

New Building for

# Marketstreet Center

M291 and SW Market Street

Lee's Summit . Missouri  
Building Package



**JOE STEWART**  
ARCHITECT

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Drawings and/or Specifications are original proprietary work and property of the Architect intended for the specifically titled project. Use of items contained herein without consent of Architect for titled or other projects is prohibited. Drawings illustrate best information available to Architect. Field verification of actual elements, conditions, and dimensions is required.



signed on March 2023  
Project Number 21.188.05

**ADA Compliance**  
Certification

To best of my professional knowledge, the facility as indicated is in compliance with the Americans with Disabilities Act, including the current ADA Title III Design Guidelines.

**Joseph Ray Stewart**  
Missouri Architect A-2017032055

Revisions

new shell building

# Market Street Center

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Lee's Summit . Missouri

Wall . Partition Schedule

- 1 **Exterior Wall Assembly**  
2 x 6 studs at 16" oc . treated sill on sealer . 7/16" 'AdvanTech ZIP System' . R19 foil faced batt insulation
- 2 **Interior Partition**  
2 x 4 wood studs at 16" oc with 1/2" gypsum board each side to 6" above finish ceiling . brace to structure above . full mud.tape.finish . wr gypsum board at wet locations

Door Schedule










- Door . Frame . Size
- A1 **Exterior Door** 3-0 x 7-0  
Insulated Hollow metal door and frame
- A2 **Exterior Door** 3-0 x 7-0  
Medium stile full lite aluminum storefront system door

Hardware

-Unless indicated otherwise, all door sets to be 'Schlage' or equal commercial [grade 2] ADA compliant lever type . nickel finish

- 1 Top and bottom pivot hinges . panic hardware . closer . sweeps . weatherstripping . exterior pull . Provide metal threshold . All by door manufacturer
- 2 1.5 pair butt hinges, rim mounted panic, closer, sweeps, weatherstripping, metal threshold, drip cap, door viewer . ADA operator required at double doors . Connect to sidewalk pedestal for push button
- 3 Top and bottom pivot hinges . panic hardware . closer . sweeps . push botton lock . weatherstripping . exterior pull . Provide metal threshold . All by door manufacturer

Symbols

-  New door and frame: Refer Door Schedule
-  Door Indicator: Refer Door Schedule
-  Elevation Key
-  Wall Section Key
-  Building Section Key
-  Section Detail
-  Partition Type
-  Plan Detail
-  Reference Notes

Project Description

Project scope includes concrete footings-foundations-slabs, wood wall and roof framing, membrane roofing assembly, exterior masonry-metal-synthetic plaster finishes, utility service entries and tenant preparations, hvac rooftop equipment, and related incidental elements, no occupancy at this time . Tenant finishes and occupancy to be applied for under separate permit

General Notes

- 01 All construction and installations shall meet the requirements of applicable Codes and Ordinances
- 02 Contractor and subcontractors to field verify all dimensions and conditions prior to fabrications and installations
- 03 All material shall be new and unused unless indicated otherwise; construction, installations, fit, and finishes shall exhibit first class workmanship
- 04 Drawings indicate design intent only; operations, methods, and installations sole responsibility of General and Sub Contractors
- 05 Unless noted or indicated otherwise dimensions are to face of finished wall and other vertical elements
- 06 Subcontractors shall visit project site, acquaint themselves with and verify existing conditions prior to fabrication and/or installation of any work - notify Architect immediately of any discrepancies discovered
- 07 Do not scale drawings - perform layouts from dimensions only - notify Architect immediately of any discrepancies discovered
- 08 Unless indicated otherwise, new wall construction not specifically dimensioned aligns with existing construction
- 09 Each trade responsible for protecting existing work in place from damage and responsible for repairing to original condition any affected materials and/or installations
- 10 Subcontractors shall coordinate their work with that of other trades
- 11 Subcontractors shall remove daily from premises trash, waste, and debris generated from their work
- 12 All work shall conform with latest published safety standards as established by OSHA and ANSI
- 13 Procedure with work constitutes acceptance of existing conditions . substrates
- 14 Premises shall be left fully cleaned and ready for Owner acceptance . at completion of work
- 15 All materials and assemblies to be installed in strict accordance with manufacturer requirements and industry standards unless specifically indicated otherwise

Submittals Required

Shop drawings, product data, designs, and samples are required [as may apply] for the following materials, assemblies, and / or systems:

Paint / Stain . Sheet Metal / Fabrications  
Storefront / Windows . Masonry / Mortar  
Doors / Hardware . Roofing / Accessories  
Synthetic Plaster (ells) Systems . Caulking / Sealants .  
Sheet Metal / Flashings . Landscaping / Irrigation .  
Canvas Awnings

Refer Structural Drawings for Concrete Requirements .  
Submittals

Refer MEP Drawings for submittal requirements for hvac .  
electrical . plumbing

Project Code Data

**Building Code**  
2018 International Building Code

**Electrical Code**  
2017 National Electric Code

**Mechanical Code**  
2018 International Mechanical Code

**Fire Protection**  
2018 International Fire Code

**Plumbing Code**  
2018 International Plumbing Code

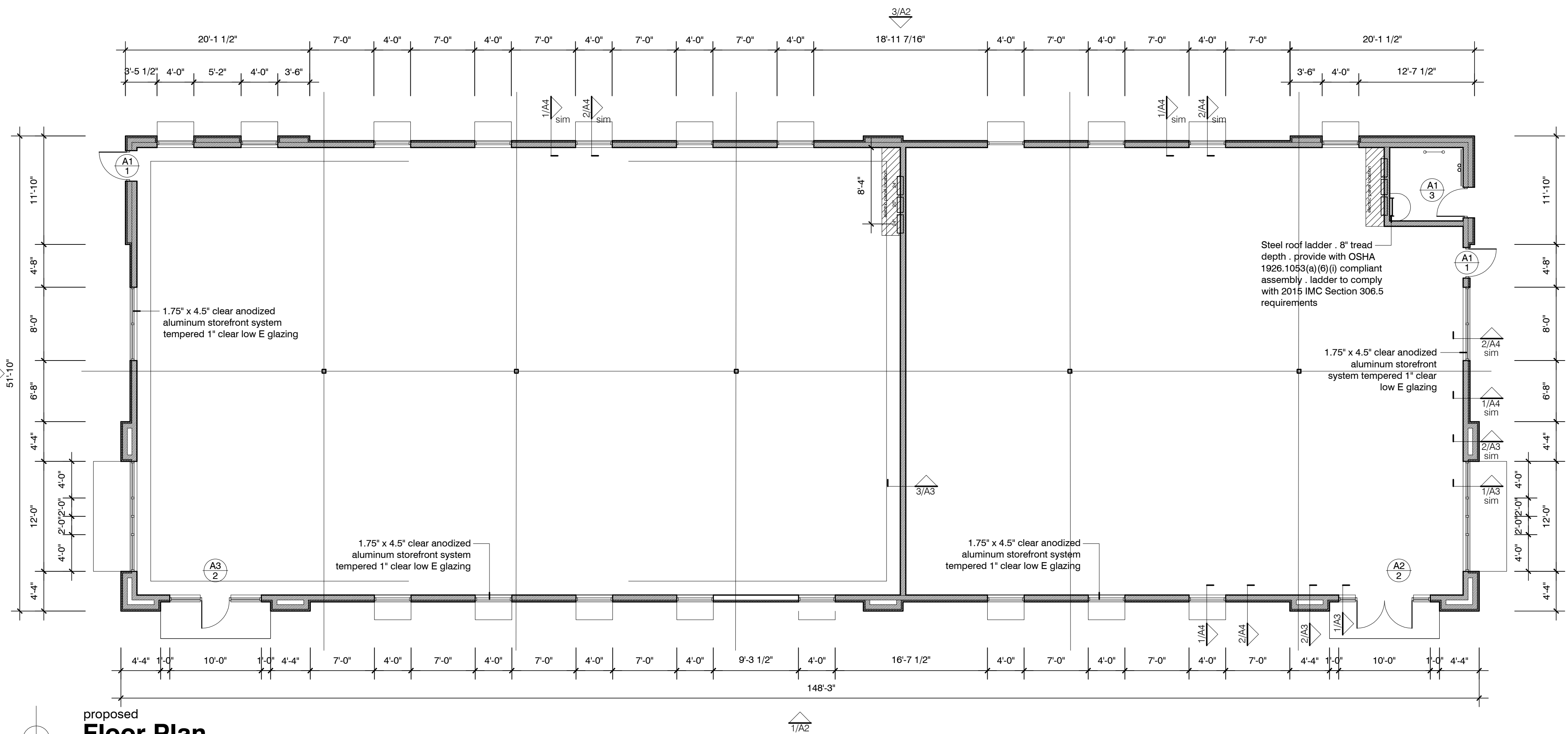
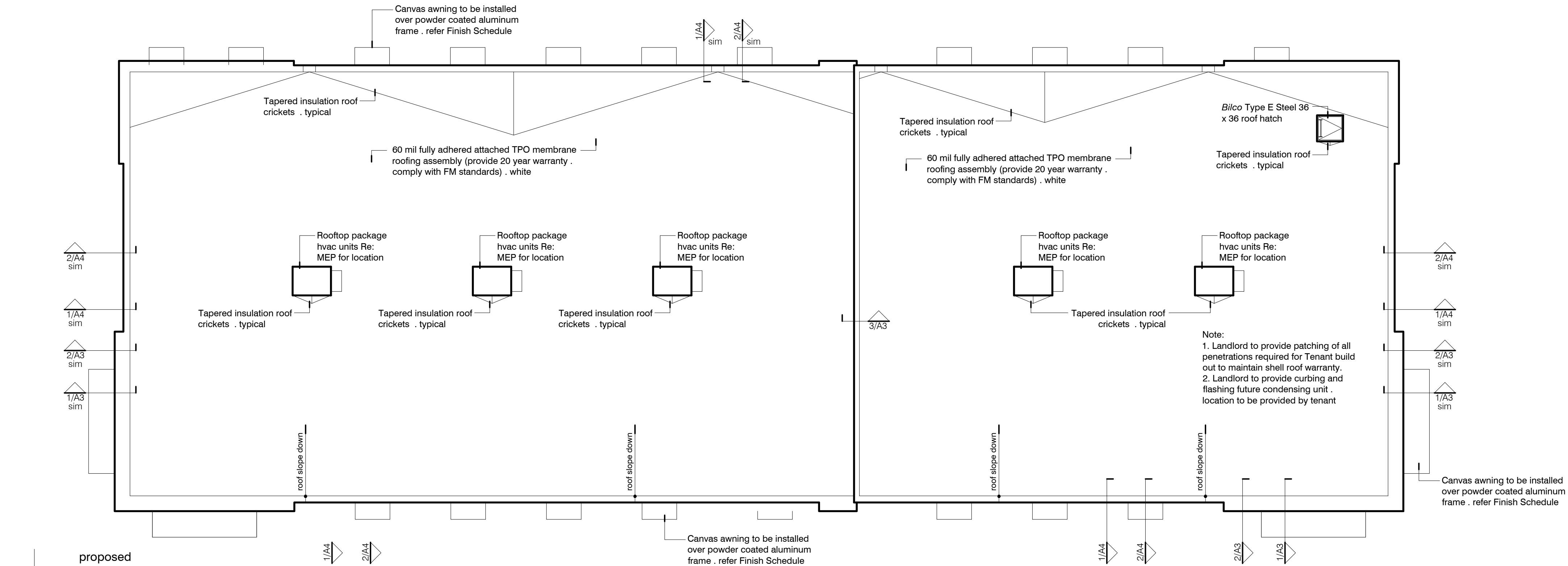
**Energy Conservation Code**  
2009 International Energy Conservation Code

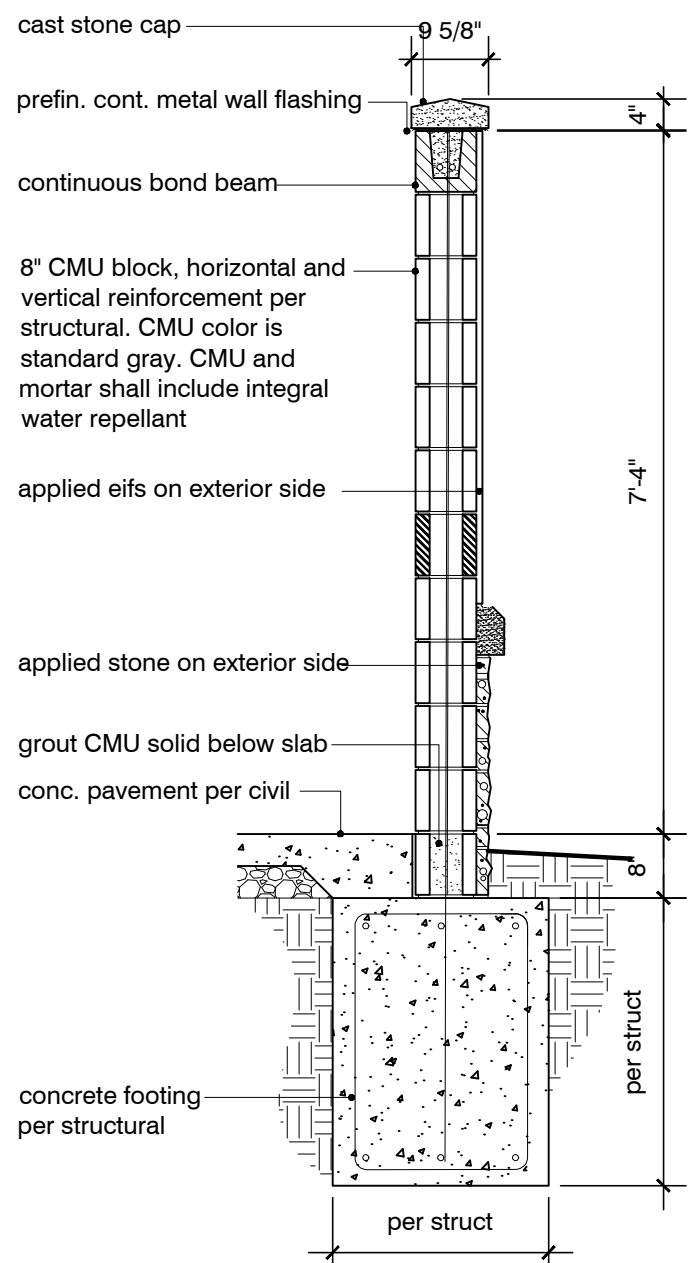
**Accessibility**  
Americans with Disabilities Act Accessibility Guidelines  
2010 Accessible and Usable Buildings

**Use Group**  
'B' Business . Section 303.3

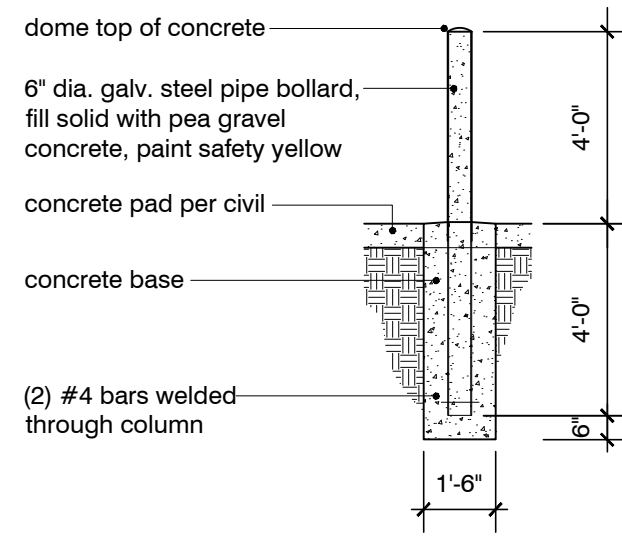
**Gross Tenant Area**  
7,330 gross square feet  
[calculated to exterior face of perimeter walls and centerline of demising walls]

