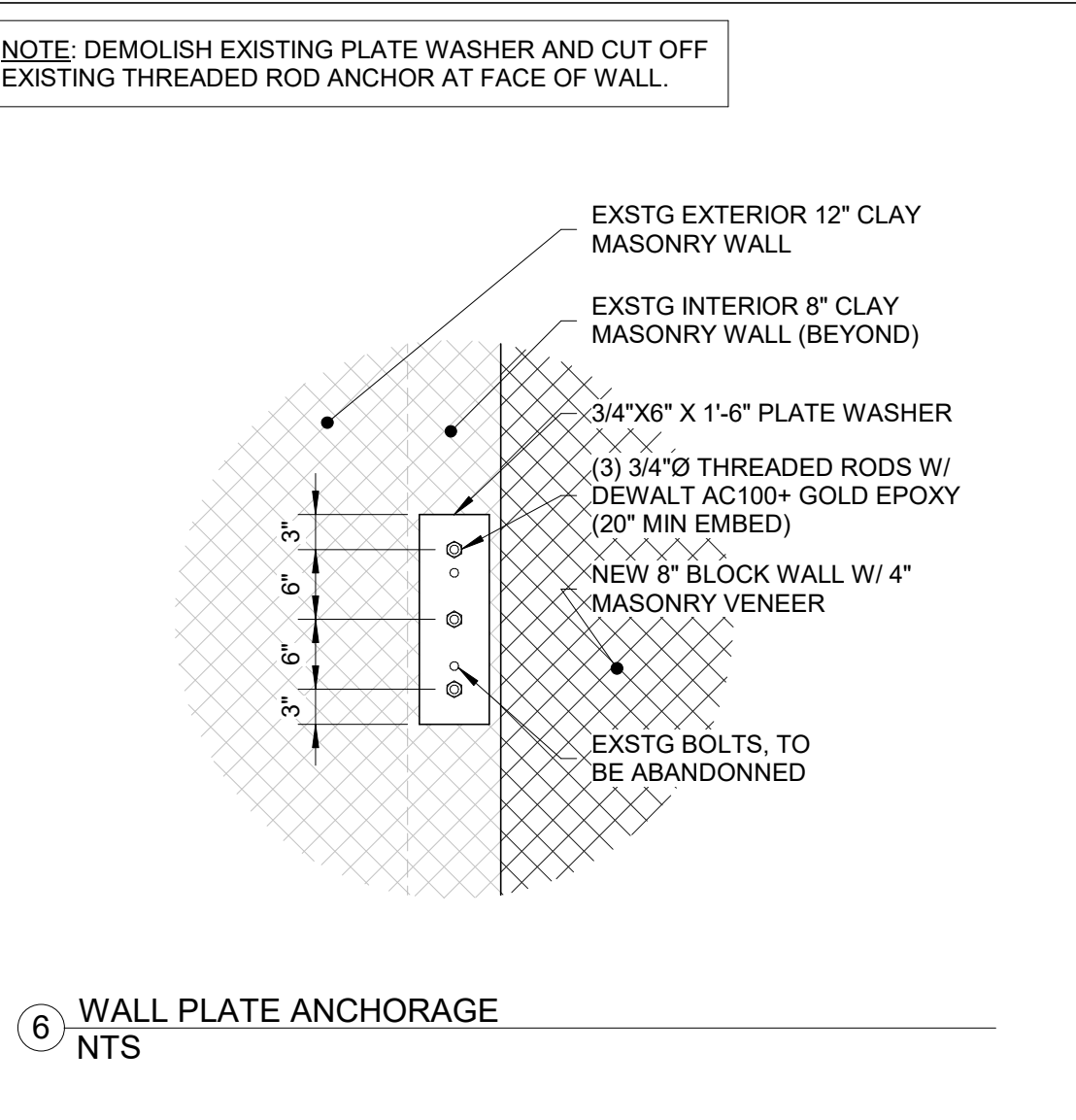
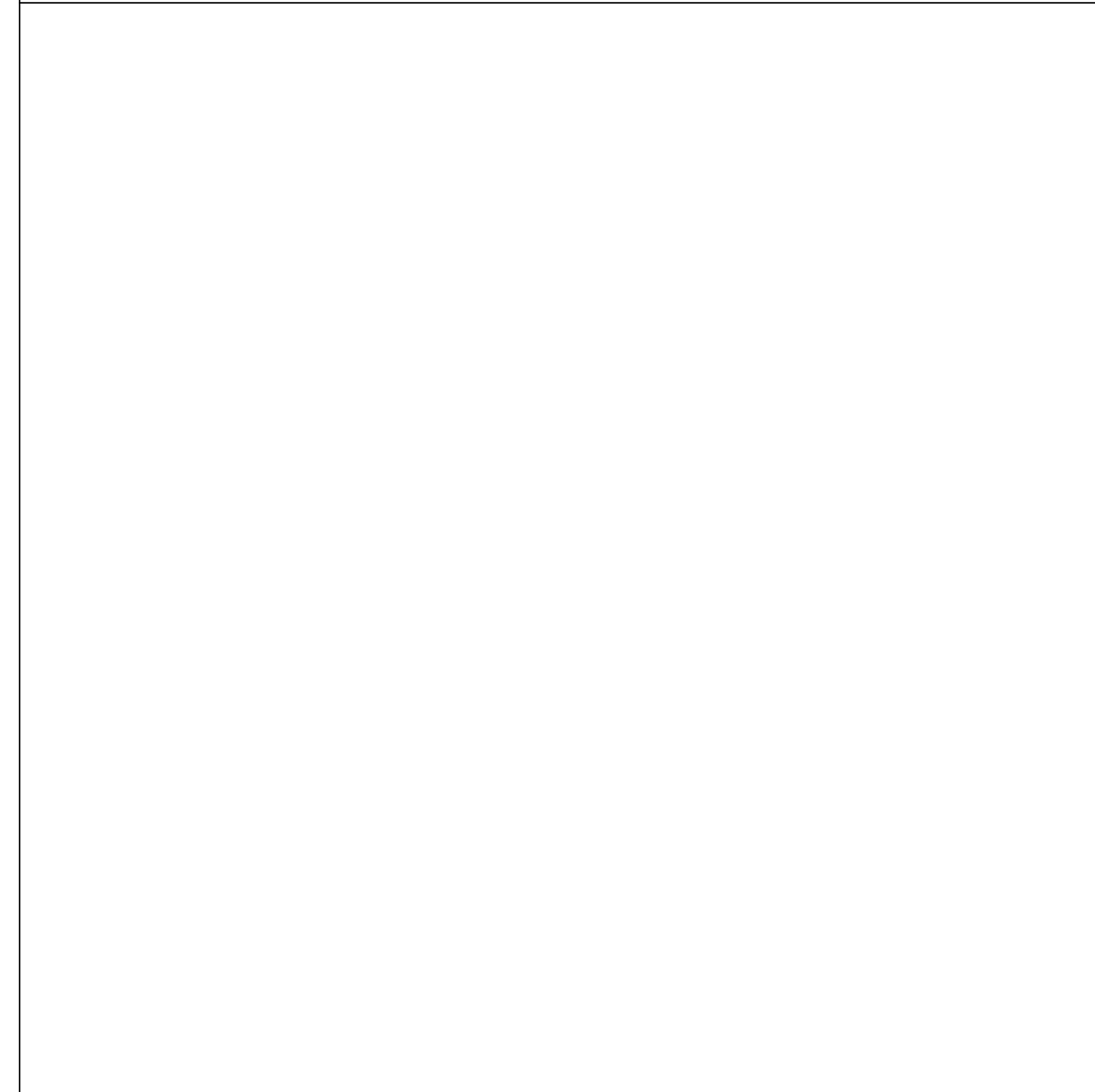