**Construction Type**  
V-B Section 602.2 . Table 601

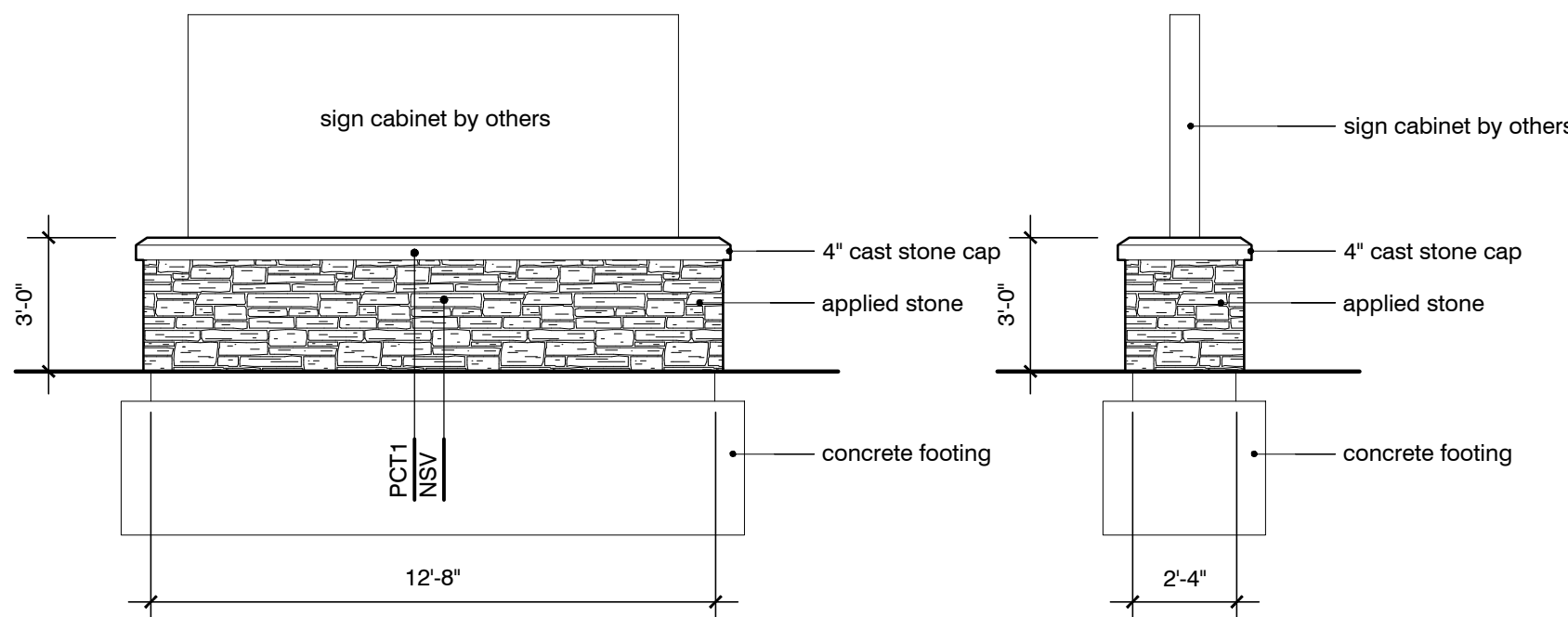




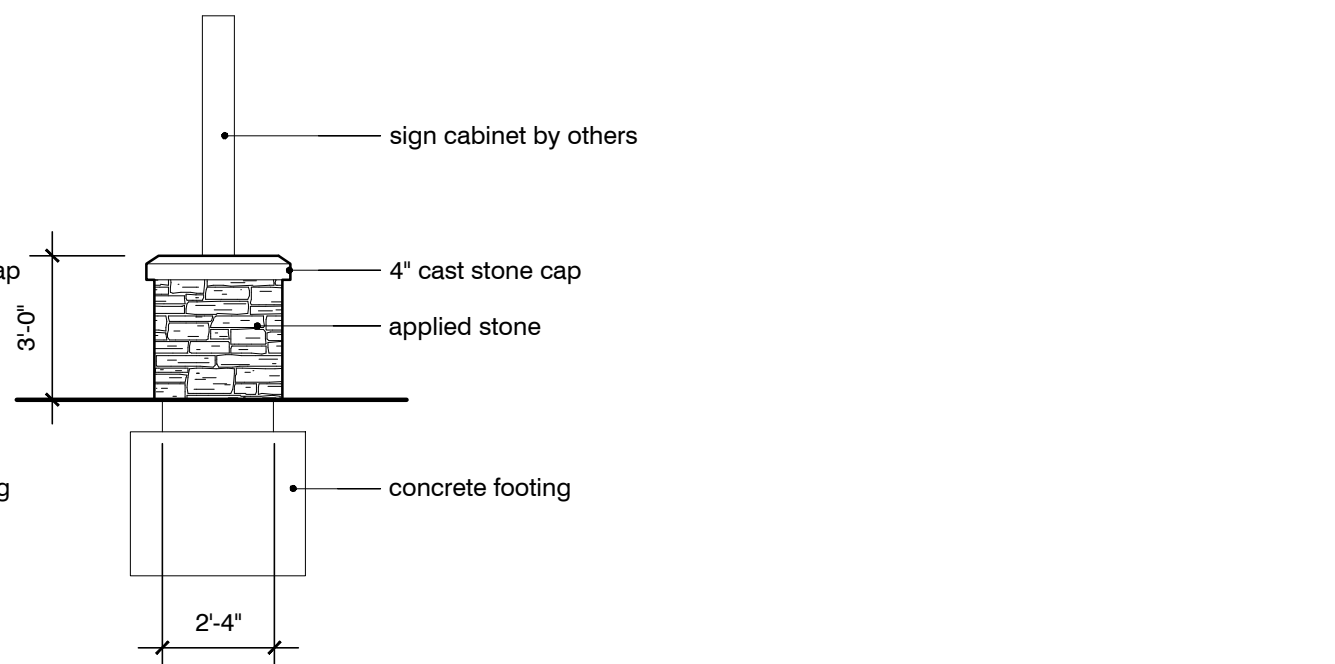
**9** trash enclosure  
Section  
1/4" = 1'-0"



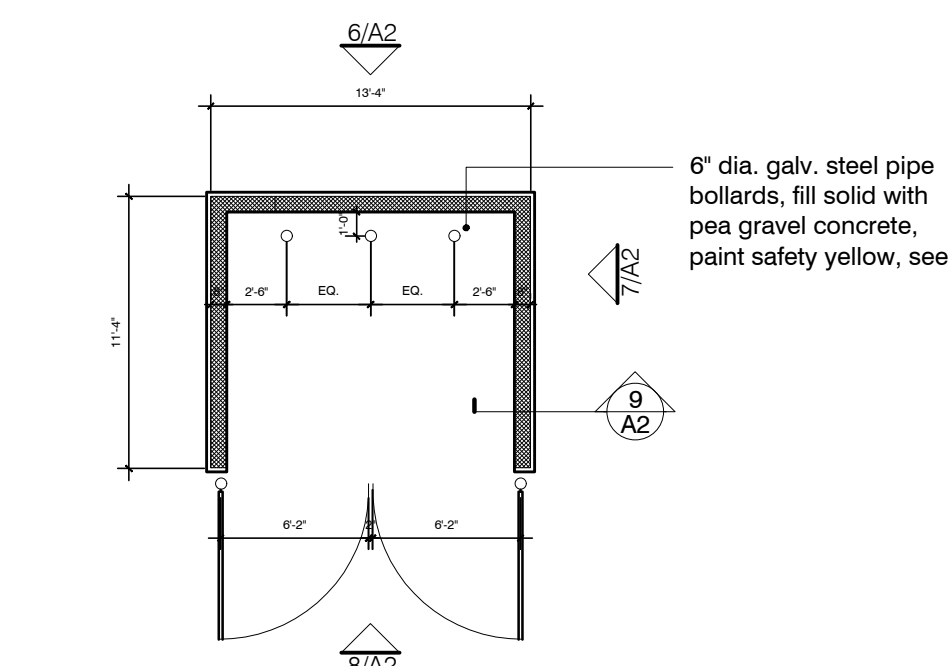
**10** detail  
Bollard  
1/4" = 1'-0"



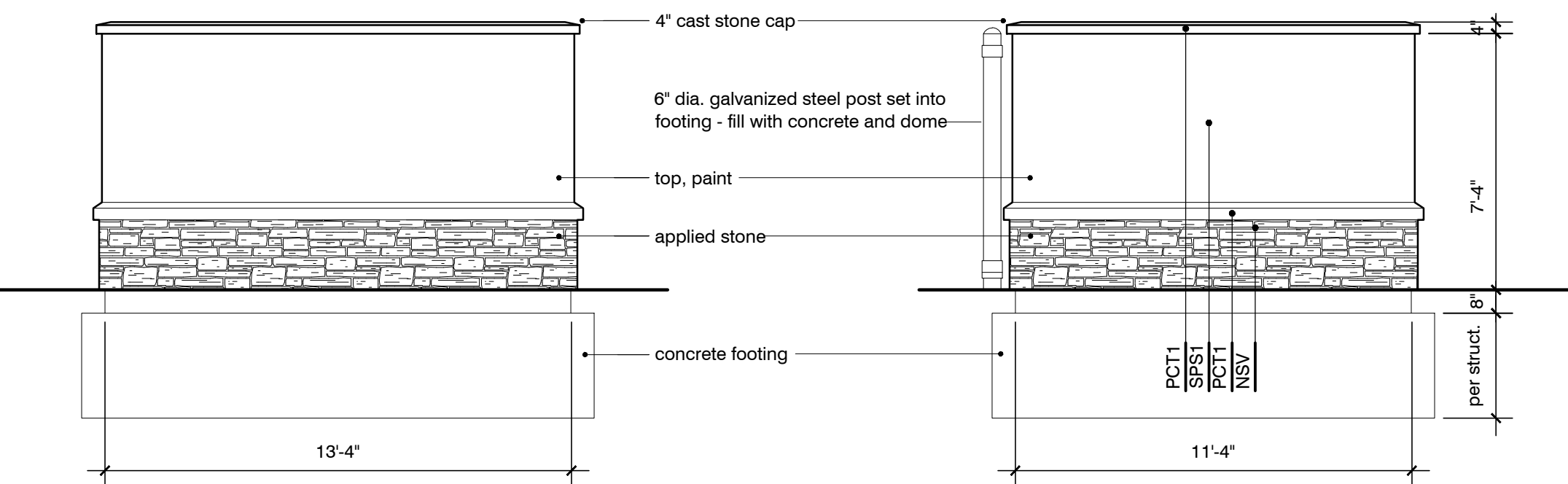
**11** monument sign  
Elevation  
1/4" = 1'-0"



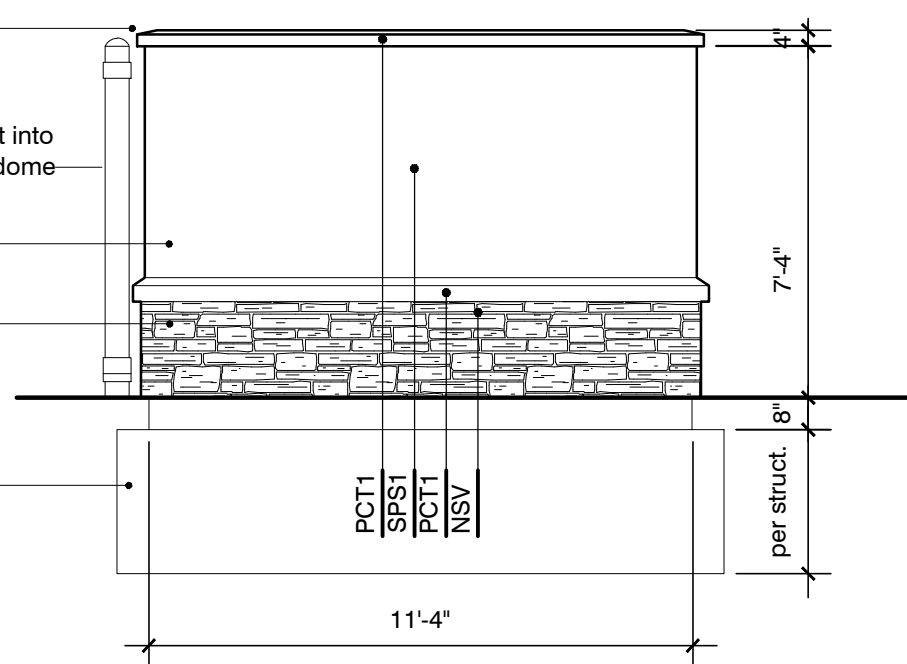
**12** monument sign  
Elevation  
1/4" = 1'-0"



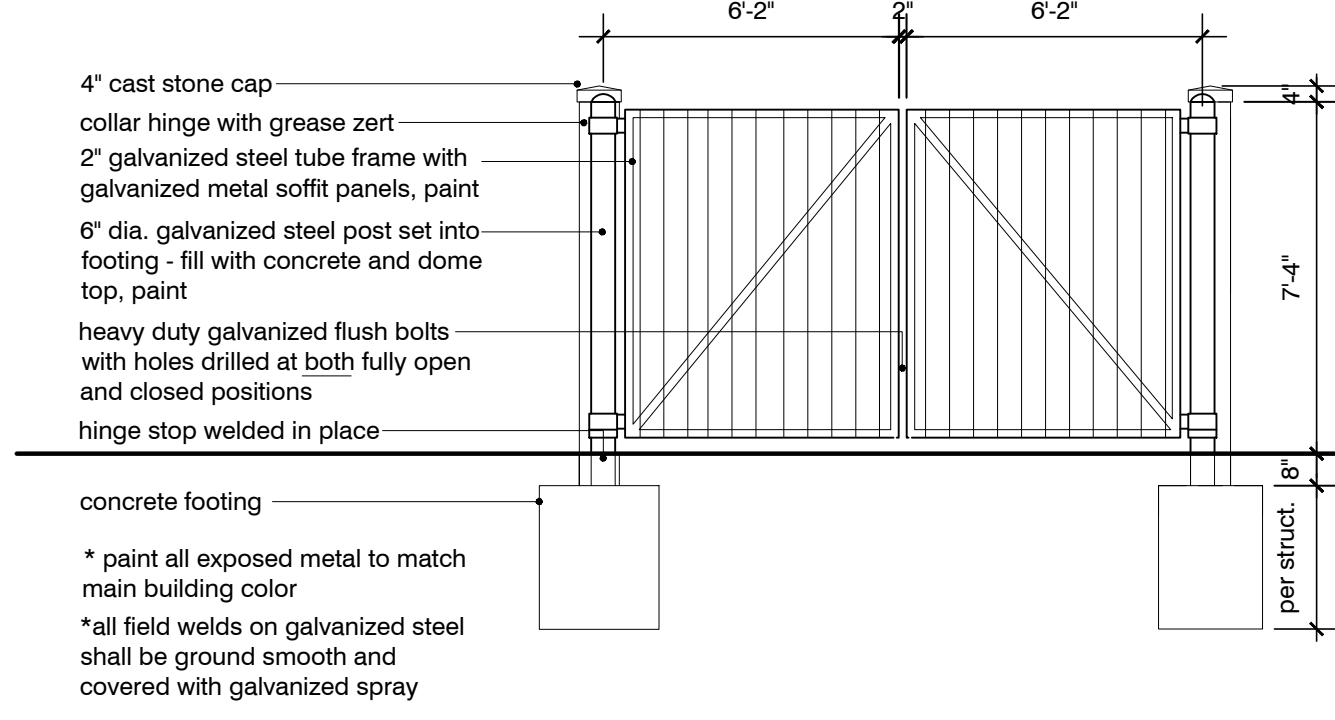
**5** trash enclosure  
Plan  
1/4" = 1'-0"