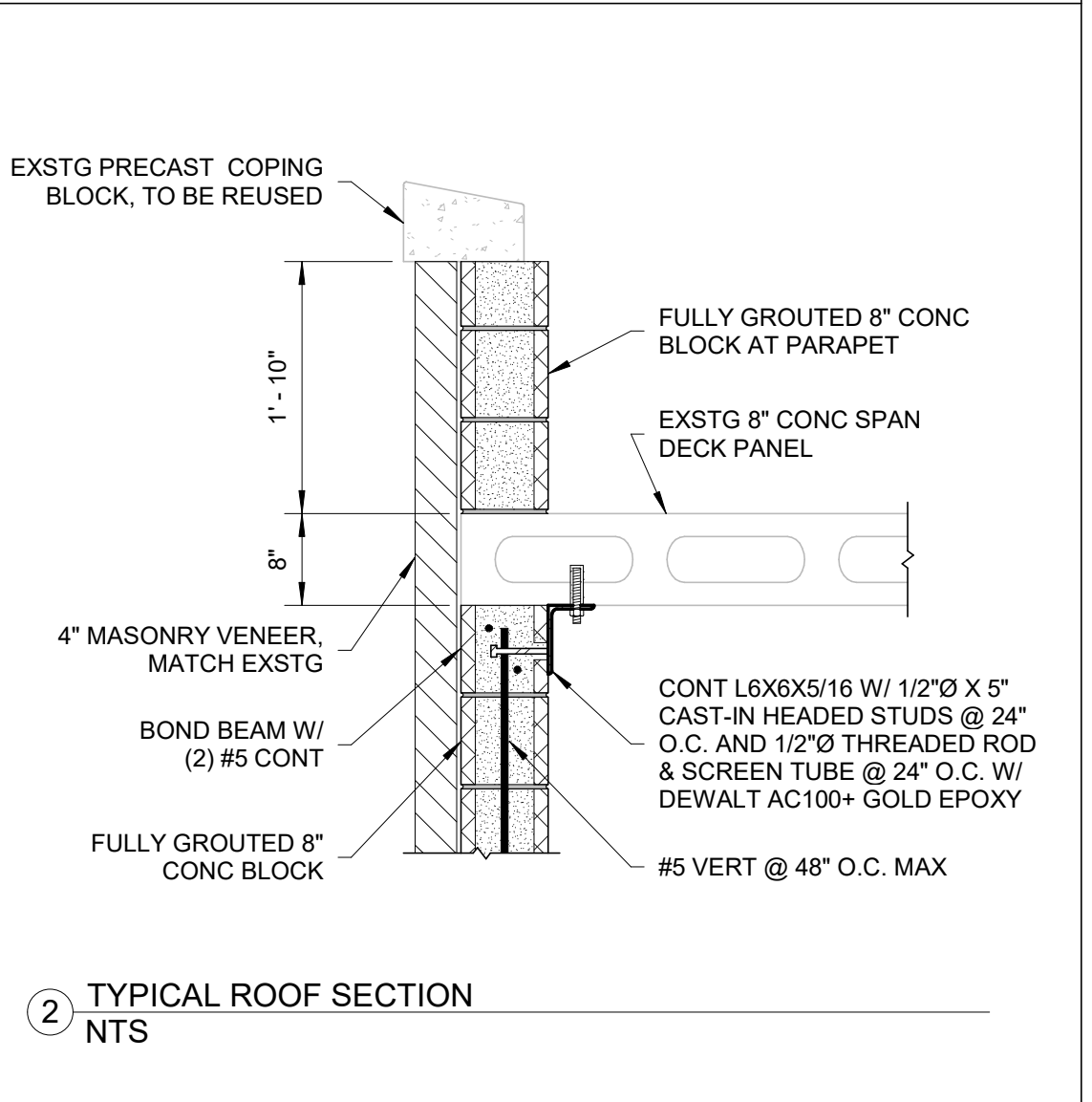