**6** trash enclosure  
Elevation  
1/4" = 1'-0"

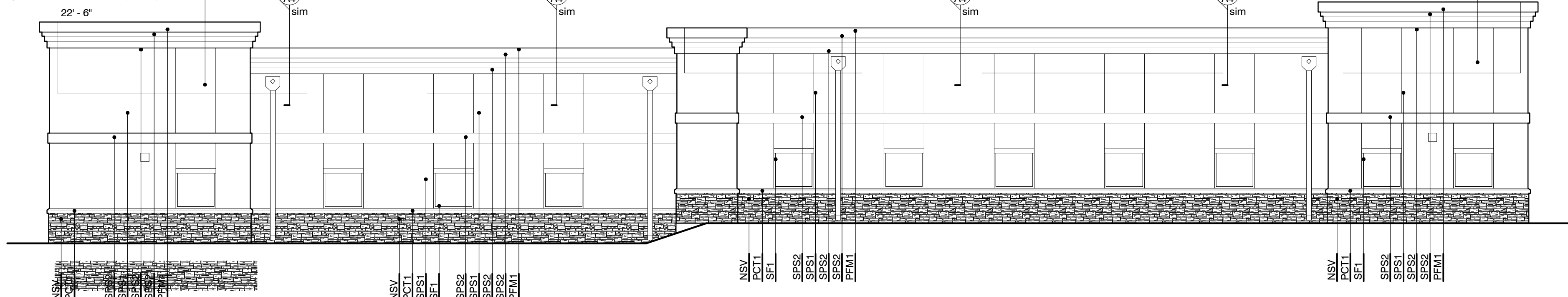


**7** trash enclosure  
Elevation  
1/4" = 1'-0"

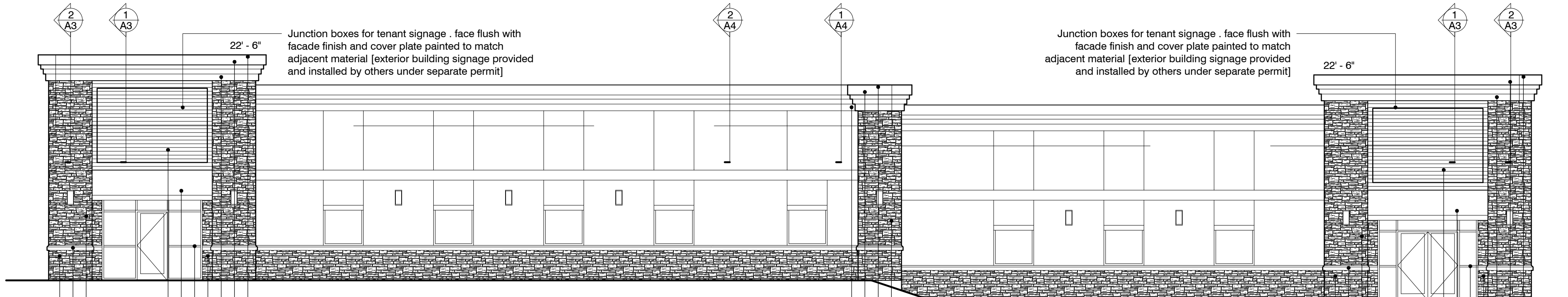


**8** trash enclosure  
Elevation  
1/4" = 1'-0"

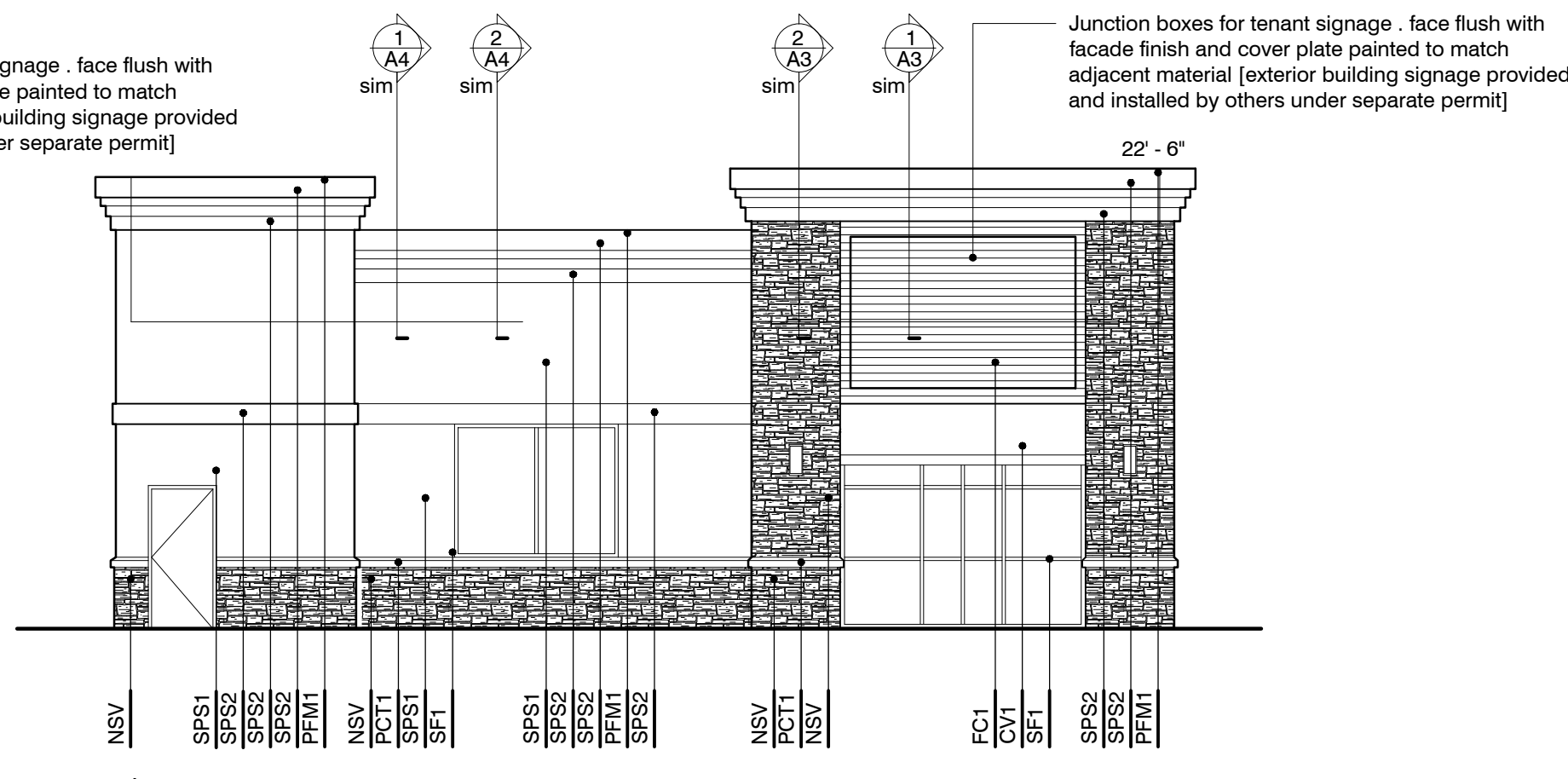
Junction boxes for tenant signage . face flush with facade finish and cover plate painted to match adjacent material [exterior building signage provided and installed by others under separate permit]



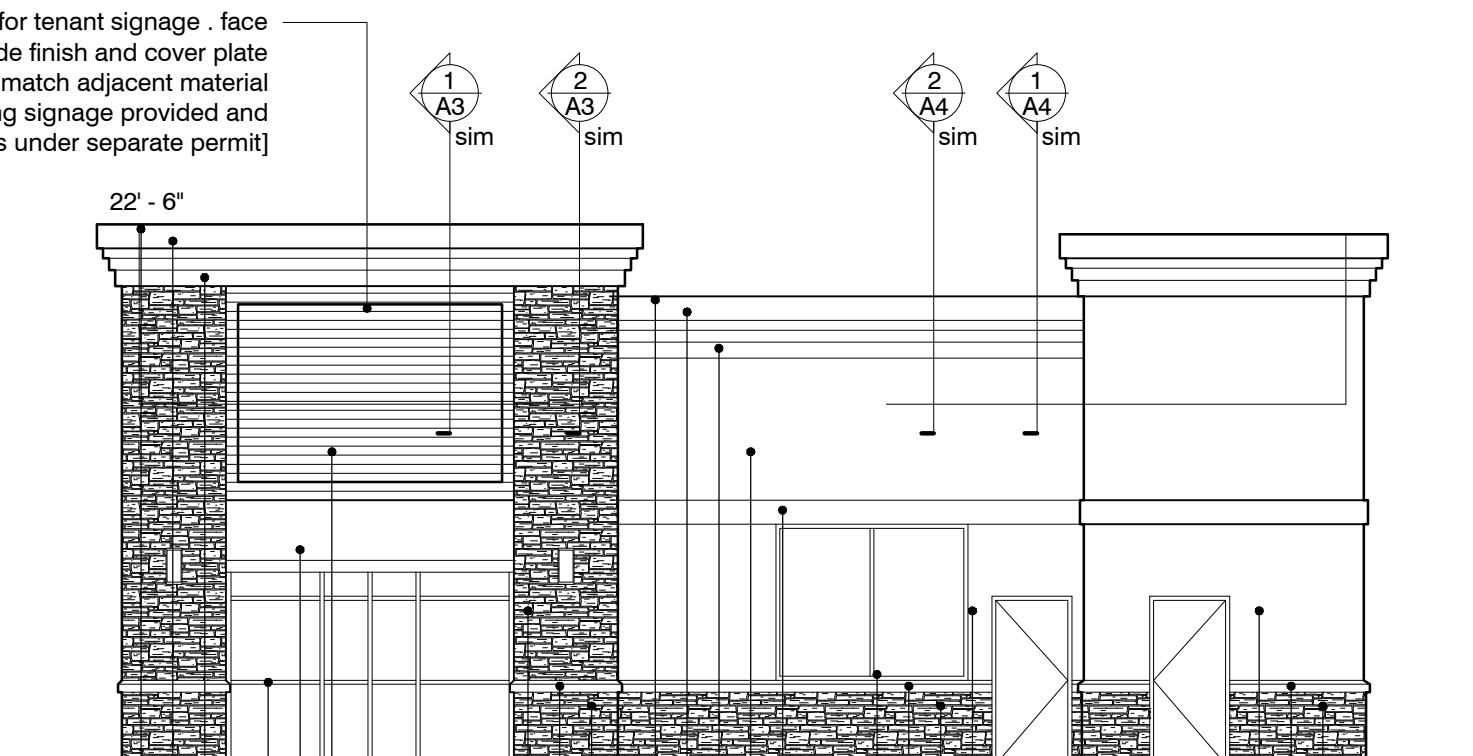
**3** proposed  
East Elevation  
1/8" = 1'-0"



**1** proposed  
West Elevation  
1/8" = 1'-0"



**4** proposed  
North Elevation  
1/8" = 1'-0"



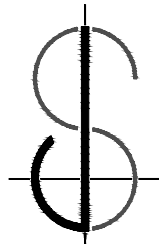
**2** proposed  
South Elevation  
1/8" = 1'-0"

## Exterior Finish Schedule

All masonry to be sealed with 'Sure Klean' Siloxane PD water repellent [protect adjacent finishes]

- PFM1** Pre-Finished Metal  
Berridge Sierra Tan [parapet cap . metal trim]
- NSV** to match 'Canyon Stone' Timber Ledge Series - Suede  
[random . ledge]
- AAS** Anodized Aluminum Storefront  
Clear anodized aluminum storefront system with nominal 1 3/4" x 4 1/2" frame . tempered 1" clear low E glazing: 'Kawneer' or approved equal
- FC1** Fiber Cement Siding . Wood Design [facade]  
Nichiha Wood Look Paneling  
color . spruce
- PCT1** Pre Cast Trim  
to match 'Canyon Stone' Sandy Bluff  
tooled concave mortar joints [masonry caps]
- SPS1** Class PB 'Dryvit' Sandpebble Finish to match 110 Van Dyke [field]
- SPS2** Class PB 'Dryvit' Sandpebble Finish to match 106 Pearl Ash [trim]
- PT1** Paint  
Color to match SPS1 110 Van Dyke

- General notes:
- Signage shown for reference only.
  - Signage direction, usage, and placement for reference only. Final design per starbucks design regional or site-specific design concept . Align center of sign with center of adjacent signage, unless otherwise noted.
  - Provide j-box with pull string for future building signage. Locate signage disconnect inside building space adjacent to sign
  - Provide 3/4" marine grade blocking for exterior signage. Extend blocking 8" beyond edge of signage, typical.

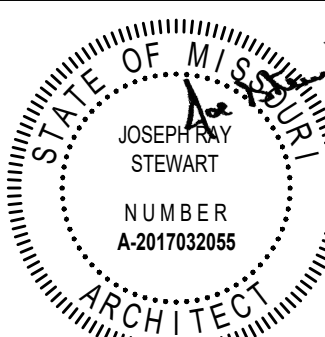


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**Certification**

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## Revisions

new shell building

**Market Street Center**

M291 and SW Market Street  
Lee's Summit . Missouri

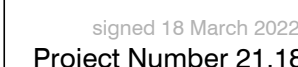
sheet  
**A2**

Elevations  
Trash Enclosure  
Permit  
04 March 2022



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## Revisions

new shell building

# Market Street Center

M291 and SW Market Street

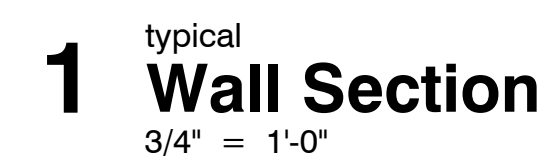
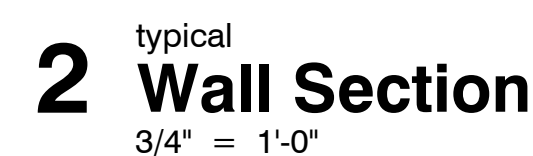
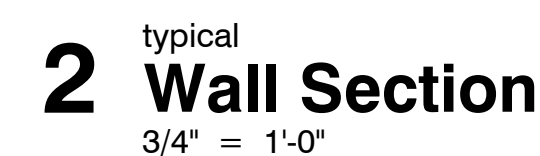
new shell building

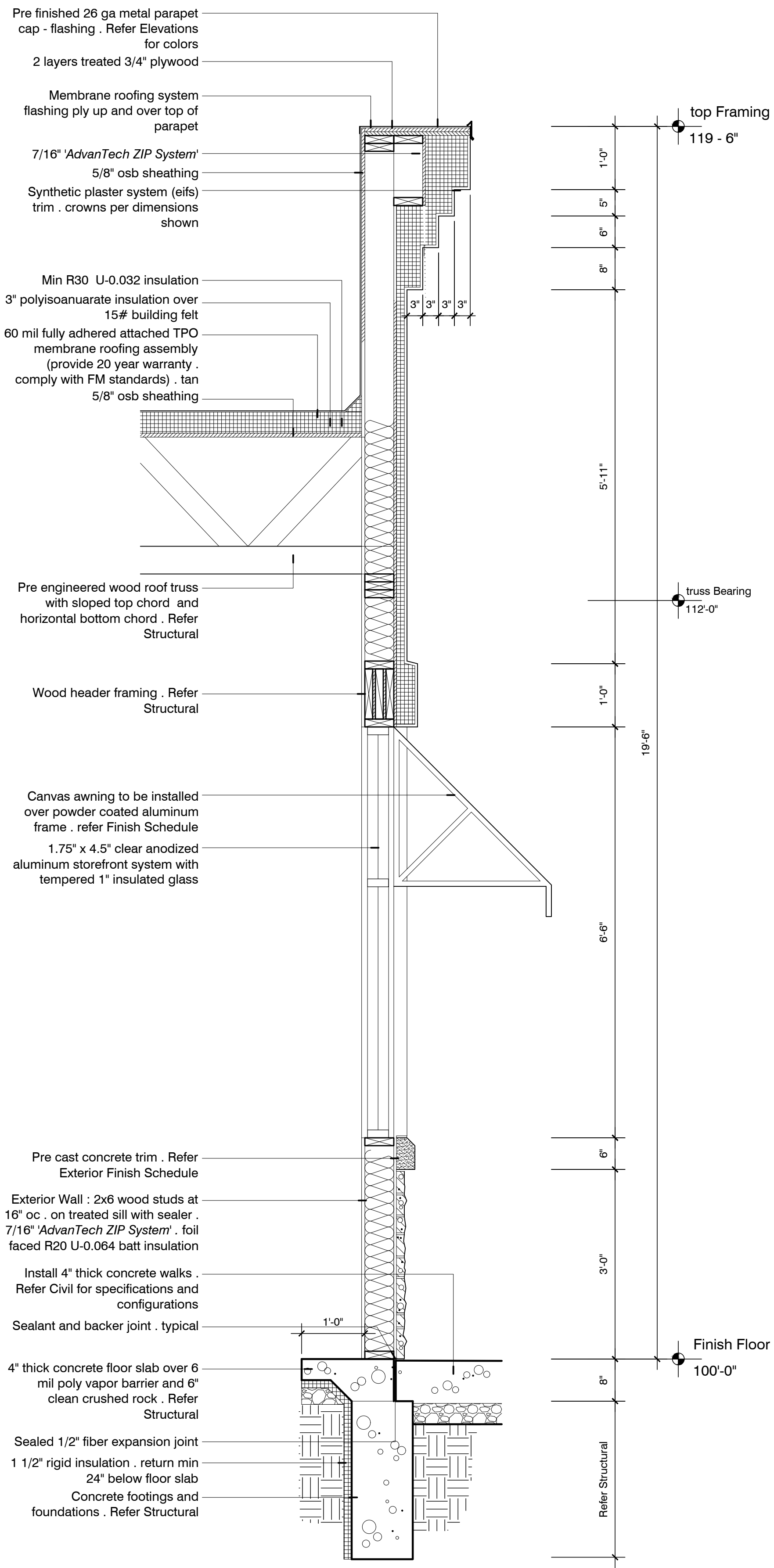
M291 and SW Market Street

sheet

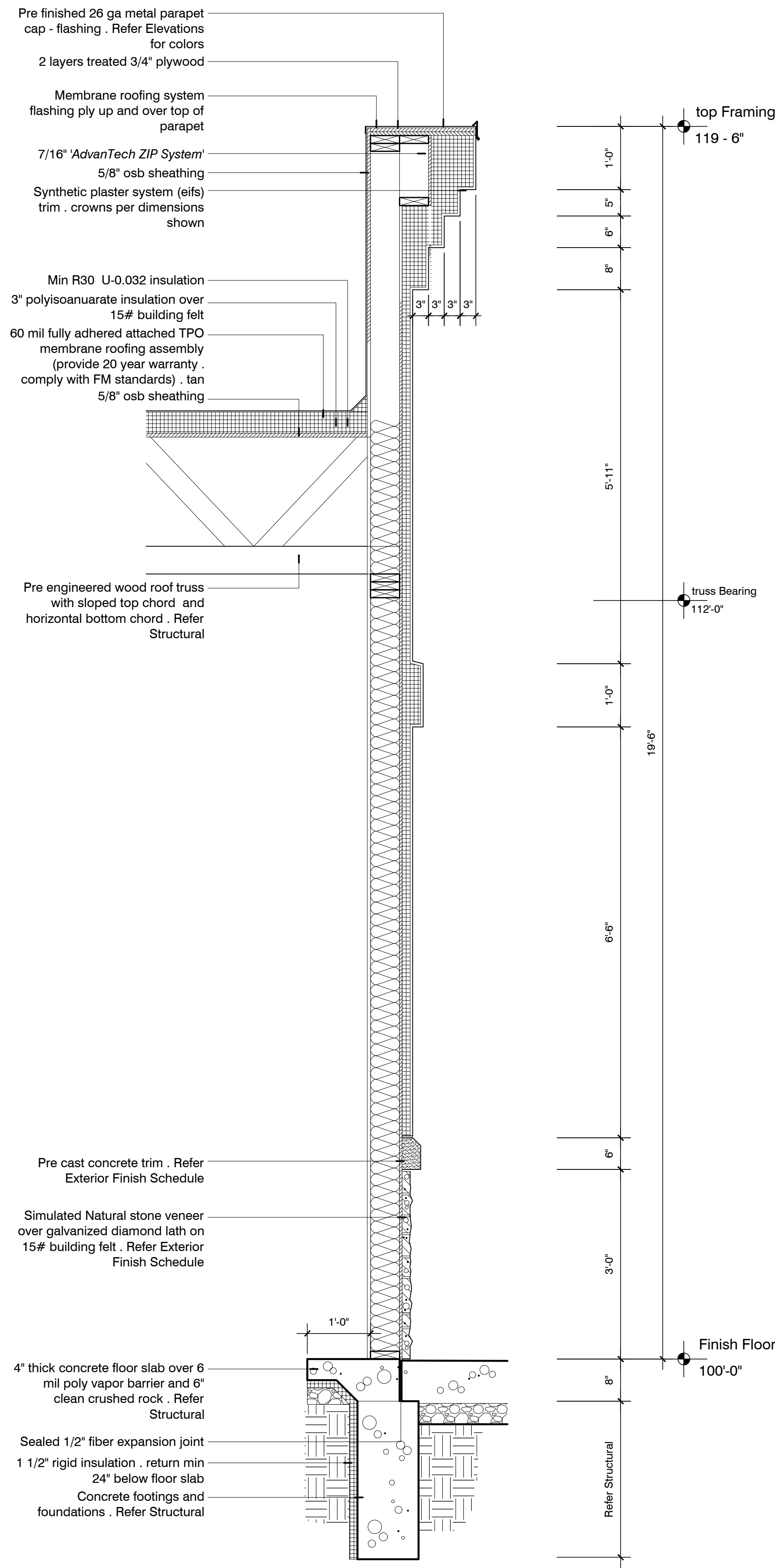
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## Wall Sections

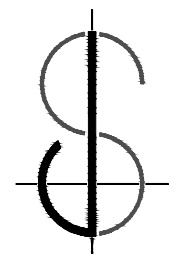
Permit  
04 March 2022



2 typical  
Wall Section  
3/4" = 1'-0"



1 typical  
Wall Section  
3/4" = 1'-0"

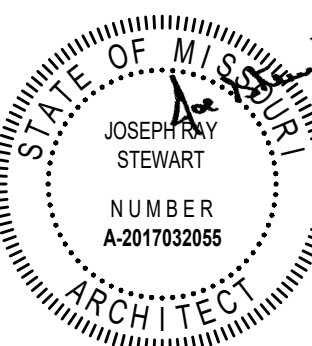


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Revisions
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new shell building

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M291 and SW Market Street  
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sheet  
**A4**  
Wall Sections

Permit  
04 March 2022



STRUCTURAL NOTES

2018 INTERNATIONAL BUILDING CODE

GENERAL NOTES:

- DESIGN AND CONSTRUCTION SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE.
- THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE NEW STRUCTURE DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, BRACING, SHORING FOR CONSTRUCTION LOADS AND EQUIPMENT, ETC. THE ARCHITECT-ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTOR'S MEANS AND METHODS, SEQUENCES OF CONSTRUCTION, OR THE SAFETY PROGRAM. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT-ENGINEER WILL NOT INVOLVE REVIEW OF THESE ITEMS.
- CONTRACTOR IS TO ESTABLISH AND VERIFY OPENINGS AND INSERTS FOR ITEMS TO BE INSTALLED BY OTHER TRADES PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.
- CONSTRUCTION MATERIAL AND EQUIPMENT PLACED ON FRAMED CONSTRUCTIONS SHALL BE SUCH THAT THE LOAD DOES NOT EXCEED THE DESIGN LIVE LOAD OF THE CONSTRUCTION. PROVIDE SHORING OF CONSTRUCTIONS WHERE NECESSARY FOR LOADS.
- DETAILS THAT ARE NOTED AS "TYP." ON DETAIL TITLES ARE TO BE APPLIED TO THE PROJECT CONSTRUCTION AS GENERAL CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. THESE DETAILS ARE NOT CUT AT ALL LOCATIONS THEY OCCUR AND MAY NOT BE CUT AT ALL.
- 

DESIGN:

ALL CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES AND STANDARDS, EXCEPT WHERE NOTED TO THE CONTRARY ON DRAWINGS OR WHERE MORE STRINGENT REQUIREMENTS ARE SHOWN.

ACI 117	STANDARD SPECIFICATIONS FOR TOLERANCE FOR CONCRETE CONSTRUCTION AND MATERIALS
ACI 301	SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
ACI 318	BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
AISC	SPECIFICATIONS FOR STRUCTURAL STEEL FOR BUILDINGS
AISI-NAS	NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
AWS D1.1	STRUCTURAL WELDING CODE

DEAD LOADS:

15 PSF ROOF LOAD

LIVE LOADS:

20 PSF ROOF LOAD

SNOW LOADS:

SNOW LOADS IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE AND ASCE 7 INCLUDING DRIFTING SNOW LOADS CHAPTER 16.  
Ce = 1.0                      Cf = 1.0  
Is = 1.0                      Pg = 30 PSF  
Pf = 16 PSF                      Pf(min) = 20 PSF  
DESIGN SNOW LOAD SHALL BE WORST CASE OF:  
CASE 1: 20 PSF + SNOW DRIFT                      (SEE FRAMING PLAN FOR DRIFT LOADS)  
CASE 2: 30 PSF                      (BALANCED SNOW)

WIND LOAD:

WIND LOADS IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE.  
ULTIMATE DESIGN WIND SPEED = 115 MPH  
EXPOSURE "B"  
Gcpi = +/- 0.18

SEISMIC LOAD:

SEISMIC DESIGN IN ACCORD WITH 2018 INTERNATIONAL BUILDING CODE.  
Ie=1.0  
SITE CLASS = D  
MAPPED SPECTRAL RESPONSE COEFFICIENTS:                      Ss = 0.1137    Si = 0.0668  
SPECTRAL RESPONSE COEFFICIENTS:                      Sps = 0.121    Sms=0.107  
R = 6.5  
Cs = 0.0157

LATERAL LOAD RESISTANCE SYSTEM:

LATERAL LOAD SYSTEM CONSISTS OF ROOF DIAPHRAGMS TRANSFERRING LATERAL LOADS TO WOOD SHEAR WALLS SUPPORTED BY CONCRETE FOUNDATIONS.

FOUNDATIONS:

- A GEOTECHNICAL REPORT HAS NOT BEEN COMPLETED. FOUNDATIONS HAVE BEEN DESIGNED TO BEAR ON SOIL CAPABLE OF SUPPORTING 1500 PSF. THIS SHOULD BE VERIFIED BY LOCAL GEOTECHNICAL ENGINEER.
- MINIMUM FROST DEPTH: 3'-0"

CONCRETE:

- CONCRETE MIX DESIGNS:  
FOOTINGS:  
MIN 28 DAY COMPRESSIVE STRENGTH = 3,000 PSI  
W/C RATIO = 0.50  
MAX AGGREGATE SIZE = ¾"  
SLUMP = 4" ±1"  
AIR CONTENT = 6% ±1.5% (ASTM C 260)  
  
SLAB ON GRADE:  
MIN 28 DAY COMPRESSIVE STRENGTH = 4,000 PSI  
W/C RATIO = 0.45  
MAX AGGREGATE SIZE = ¾"  
MAX SLUMP = 4"  
AIR CONTENT = 1.5% (ASTM C 260)

- IF CONTRACTOR DESIRES TO INCREASE SLUMP ABOVE ALLOWABLE LIMITS TO FACILITATE PLACEMENT OR PUMPING, THIS SHALL BE DONE UTILIZING AN APPROPRIATE APPROVED ADMIXTURE - NO WATER SHALL BE ADDED AT THE PROJECT SITE WITHOUT THE ENGINEER'S PERMISSION. ALL ADMIXTURES SHALL BE APPROVED IN WRITING BY THE ENGINEER.
- THE CONTRACTOR SHALL REJECT ANY CONCRETE THAT EXCEEDS THE SLUMP LIMITS NOTED ABOVE OR EXCEEDS THE TOTAL ALLOWABLE MIXING TIME.
- FLY ASH MAY BE INCLUDED IN FOUNDATION CONCRETE.
- NO ALUMINUM SHALL BE PLACED IN CONCRETE.
- DURING HOT WEATHER (80 DEGREES F AND ABOVE, THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS ACI 305"HOT WEATHER CONCRETE." DURING COLD WEATHER (40 DEGREES F AND BELOW), THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS OF ACI-306 "COLD WEATHER CONCRETING."
- THE CONCRETE MIX DESIGNS ARE TO BE SUBMITTED AS A FORMAL SUBMITTAL TO THE ENGINEER OF RECORD FOR REVIEW AND ACCEPTANCE. AFTER ACCEPTANCE OF THE MIX DESIGN BY THE ENGINEER OF RECORD, THE ACCEPTED DESIGNS MUST BE FORWARDED TO THE CITY INSPECTION DEPT. & THE SPECIAL INSPECTOR PRIOR TO CONCRETE BEING DELIVERED TO THE SITE.

CONCRETE REINFORCEMENT:

- REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.
- CONCRETE COVER REQUIREMENTS FOR CAST-IN-PLACE, UNLESS OTHERWISE NOTE ON DETAILS:  
  
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3" #6 BARS AND LARGER: 2" #5 BARS AND SMALLER: 1-½"
- REINFORCING BAR SPLICES SHALL BE IN ACCORD WITH THE REQUIREMENTS OF ACI 318-05 AND THE REINFORCING SPLICE LENGTH TABLE SHOWN ON THE DRAWINGS.  
  
**ROUGH CARPENTRY:**
  - ALL WOOD FRAMING MEMBERS INDICATED ARE NOMINAL SIZES. PROVIDE ACTUAL DRESSED SIZES, KILN DRIED, WITH MAXIMUM IN PLACE MOISTURE CONTENT OF 19%.
  - ALL BOLTS ARE A36 OR A307, GRADE A, AND ALL NAILS ARE BOX NAILS UNLESS NOTED OTHERWISE.
- WALL SHEATHING IS 7/16" STRUCTURAL SHEATHING, 8d NAILS AT 6" OC. BLOCK ALL PANEL EDGES. REFERENCE PLANS FOR HOLDDOWN LOCATIONS AND SIZES.
- INTERIOR SHEAR WALLS ARE GYPSUM SHEATHING, BLOCKED AT ALL EDGES, FASTENED WITH 6D GALVANIZED COOLER NAILS AT 4" MAX AT EDGES AND 7" MAX IN THE FIELD. GYPSUM SHEATHING SHALL BE CONTINUOUS TO ROOF DIAPHRAGM.
- UNLESS NOTED OTHERWISE, FASTENER QUALITY, QUANTITY SIZE AND SPACING SHALL COMPLY WITH THE 2016IBC FASTENING SCHEDULE (TABLE 2304.9)
- ALL WOOD IN CONTRACT WITH THE CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESERVATIVE TREATED.
- 15/32" ROOF SHEATHING STRUCTURAL WITH 8D NAILS AT 6" OC.
- JOIST HEADERS AND WALL STUDS TO BE #2 DOUGLAS FIR AND LVL -E=2,000,000 PSI

PRE-FABRICATED WOOD TRUSSES:

- ROOF AND FLOOR TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH TRUSS PLATE INSTITUTES (TPI) DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES AND THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. BRACE TOP AND BOTTOM CHORDS OF TRUSSES DURING ERECTION PER MANUFACTURER RECOMMENDATIONS.
- ROOF TRUSSES SHALL BE DESIGNED FOR AND CONSTRUCTED FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/360. FLOOR TRUSSES SHALL BE DESIGNED AND CONSTRUCTED FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/360 WITH NON BEARING WALLS BELOW AND L/480 AT CLEAR SPAN TRUSSES.
- TRUSS SPACING IS AS DETERMINED BY TRUSS MANUFACTURER. MAXIMUM SPACING IS 24" OC.
- LOADS ARE NOTED IN THE LOADING SECTION AND ARE MINIMUM. TRUSS DESIGNER IS RESPONSIBLE FOR ESTABLISHING. FINAL LOADS USED FOR DESIGN, INCLUDING LIVE, DEAD, SNOW (WITH DRIFTS) AND WIND LOADS. TRUSS FABRICATOR TO SUPPLY SEALED TRUSS SHOP DRAWINGS AND SEALED PLAN PLACEMENT DRAWINGS PREPARED UNDER THE SUPERVISION OF THE SAME LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI. SHOP DRAWINGS SHOULD INCLUDE DETAILED ERECTION DRAWINGS, AS WELL AS DESIGN INFORMATION FOR EACH TRUSS. PROVIDE ALL INFORMATION AS REQUIRED IN THE 2018 IBC SECTION 2303.4.1.
- TRUSS MANUFACTURER IS RESPONSIBLE FOR DESIGNING ALL TRUSS-TO-TRUSS, TRUSS-TO-WALL AND TRUSS-TO-BEAM CONNECTIONS UNLESS NOTED OTHERWISE.
- COORDINATE ROOF ANCHOR LOCATIONS WITH ROOF ANCHOR MANUFACTURER.

STRUCTURAL STEEL:

- FABRICATOR SHALL BE AN "APPROVED FABRICATOR" IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE SECTION 1704.2.5, REGISTERED AND APPROVED BY THE LOCAL BUILDING DEPARTMENT. IN LIEU OF THE PREVIOUS, FABRICATOR SHALL INCLUDE IN THEIR BID THE SERVICES OF A SPECIAL INSPECTOR TO PROVIDE INSPECTION/TESTING SERVICES FOR IN-SHOP WORK TO MEET THE REQUIREMENTS OF 2018 INTERNATIONAL BUILDING CODE SECTION 1704.
- FABRICATOR SHALL PROVIDE CONNECTION DESIGN DETAILS AND CALCULATIONS FOR BRACED FRAMES FOR THE LOADS LISTED ON BRACED FRAME ELEVATIONS SEALED BY A LICENSED KANSAS PROFESSIONAL ENGINEER.
- STRUCTURAL STEEL SHALL MEET ASTM A36 UNLESS NOTED OTHERWISE. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL MEET ASTM A992.
- STEEL TUBES SHALL MEET ASTM A500, GRADE B.
- STEEL PIPE SHALL MEET ASTM A53, TYPE E OR S, GRADE B.
- BOLTS SHALL BE ¾" DIAMETER A325-N UNLESS OTHERWISE NOTED.
- FIELD BOLTING INSTALLATION SHALL BE INSPECTED IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE AND THE AISC LRFD MANUAL, SECOND EDITION. BOLTS SHALL BE INSTALLED SNUG TIGHT UNLESS NOTES OTHERWISE NOTED. ASTM A-325-SC SHALL BE FULLY TIGHTENED USING LOAD INDICATOR WASHERS.
- ALL WELDING SHALL CONFORM TO THE PROVISIONS OF THE AMERICAN WELDING SOCIETY CODE AWS D1.1-98. ELECTRODES SHALL MATCH BASE METALS AS SPECIFIED IN 2018 INTERNATIONAL BUILDING CODE.
- ALL FIELD WELDING SHALL BE VISUALLY INSPECTED BY THE TESTING LABORATORY.
- HOT DIP GALVANIZE ALL EXPOSED STEEL MEMBERS TO MEET ASTM 525 G60.
- ALL STEEL BELOW GRADE SHALL BE ENCASED IN CONCRETE WHERE POSSIBLE; IF NOT POSSIBLE, STEEL SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTIC PAINT.
- SEE ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL STRUCTURAL STEEL NOT CALLED OUT ON STRUCTURAL DRAWINGS.

CONCRETE SPLICE LENGTH TABLE							
BAR SIZE	FOOTING OR GRADE BEAM	WALL (VERTICAL)	WALL (HORIZONTAL)	SLAB	COLUMN	BEAM (BOTTOM)	BEAM (TOP)
#3	-	1'-8"	1'-8"	1'-8"	-	-	-
#4	2'-3"	2'-3"	2'-3"	2'-3"	-	-	-
#5	2'-9"	2'-9"	2'-9"	2'-9"	2'-0"	2'-7"	3'-5"
#6	3'-4"	3'-4"	3'-4"	3'-4"	2'-5"	3'-1"	4'-1"
#7	4'-10"	4'-10"	4'-10"	4'-10"	3'-6"	4'-6"	5'-11"
#8	5'-6"	5'-6"	-	-	4'-0"	5'-2"	6'-9"
#9	-	-	-	-	4'-6"	5'-10"	7'-7"
#10	-	-	-	-	5'-1"	6'-7"	8'-6"
#11	-	-	-	-	5'-7"	7'-3"	9'-6"

NOTES:

- WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE LARGER SPLICE LENGTH SHALL BE USED.
- BEAM TOP BAR IS DEFINED AS ANY HORIZONTAL BAR THAT HAS MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
- TABLE SHALL ONLY BE USED WHEN:
  - CONCRETE IS NORMAL WEIGHT
  - REINFORCEMENT STEEL IS UNCOATED
  - REINFORCEMENT STEEL MEETS ASTM A615, GRADE 60

POST-INSTALLED ANCHORS:

- EXPANSION BOLTS INSTALLED IN CONCRETE SHALL BE HILTI KWIK BOLT-II ANCHORS OR APPROVED EQUAL WITH EMBEDMENT NOTED ON THE DRAWINGS OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ESR-4627.
- SCREW ANCHORS SHALL BE KWIK CON II CONCRETE ANCHORS BY HILTI, INC. OR APPROVED EQUAL. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ER-5259
- ADHESIVE ANCHORS SHALL BE HILTI INC., HIT HY 150 ADHESIVE. ANCHORING SYSTEM OR APPROVED EQUAL, WITH EMBEDMENT NOTED ON THE DRAWINGS OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. INSTALL IN ACCORD WITH MANUFACTURER'S RECOMMENDATIONS AND ICBO REPORT ESR-3187.
- ANCHORS ARE NOT TO BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED ITS DESIGN STRENGTH.

DEFERRED SUBMITTALS:

- THE FOLLOWING ITEMS ARE DEFERRED SUBMITTAL ITEMS:
  - PRE-ENGINEERED WOOD TRUSS
- DEFERRED SUBMITTAL ITEMS SHALL BE PREPARED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF THE PROJECT WITH CALCULATIONS, DRAWINGS, DETAILS, AND CUT SHEETS SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. ONCE REVIEWED, CONTRACTOR SHALL FORWARD TO THE BUILDING DEPARTMENT FOR APPROVAL. FABRICATION AND/OR INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT OCCUR UNTIL APPROVAL OF THE BUILDING DEPARTMENT IS RECEIVED.