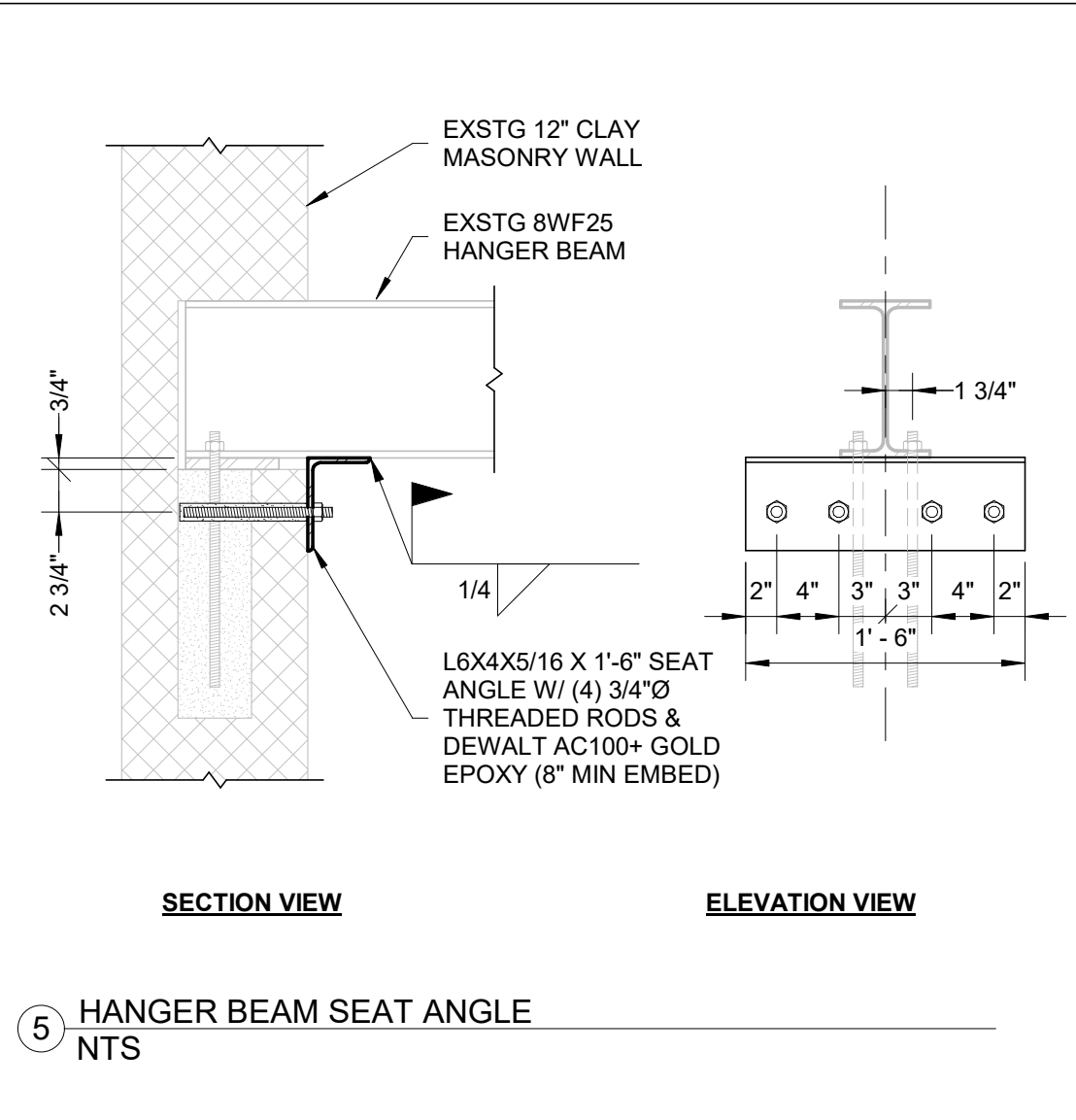
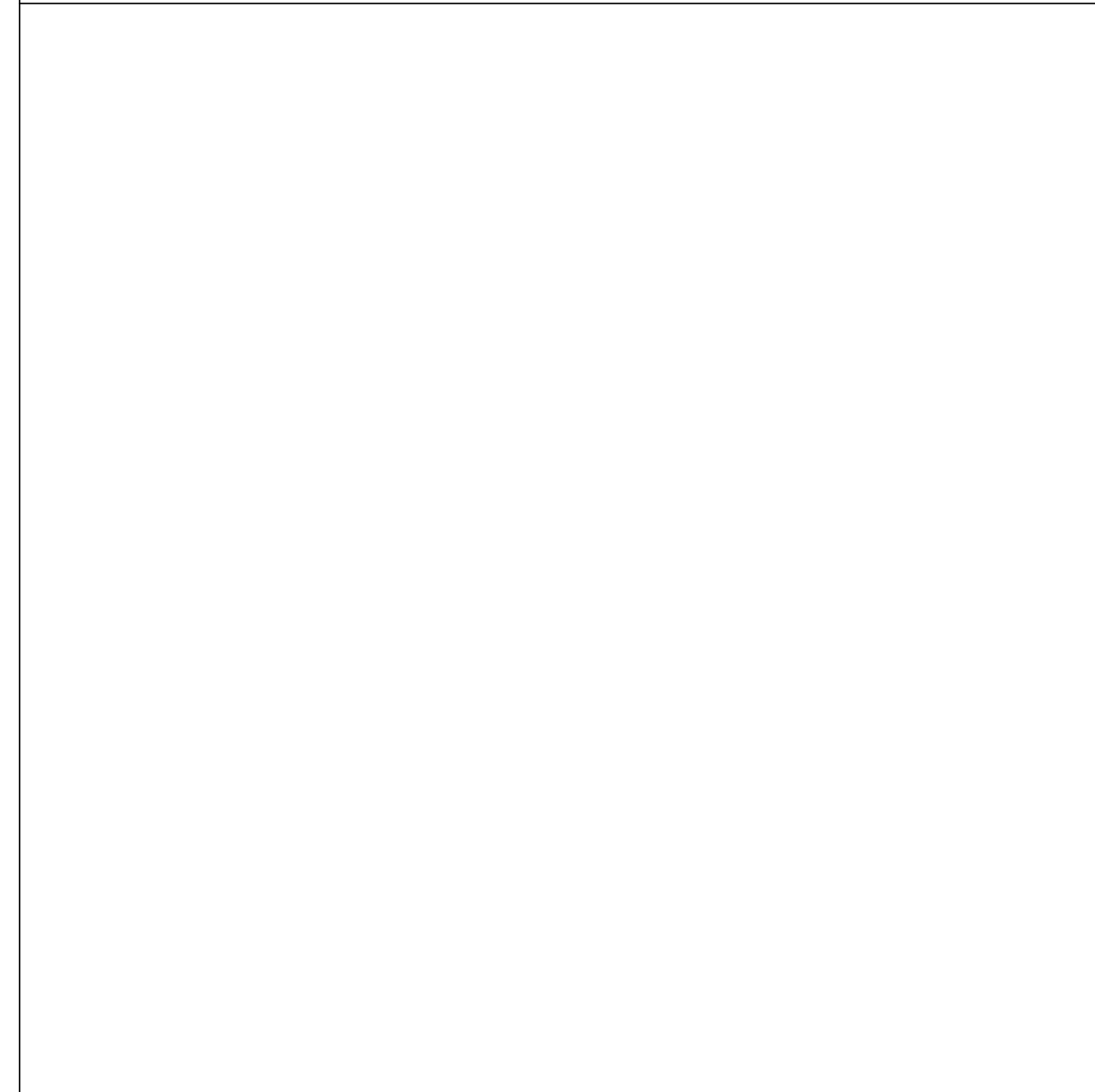