SPECIAL STRUCTURAL INSPECTIONS:

- IN ACCORD WITH THE 2018 INTERNATIONAL BUILDING CODE, SECTION 1704, AS NOTED BELOW. TESTING AND INSPECTION SHALL BE BY AN INDEPENDENT TESTING/INSPECTION FIRM, UNDER THE SUPERVISION OF A LICENSED ENGINEER EMPLOYED BY THAT FIRM. THE BASIS FOR WELDING INSPECTOR QUALIFICATION SHALL BE AWS D1.1.
  - SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE LOCAL DEPARTMENT OF BUILDING SAFETY AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR HIS AUTHORIZED AGENT FROM REQUESTING THE PERIODIC AND CALLED INSPECTIONS REQUIRED BY THE 2018 INTERNATIONAL BUILDING CODE
  - VERIFICATION OF SOILS: PER SECTION 1705.6 AND TABLE 1705.6.
  - CONCRETE: PER SECTION 1705.3 AND TABLE 1705.3.(ALL CONCRETE EXCEPT SLABS-ON-GRADE AND SIDEWALKS). ANCHOR BOLTS SHALL BE INSPECTED.
  - STEEL: PER SECTION 1705.2 AND TABLE 1705.2.2. PROVIDE INSPECTION OF ALL SHOP WELDING AT CONTRACTOR'S EXPENSE IF WELDING IS NOT DONE IN AN APPROVED FABRICATOR'S SHOP.
  - EXPANSION BOLT, SCREW ANCHOR AND EPOXY ANCHOR INSTALLATION TO VERIFY INSTALLATION IN ACCORD WITH ICBO REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.
  - THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS WITH THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS.
  - THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE BUILDING OFFICIAL AND TO THE ENGINEER OF RECORD FOR CONFORMANCE TO THE CONTRACT DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER OF RECORD AND THE BUILDING OFFICIAL.
  - THE TESTING/INSPECTION FIRM'S ENGINEER SHALL COMPLETE, SIGN AND SEAL A FINAL REPORT CERTIFYING THAT TO THE BEST OF HIS KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
- SHOP DRAWING REVIEW:
- J&S STRUCTURAL ENGINEERS, PA WILL REVIEW SHOP DRAWINGS AND RELATED SUBMITTALS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION GIVEN IN THE CONSTRUCTION DOCUMENTS. REVIEW OF A SPECIFIC ITEM SHALL NOT INCLUDE REVIEW OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.
  - THE FOLLOWING IS A LIST OF REQUIRED SHOP DRAWINGS AND RELATED SUBMITTALS. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR MORE INFORMATION AND A COMPLETE LIST OF REQUIRED SUBMITTALS:
    - CONCRETE MIX DESIGNS, TESTS AND MATERIAL CERTIFICATIONS
    - CONCRETE REINFORCING SHOP DRAWINGS AND REINFORCING MATERIAL CERTIFICATIONS.
    - STRUCTURAL STEEL SHOP DRAWINGS MATERIAL CERTIFICATIONS, WELDER CERTIFICATIONS.

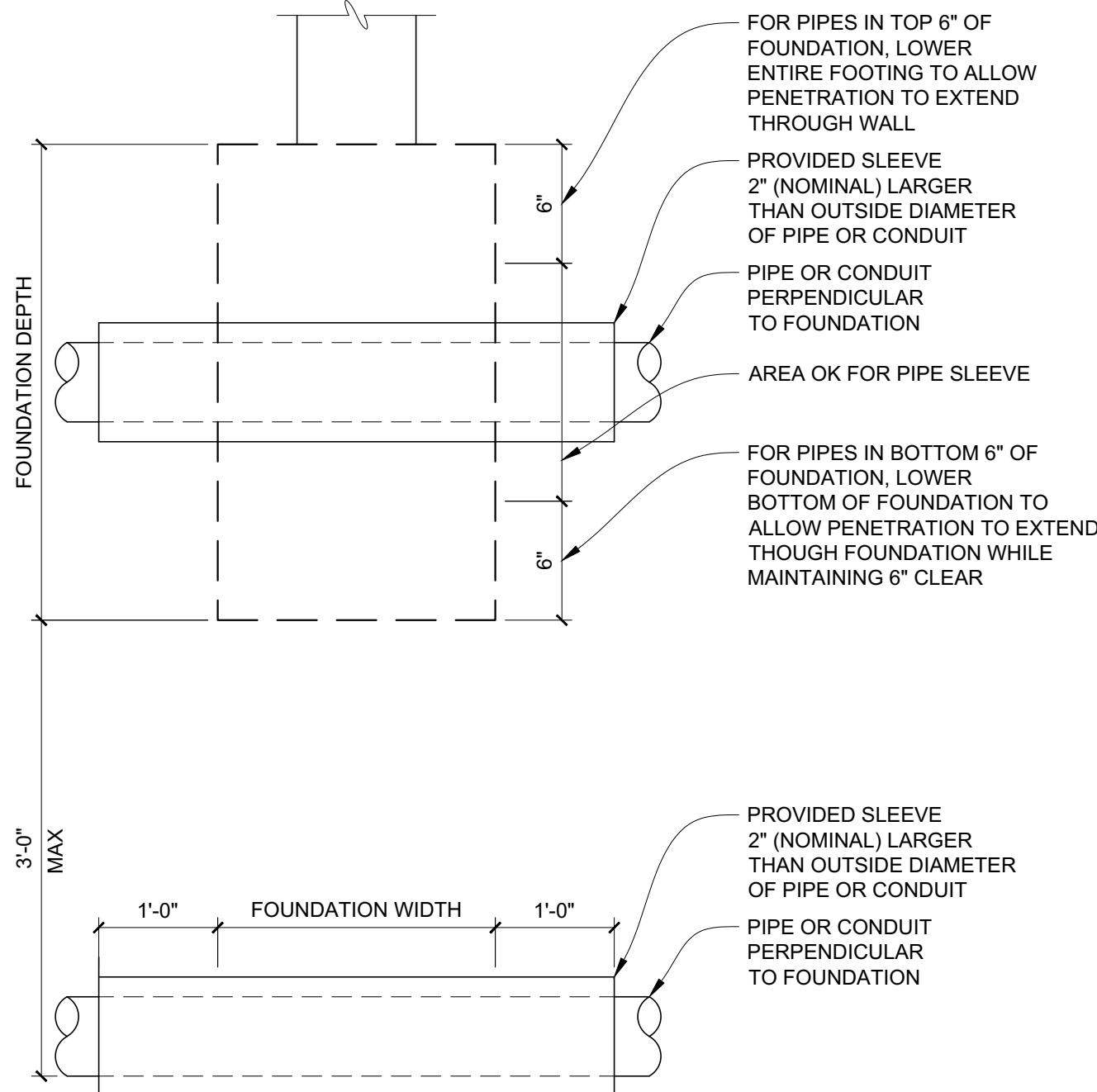
EPOXY EMBEDMENT TABLE					
REINFORCING STEEL			THREADED ROD ANCHORS		
BAR SIZE	MINIMUM EMBEDMENT DEPTH			ANCHOR DIAMETER	MINIMUM EMBEDMENT DEPTH
	Pc=3,000 psi	Pc=3,500 psi	Pc=4,000 psi		
#3	3 1/2"	3"	2 3/4"	3/8"	5 1/4"
#4	5"	4 3/4"	4 1/4"	1/2"	6 3/8"
#5	6 1/4"	5 3/4"	5 1/4"	5/8"	7 1/2"
#6	7 1/2"	7"	6 1/2"	3/4"	10"
#7	9"	8 1/2"	7 3/4"	7/8"	11 1/4"
#8	10 1/2"	9 3/4"	9"	1"	12 1/2"
#9	11 1/2"	10 3/4"	10"	1 1/4"	15"
#10	13 1/2"	13"	12"	1 1/4"	18"

NOTES:

- CONTRACTOR HAS THE OPTION TO EPOXY DOWELS AS AN ALTERNATE TO HOOKED OR CAST-IN-PLACE DOWELS WHERE NOTED ON DETAILS.
- SEE GENERAL STRUCTURAL NOTES FOR APPROVED EPOXY.

ABBREVIATIONS:

ASD	ALLOWABLE STRESS DESIGN
ARCH	ARCHITECT
BPL	BASEPLATE
BTW	BETWEEN
BOTT	BOTTOM
BOTT OF	BOTTOM OF
BOL	BOTTOM OF LINTEL
CIP	CAST IN PLACE
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESSIBLE
CONC	CONCRETE
CONT	CONTINUOUS
CJ	CONTROL JOINT
DB	DECK BEARING
DIM	DIMENSION
EA	EACH
EF	EACH FACE
ELEV	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
EW	EACH WAY
EXP	EXPANSION
FF	FINISH FLOOR
FND	FOUNDATION
FTG	FOOTING
GALV	GALVANIZED
GB	GRADE BEAM
HSS	HOLLOW STRUCTURAL SECTION
HORIZ	HORIZONTAL
IJ	ISOLATION JOINT
INFO	INFORMATION
INSUL	INSULATION
JSUL	JOINT
JB	JOIST BEARING
K	KIP = 1,000 POUNDS
LONG	LONGITUDINAL
LRFD	LOAD AND RESISTANCE FACTORED DESIGN
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
MAS	MASONRY
MAT'L	MATERIAL
MAX	MAXIMUM
MBM	METAL BUILDING MANUFACTURER
MIN	MINIMUM
OC	ON CENTER
PEM	PRE-ENGINEERED MEMBER (NOT BY J&S STRUCTURAL ENGINEERS)
PEMB	PRE-ENGINEERED METAL BUILDING (NOT BY J&S STRUCTURAL ENGINEERS)
PL	PLATE
LB	POUND
PSF	POUNDS PER SQUARE FOOT
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
SCHED	SCHEDULE
SPA	SPACE
SQ	SQUARE
STD	STANDARD
STL	STEEL
TB	TRUSS BEARING
T&B	TOP AND BOTTOM
T&G	TONGUE-AND-GROOVE
TO	TOP OF
TOF	TOP OF FOOTING
TOL	TOP OF LINTEL
TOS	TOP OF STEEL
TPE	TOP PLATE ELEVATION
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WWR	WELDED WIRE REINFORCEMENT



NOTES:

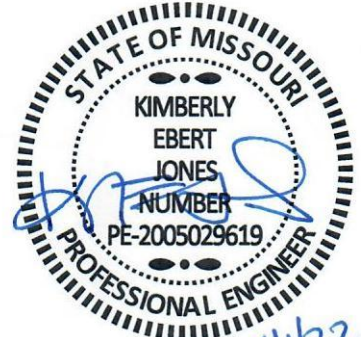
- FOR PIPE 3'-0" OR LESS BELOW FOUNDATION, PROVIDE SLEEVES AS SHOWN.
- FOR PIPE AND CONDUITS MORE THAN 3'-0" BELOW FOUNDATION, PIPE SLEEVE MAY BE ELIMINATED.
- COORDINATE WITH MECHANICAL, ELECTRICAL AND ALL OTHER EFFECTED TRADES.

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S001

TYPICAL INSTALLATION OF PIPE

(@ FOUNDATIONS)



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NEW MULTI-TENANT SHELL BUILDING FOR  
**MARKET STREET CENTER**  
291 AND SW MARKET STREET  
LEE'S SUMMIT, MO

PROJECT NUMBER:

22-015

ISSUE DATE:

3/6/2022

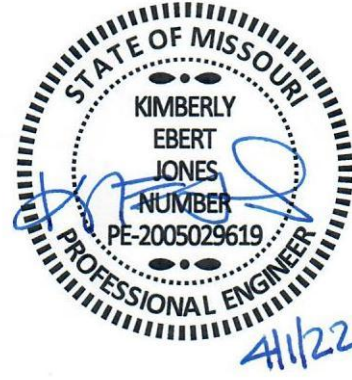
SHEET NAME:

GENERAL  
STRUCTURAL  
NOTES

SHEET NUMBER:

S001





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NOTES AND  
FASTENING  
SCHEDULE

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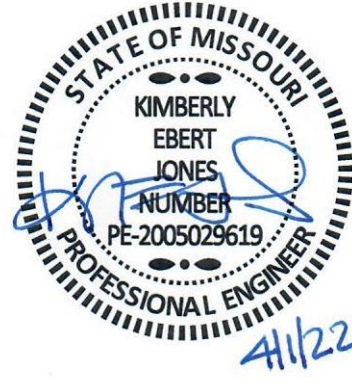
S002

TABLE 2304.9.1 FASTENING SCHEDULE		
CONNECTION	FASTENING (a,n)	LOCATION
1. JOIST TO SILL OR GIRDER	3 - 8d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	TOENAIL
2. BRIDGING TO JOIST	2 - 8d COMMON 2 - 3"x0.131" NAIL 2 - 3" 14 GAGE STAPLE	TOENAIL EACH END
3. 1"x8" SUBFLOOR OR LESS TO EACH JOIST	2 - 8d COMMON	FACE NAIL
4. WIDER THAN 1"x8" SUBFLOOR TO EACH JOIST	3 - 8d COMMON	FACE NAIL
5. 2" SUBFLOOR TO JOIST OR GIRDER	2 - 16d COMMON	BLIND AND FACE NAIL
6. SOLE PLATE TO JOIST OR BLOCKING	16d AT 16" OC 3"x0.131" NAIL AT 8" OC 3" 14 GAGE STAPLE AT 12" OC	TYPICAL FACE NAIL
SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANEL	3 - 16d PER 16" 3"x0.131" NAIL PER 16" 3" 14 GAGE STAPLE PER 16"	BRACED WALL PANELS
7. TOP PLATE TO STUD	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	END NAIL
8. STUD TO SOLE PLATE	4 - 8d COMMON 4 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	TOENAIL
	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	END NAIL
9. DOUBLE STUDS	16d AT 24" OC 3"x0.131" NAIL AT 8" OC 3" 14 GAGE STAPLE AT 8" OC	FACE NAIL
10. DOUBLE TOP PLATES	16d AT 16" OC 3"x0.131" NAIL AT 12" OC 3" 14 GAGE STAPLE AT 12" OC	TYPICAL FACE NAIL
DOUBLE TOP PLATES	8 - 16d COMMON 12 - 3"x0.131" NAIL 12 - 3" 14 GAGE STAPLE TYPICAL FACE NAIL	LAP SPLICE
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE	3 - 8d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	TOENAIL
12. RIM JOIST TO TOP PLATE	8d AT 6" (152 mm) OC 3"x0.131" NAIL AT 6" OC 3" 14 GAGE STAPLE AT 6" OC	TOENAIL
13. TOP PLATES, LAPS AND INTERSECTIONS	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	FACE NAIL
14. CONTINUOUS HEADER, TWO PIECES	16d COMMON	16" OC ALONG EDGE
15. CEILING JOISTS TO PLATE	3 - 8d COMMON 5 - 3"x0.131" NAIL 5 - 3" 14 GAGE STAPLE	TOENAIL
16. CONTINUOUS HEADER TO STUD	4 - 8d COMMON	TOENAIL
17. CEILING JOISTS, LAPS OVER PARTITIONS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	3 - 16d COMMON MINIMUM, TABLE 2308.10.4.1 4 - 3"x0.131" NAIL 4 - 3" 14 GAGE STAPLE	FACE NAIL
18. CEILING JOISTS TO PARALLEL RAFTERS (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	3 - 16d COMMON MINIMUM, TABLE 2308.10.4.1 4 - 3"x0.131" NAIL 4 - 3" 14 GAGE STAPLE	FACE NAIL
19. RAFTER TO PLATE (SEE SECTION 2308.10.4.1, TABLE 2308.10.4.1)	3 - 8d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	TOENAIL
20. 1" DIAGONAL BRACE TO EACH STUD AND PLATE	2 - 8d COMMON 2 - 3"x0.131" NAIL 2 - 3" 14 GAGE STAPLE FACE NAIL	FACE NAIL
21. 1"x8" SHEATHING TO EACH BEARING WALL	2 - 8d COMMON	FACE NAIL
22. WIDER THAN 1"x8" SHEATHING TO EACH BEARING	3 - 8d COMMON	FACE NAIL
23. BUILD-UP CORNER STUDS	16d COMMON 3"x0.131" NAIL 3" 14 GAGE STAPLE	24" OC 16" OC 16" OC
24. BUILT-UP GIRDER AND BEAMS	20d COMMON 32" OC 3"x0.131" NAIL 24" OC 3" 14 GAGE STAPLE 24" OC	FACE NAIL AT TOP AND BOTTOM STAGGERED ON OPPOSITE SIDES
	2 - 20d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	FACE NAIL AT ENDS AND AT EACH SPLICE
25. 2" PLANKS	16d COMMON	AT EACH BEARING
26. COLLAR TIE TO RAFTER	3 - 10d COMMON 4 - 3"x0.131" NAIL 4 - 3" 14 GAGE STAPLE FACE NAIL	FACE NAIL
27. JACK RAFTER TO HIP	3 - 10d COMMON 4 - 3"x0.131" NAIL 4 - 3" 14 GAGE STAPLE	TOENAIL
	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	FACE NAIL
28. ROOF RAFTER TO 2-BY RIDGE BEAM	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	TOENAIL
	2 - 16d COMMON 3 - 3"x0.131" NAIL 3 - 3" 14 GAGE STAPLE	FACE NAIL
29. JOIST TO BAND JOIST	3 - 16d COMMON 5 - 3"x0.131" NAIL 5 - 3" 14 GAGE STAPLE	FACE NAIL
30. LEDGER STRIP	3 - 16d COMMON 4 - 3"x0.131" NAIL 4 - 3" 14 GAGE STAPLE	FACE NAIL
31. WOOD STRUCTURAL PANELS AND PARTICLEBOARD: (b) SUBFLOOR, ROOF AND WALL SHEATHING (TO FRAMING):	1/2" AND LESS 8d (c,l) 2 3/8"x0.113" NAIL (n) 1 3/4" 16 GAGE (o) 19/32" TO 3/4" 8d (d) OR 8d (e) 2 3/8"x0.113" NAIL (p) 2" 16 GAGE (p)	
	7/8" TO 1" 8d (c)	
SINGLE FLOOR (COMBINATION SUBFLOOR- UNDERLAYMENT TO FRAMING):	1 1/8" TO 1 1/4" 10d (d) OR 8d (e) 3/4" AND LESS 6d (e) 7/8" TO 1" 8d (e) 1 1/8" TO 1 1/4" 10d (d) OR 8d (e)	
32. PANEL SIDING (TO FRAMING)	1/2" OR LESS 6d (f) 5/8" 8d (f)	
33. FIBERBOARD SHEATHING: (g)	1/2" NO. 11 GAGA ROOFING NAIL (h) 6d COMMON NAIL NO. 16 GAGE STAPLE (i) 25/32" NO. 11 GAGE ROOFING NAIL (h) 8d COMMON NAIL NO. 16 GAGE STAPLE (i)	
34. INTERIOR PANELING	1/4" 4d (j) 3/8" 6d (k)	

NOTES

FOR SI: 1 INCH = 25.4 mm

- a. COMMON OR BOX NAILS ARE PERMITTED TO BE USED EXCEPT WHERE OTHERWISE STATED.
- b. NAILS SPACED AT 6 INCHES ON CENTER AT EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS EXCEPT 6 INCHES AT SUPPORTS WHERE SPANS ARE 48 INCHES OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING.
- c. COMMON OR DEFORMED SHANK.
- d. COMMON.
- e. DEFORMED SHANK.
- f. CORROSION-RESISTANT SIDING OR CASING NAIL.
- g. FASTENERS SPACED 3 INCHES ON CENTER AT EXTERIOR EDGES AND 6 INCHES ON CENTER AT INTERMEDIATE SUPPORTS.
- h. CORROSION-RESISTANT ROOFING NAILS WITH 7/16-INCH DIAMETER HEAD AND 1 1/2 INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 3/4 INCH LENGTH FOR 25/32-INCH SHEATHING.
- i. CORROSION-RESISTANT STAPLES WITH NOMINAL 7/16-INCH CROWN AND 1 1/8 INCH LENGTH FOR 1/2-INCH SHEATHING AND 1 1/2 INCH LENGTH FOR 25/32-INCH SHEATHING. PANEL SUPPORTS AT 16 INCHES (20 INCHES IF STRENGTH AXIS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED).
- j. CASING OR FINISH NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
- k. PANEL SUPPORTS AT 24 INCHES. CASING OR FINISH NAILS SPACED 6 INCHES ON PANEL EDGES, 12 INCHES AT INTERMEDIATE SUPPORTS.
- l. FOR ROOF SHEATHING APPLICATIONS, 8d NAILS ARE THE MINIMUM REQUIRED FOR WOOD STRUCTURAL PANELS.
- m. STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH.
- n. FOR ROOF SHEATHING APPLICATIONS, FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS.
- o. FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE SUPPORTS FOR SUBFLOOR AND WALL SHEATHING AND 3 INCHES ON CENTER AT EDGES, 6 INCHES AT INTERMEDIATE SUPPORTS FOR ROOF SHEATHING.
- p. FASTENERS SPACED 4 INCHES ON CENTER AT EDGES, 8 INCHES AT INTERMEDIATE.



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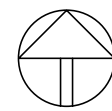
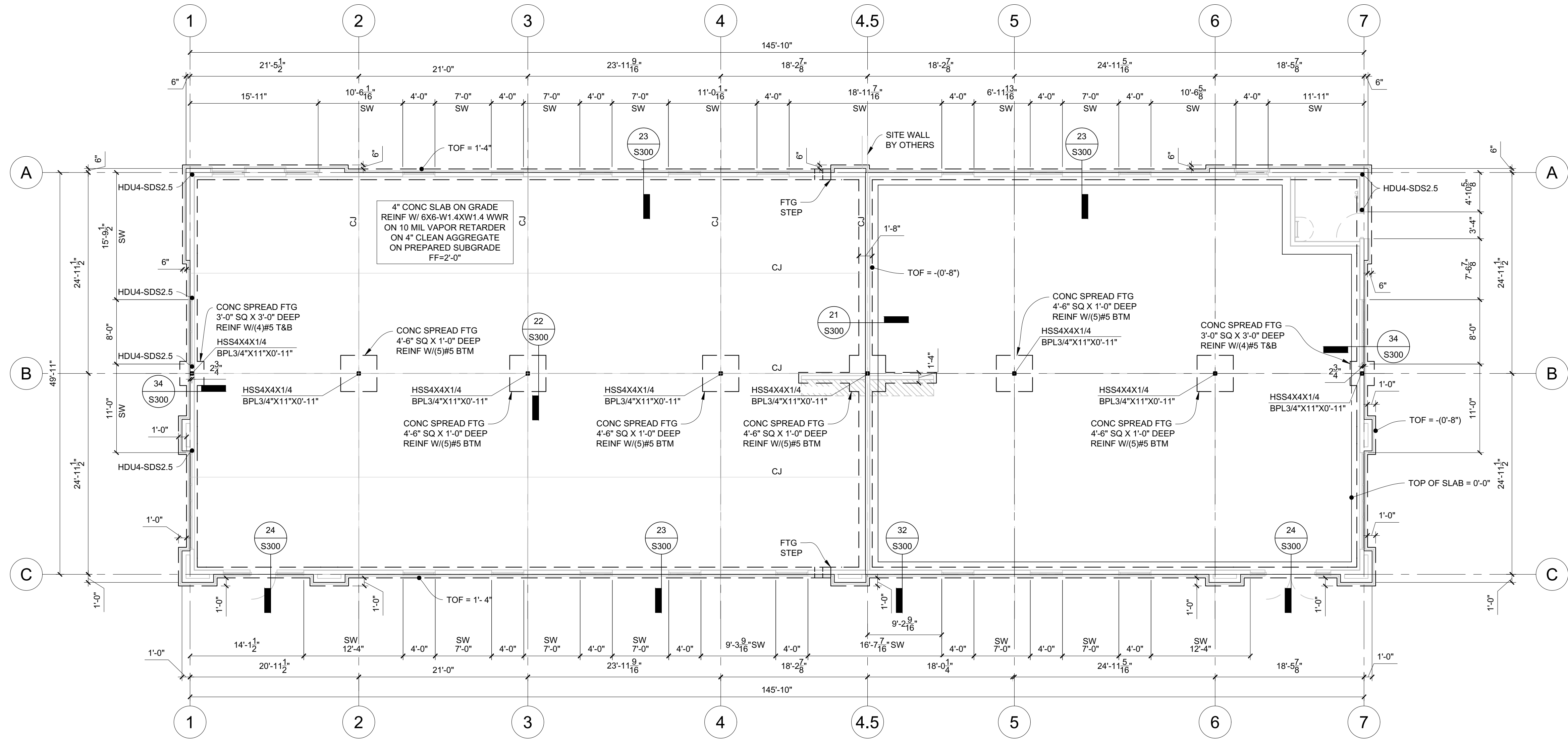
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FOUNDATION  
PLAN

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S100



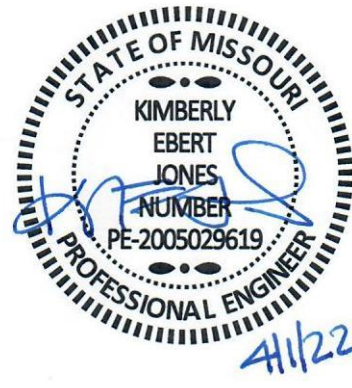
FOUNDATION PLAN

1/4" = 1'-0"

FOUNDATION NOTES:

- ALL ELEVATIONS ARE BASED ON A RELATIVE ELEVATION OF 100'-0" EQUAL TO THE INDICATED DATUM ELEVATION. VERIFY DATUM ELEVATION WITH THE LATEST CIVIL DRAWINGS PRIOR TO CONSTRUCTION.
- COORDINATE TOP OF FOOTING ELEVATIONS WITH LATEST CIVIL DRAWINGS PRIOR TO CONSTRUCTION TO MAINTAIN 3'-0" MINIMUM FROST DEPTH. TOP OF FOOTING ELEVATION = 55'-4" UNLESS OTHERWISE SHOWN THUS.
- SEE ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS AND WALL OPENINGS AND LOCATION OF THICKENED, SLOPED, RAISED, OR DEPRESSED SLABS.
- PROVIDE ISOLATION JOINTS AND SAW CUT CONTROL JOINTS IN SLAB ON GRADE AS SHOWN IN DETAIL 21 ON SHEET S300 AND 15'-0" OC MAX.
- SW\_ INDICATES SHEARWALL. PROVIDE 15/32" SHEATHING - SEE 42/S400
- ABBV: BPL - BASE PLATE
- TOP OF FOOTING = 8" BELOW FINISH FLOOR UNLESS NOTED OTHERWISE.





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MO COA #: 2009009344

NEW MULTI-TENANT SHELL BUILDING FOR  
**MARKET STREET CENTER**  
291 AND SW MARKET STREET  
LEE'S SUMMIT, MO

PROJECT NUMBER:

22-015

ISSUE DATE:

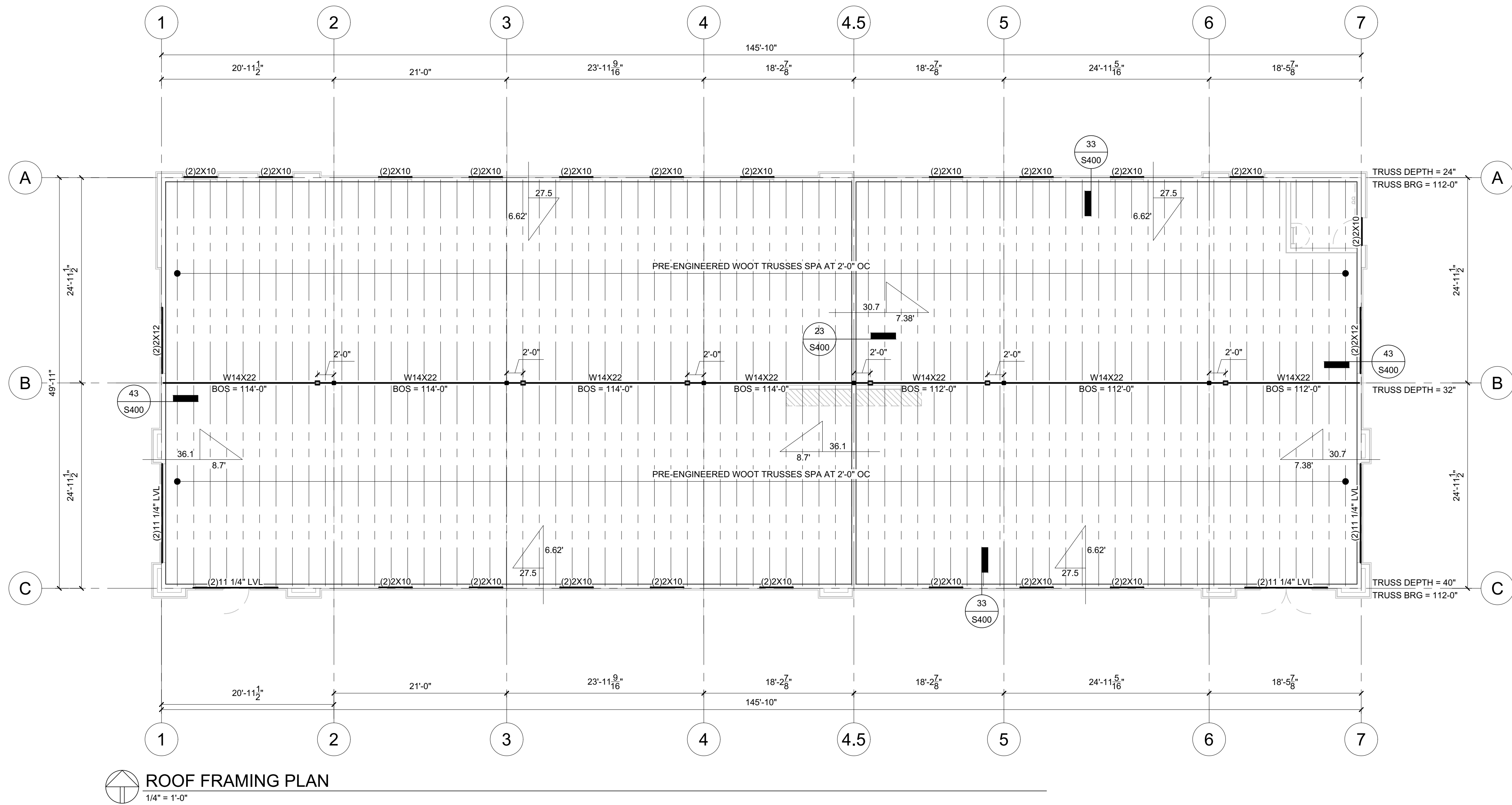
3/6/2022

SHEET NAME:

FRAMING  
PLAN

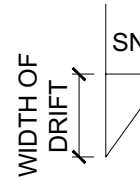
SHEET NUMBER:

S200

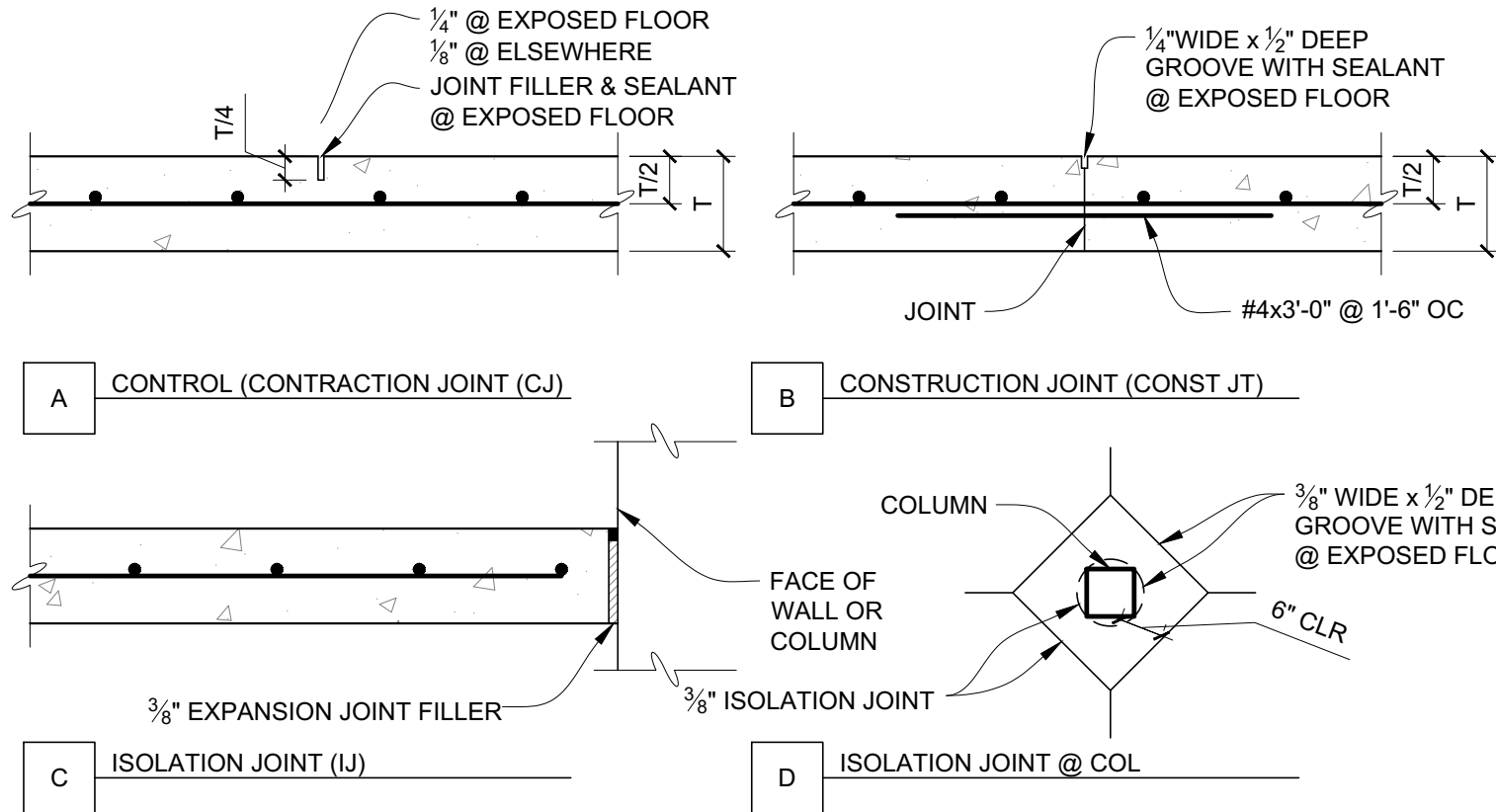


 **ROOF FRAMING PLAN**  
1/4" = 1'-0"

- NOTES:
- PRE-ENGINEERED WOOD TRUSS SPA AT 24" OC
  - TB INDICATES TRUSS BEARING ELEVATION.