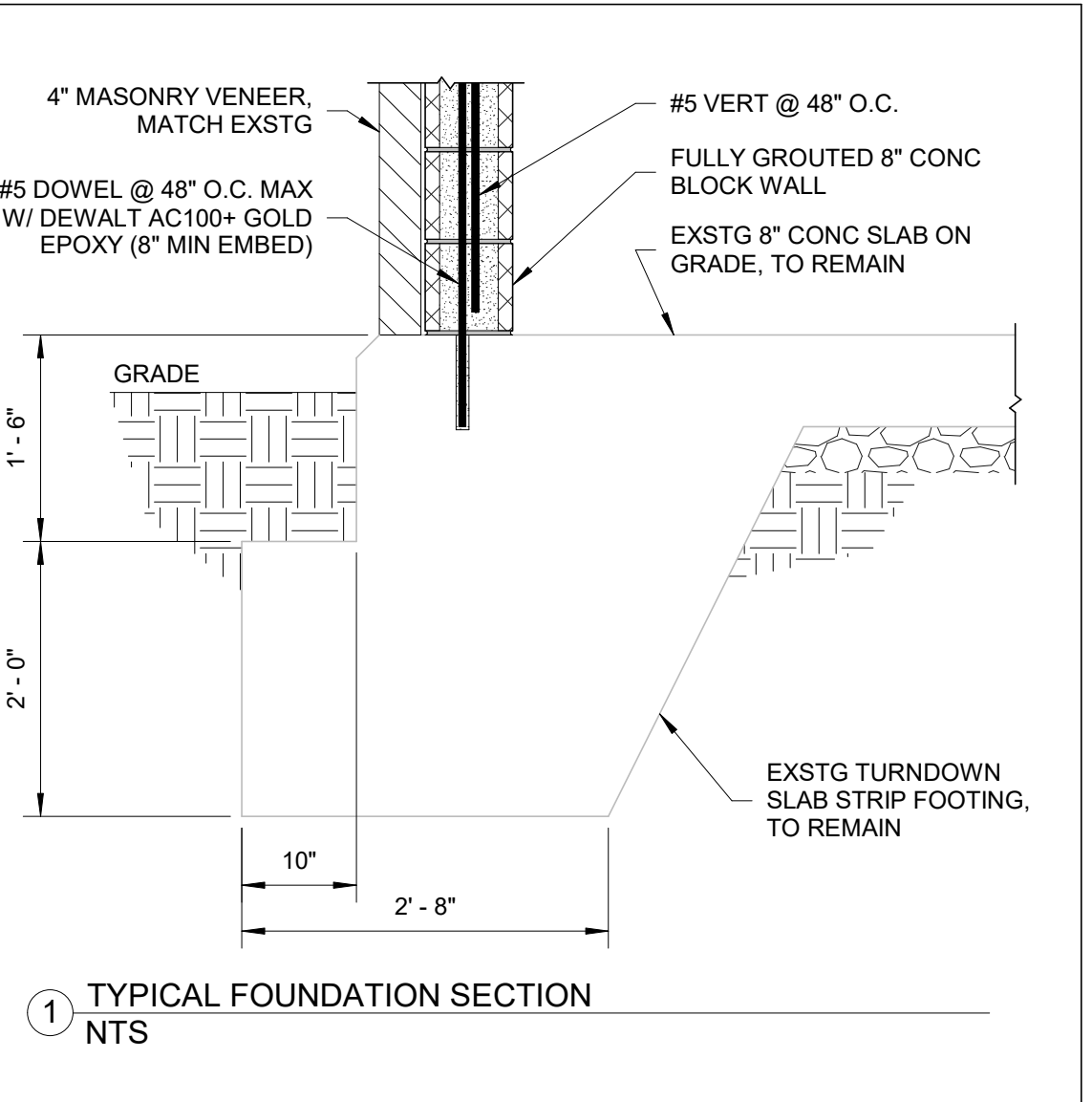