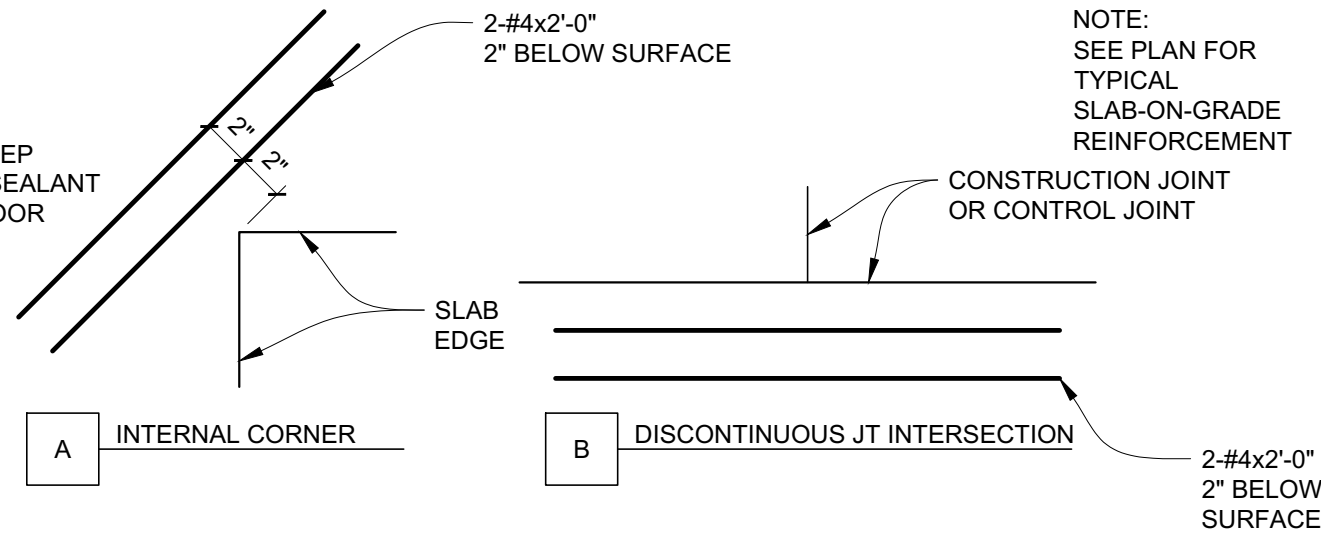
3.  SNOW DRIFT (PSF)