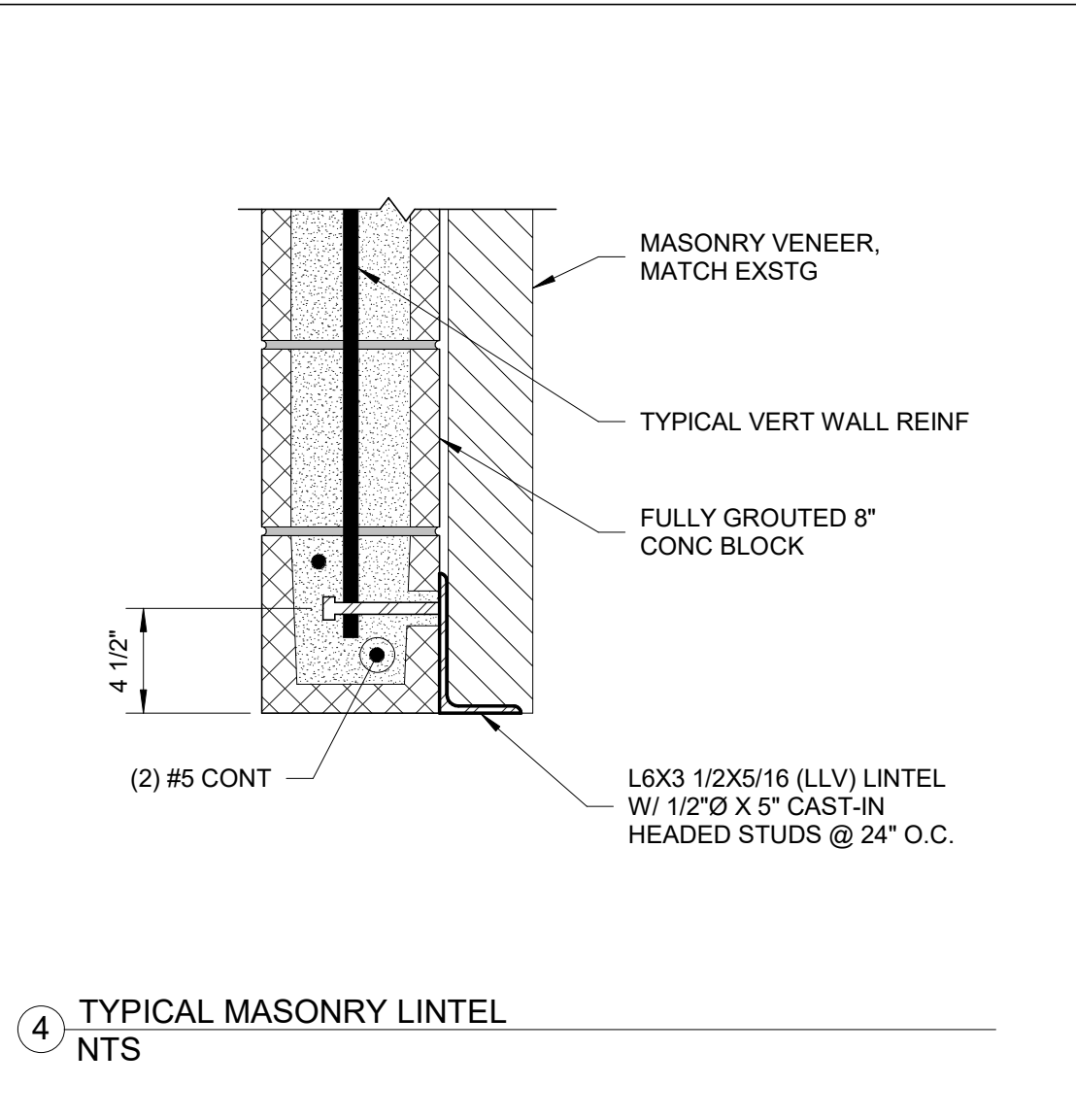
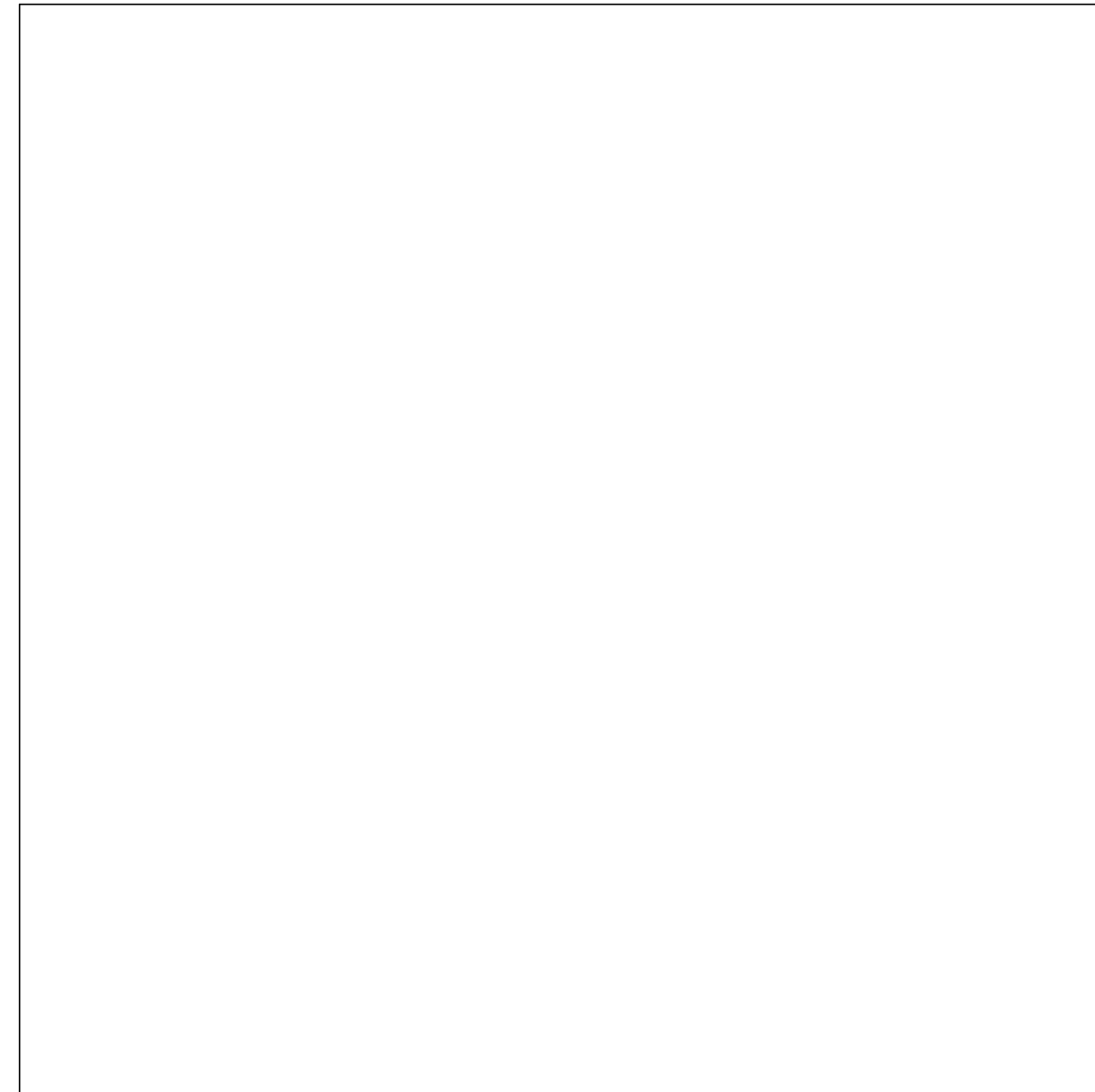
2 ROOF FRAMING PLAN  
1/4" = 1'-0"



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PLANS AND ELEVATION



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DETAILS