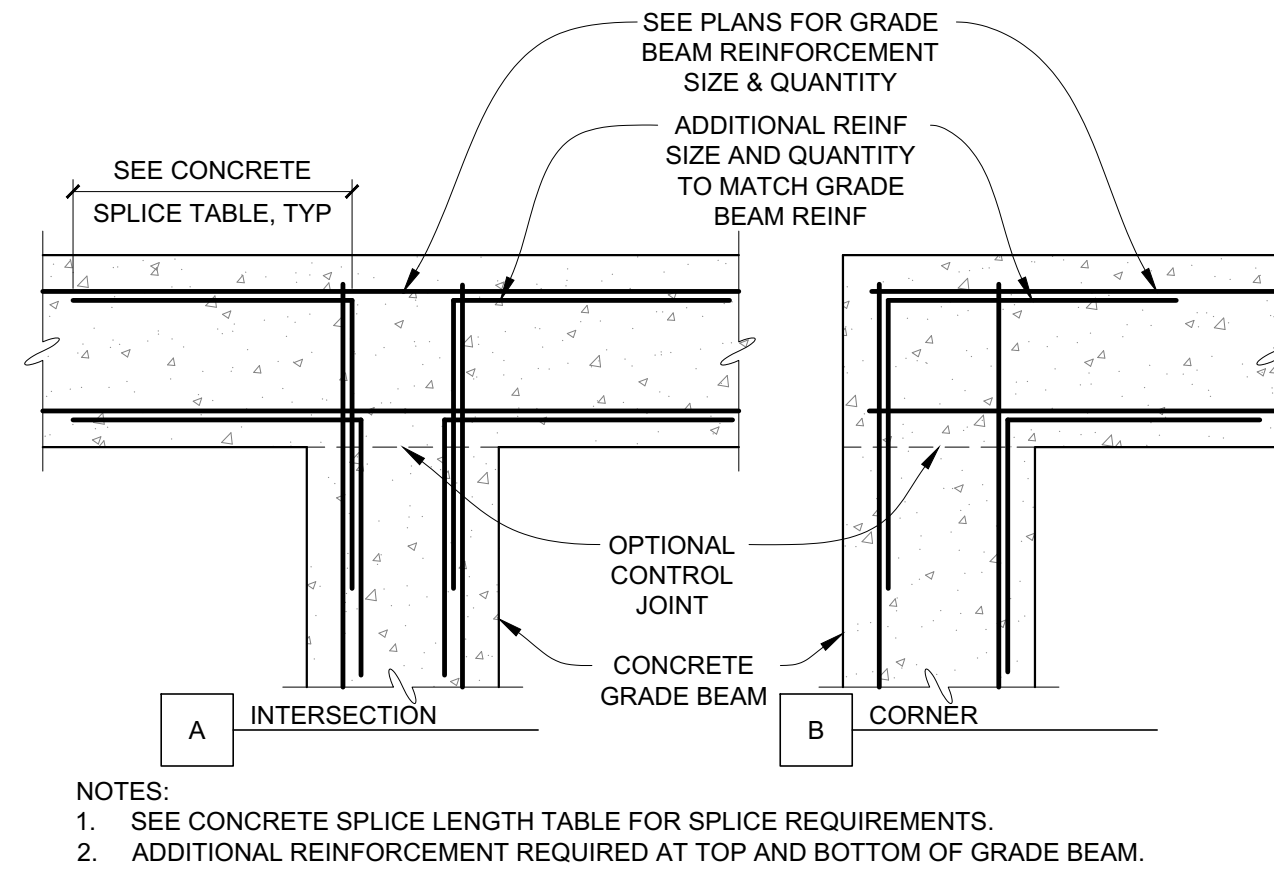
11  
S300  
NO SCALE

**TYPICAL SLAB-ON-GRADE JOINTS**



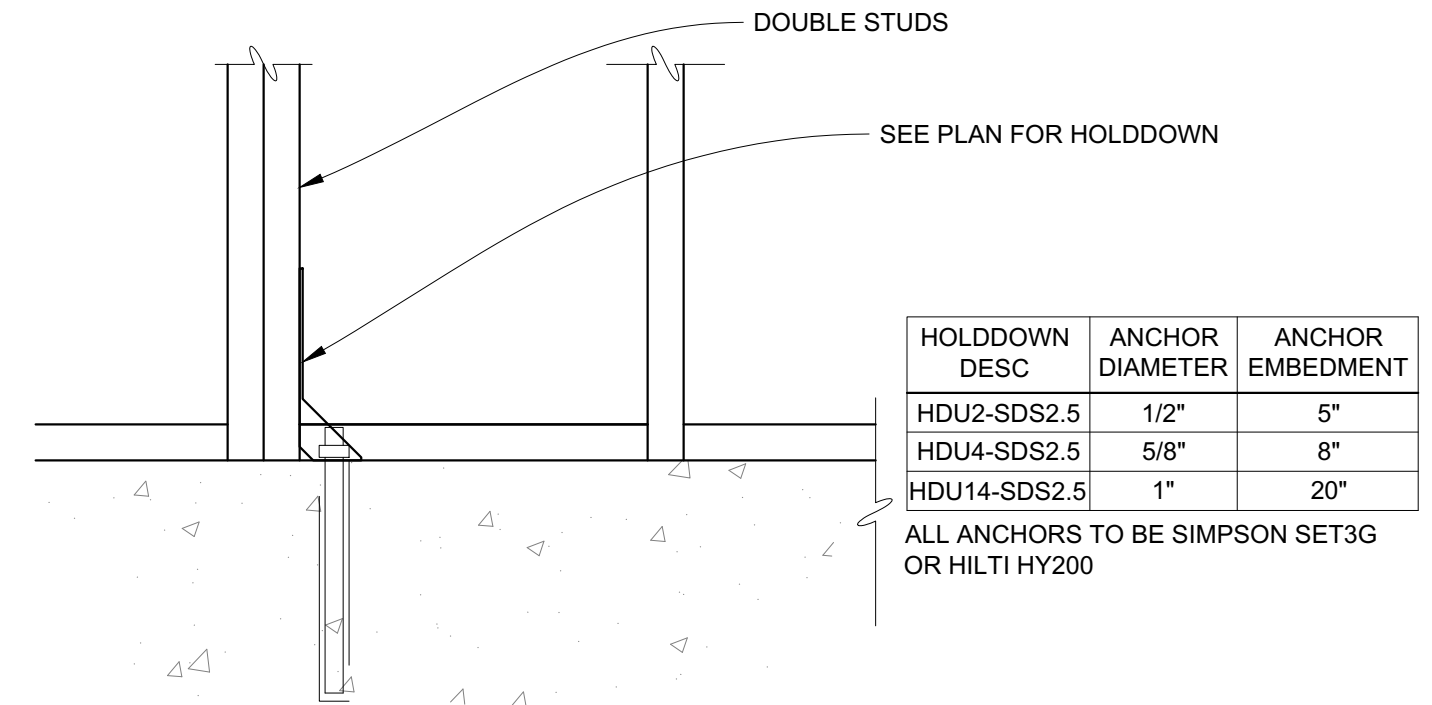
12  
S300  
NO SCALE

**ADDITIONAL SLAB-ON-GRADE REINF**



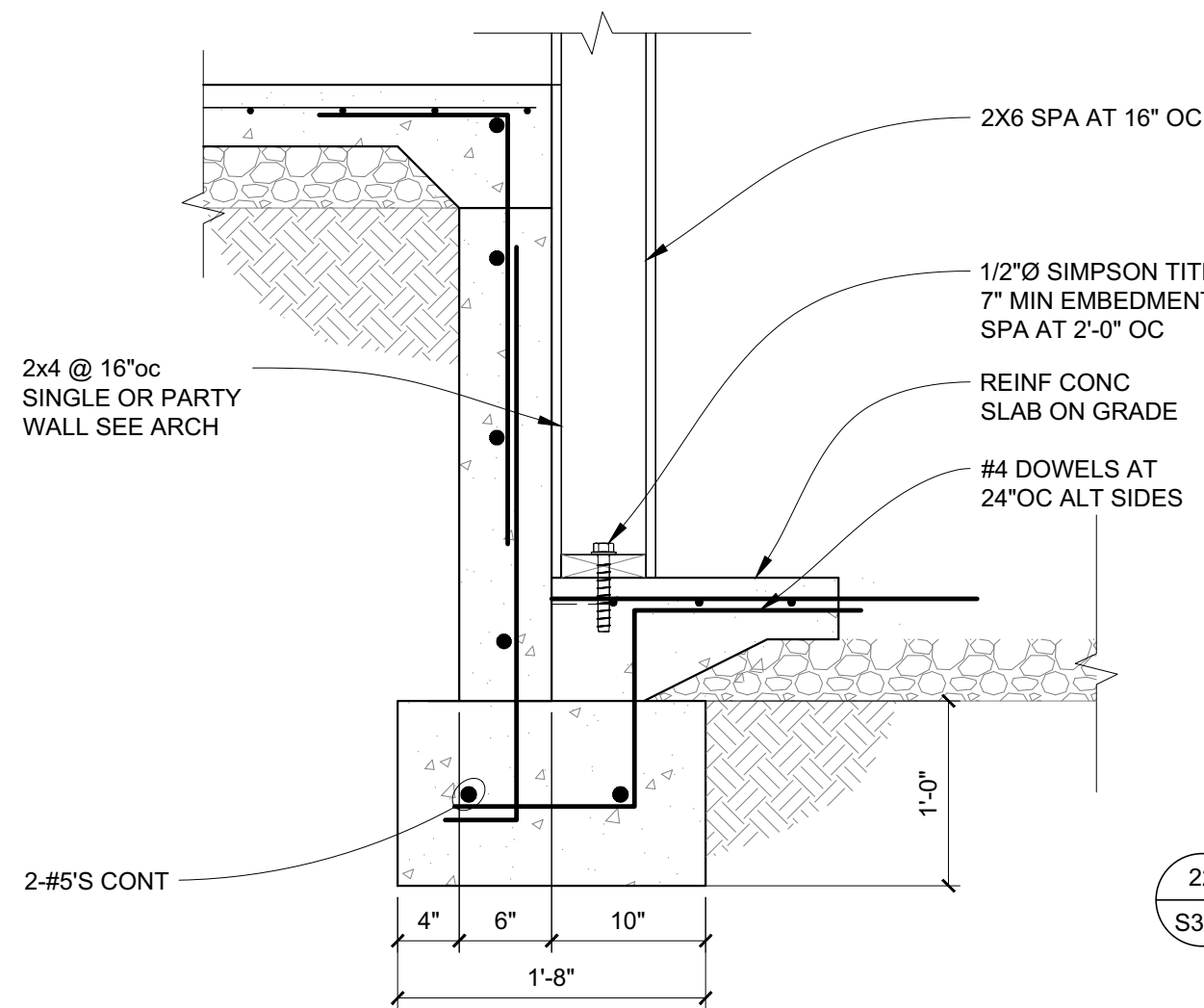
13  
S300  
NO SCALE

**TYP CORNER REINF DETAIL**



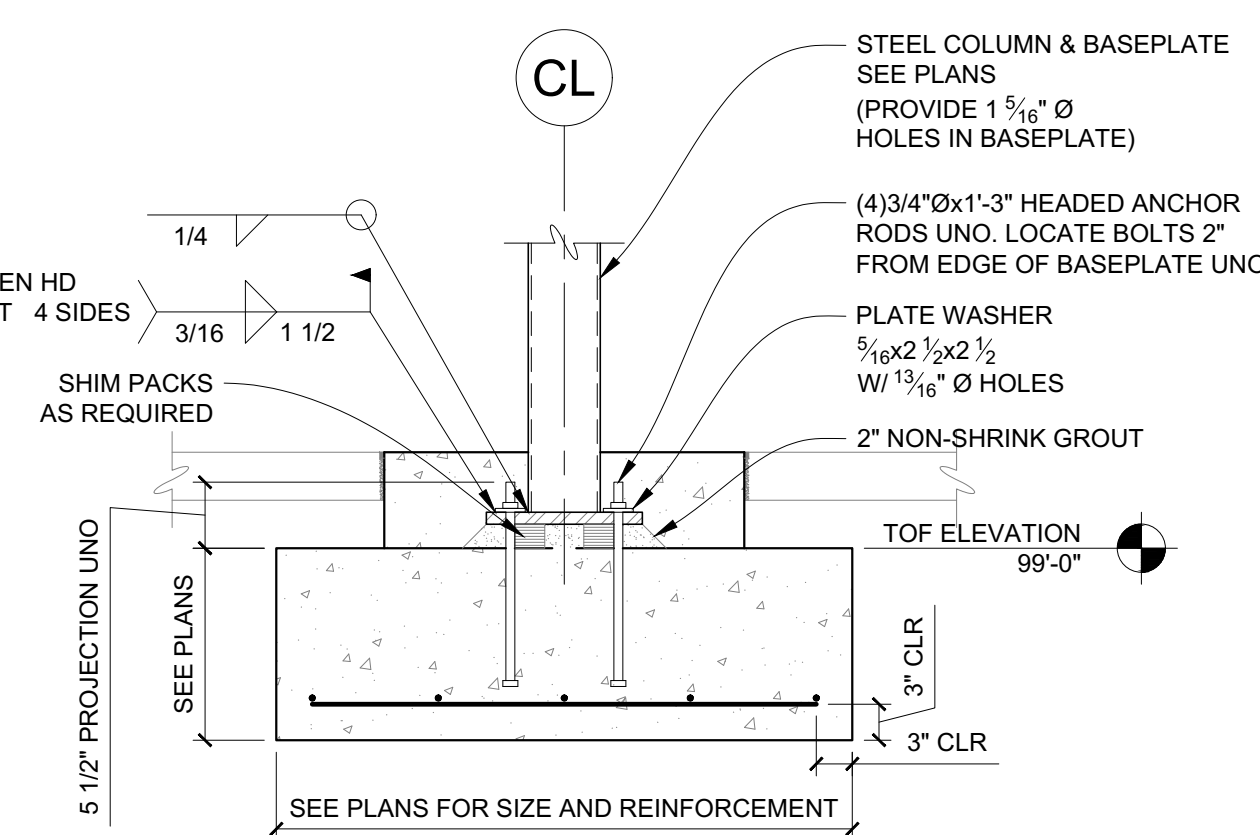
14  
S300  
NO SCALE

**TYPICAL HOLD DOWN DETAIL**



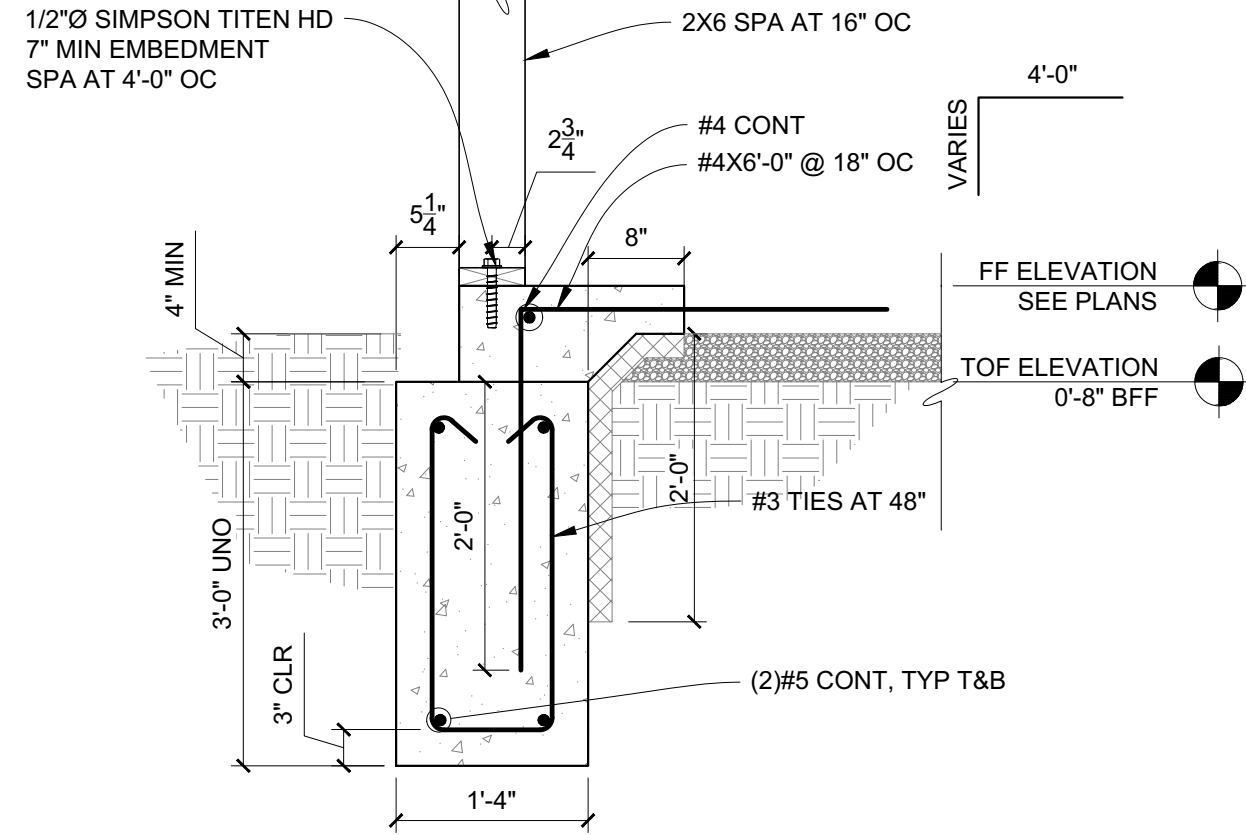
21  
S300  
NO SCALE

**TYP INTERIOR FOOTING**



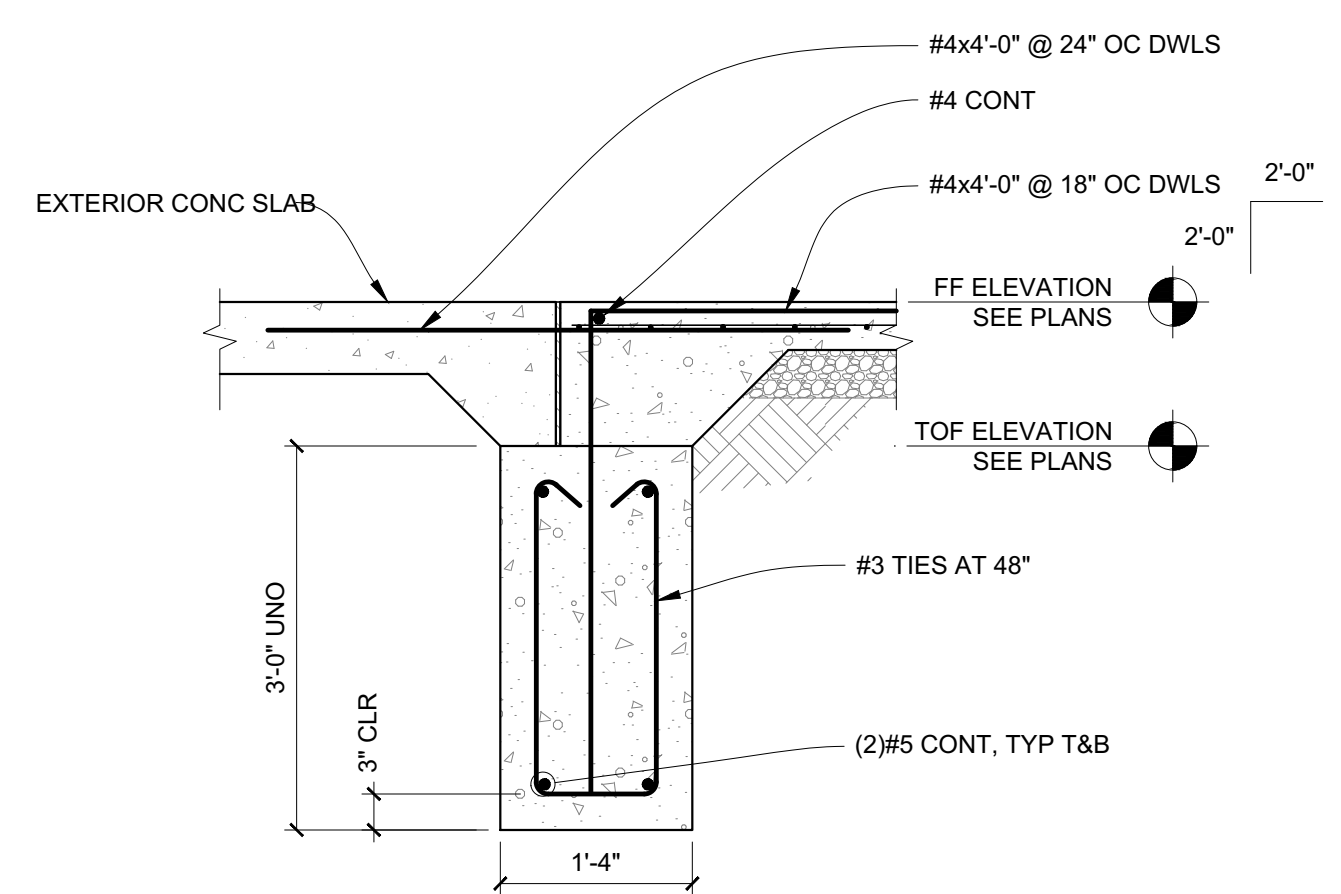
22  
S300  
NO SCALE

**TYP STEEL COL FOOTING DETAIL**



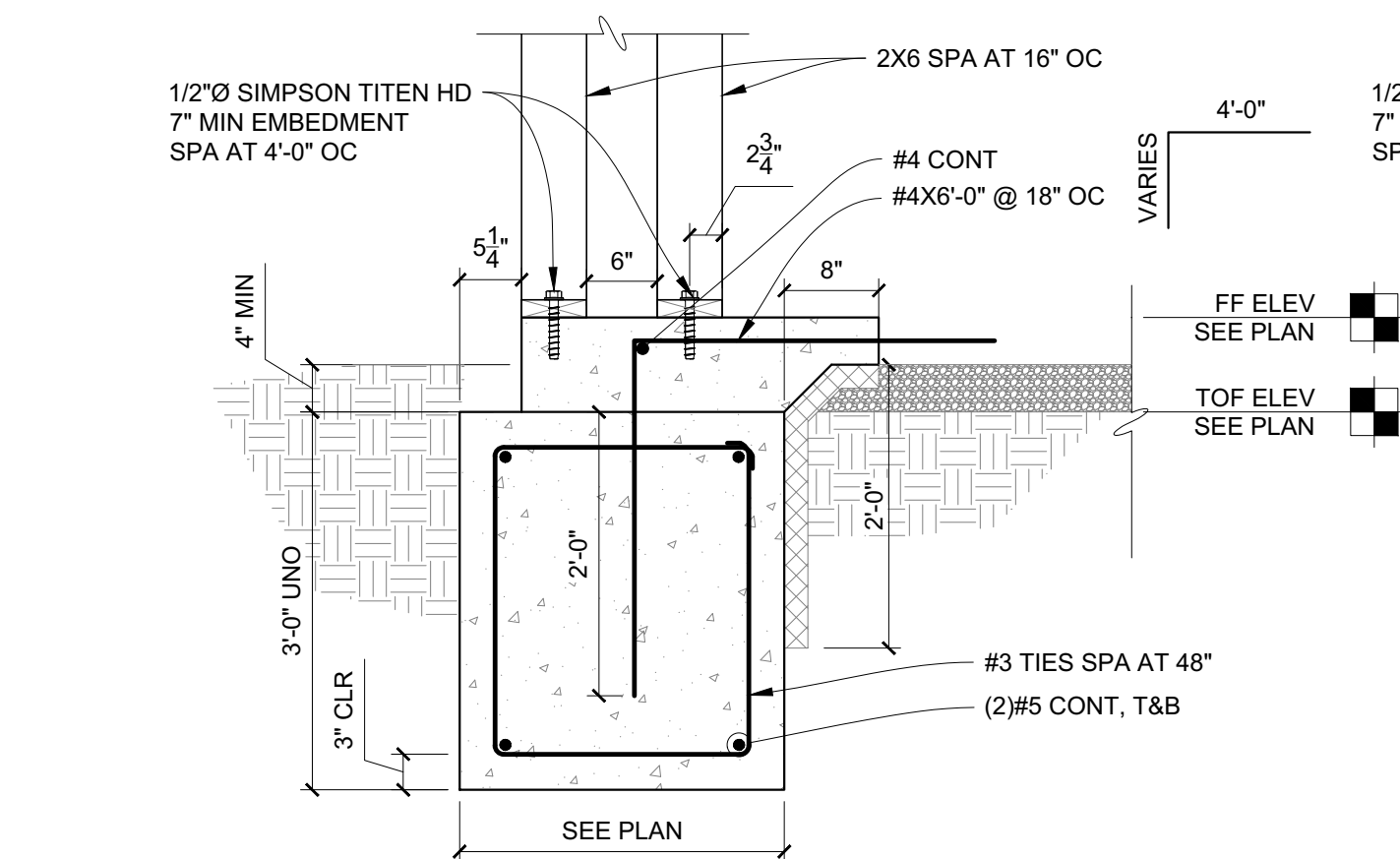
23  
S300  
NO SCALE

**TYP EXT GRADE BEAM DETAIL**



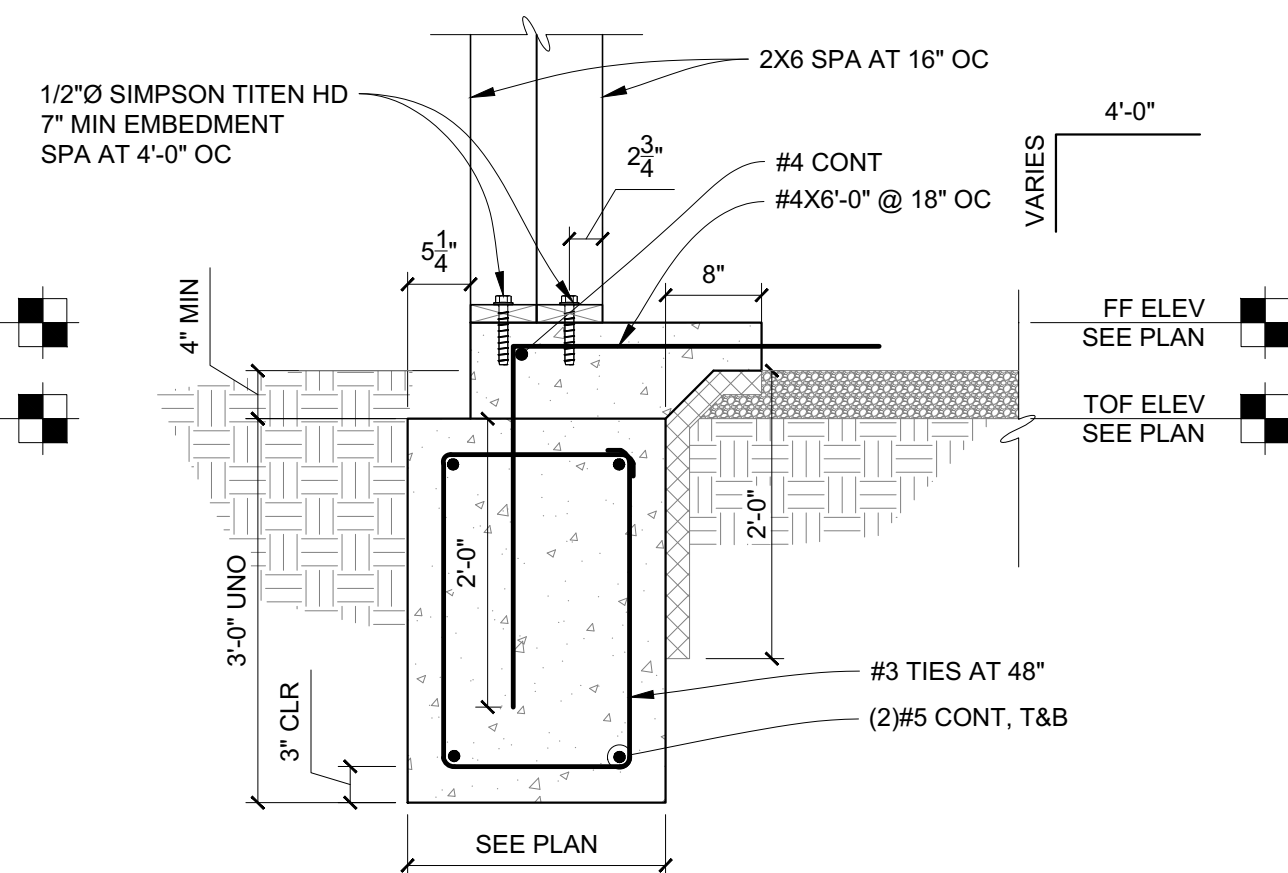
24  
S300  
NO SCALE

**DETAIL AT MAN DOOR**



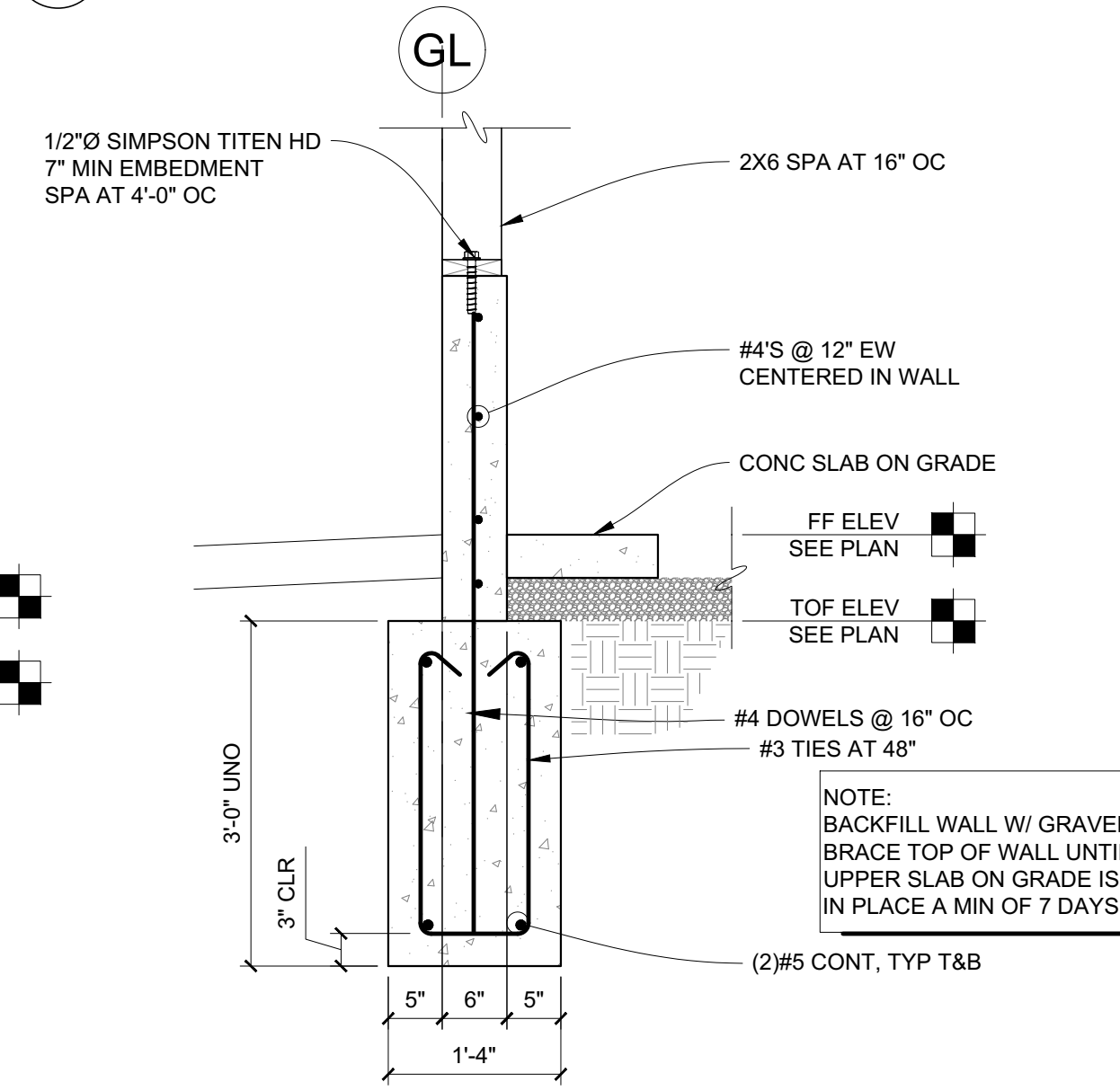
31  
S300  
NO SCALE

**GRADE BEAM AT BUMPOUT**



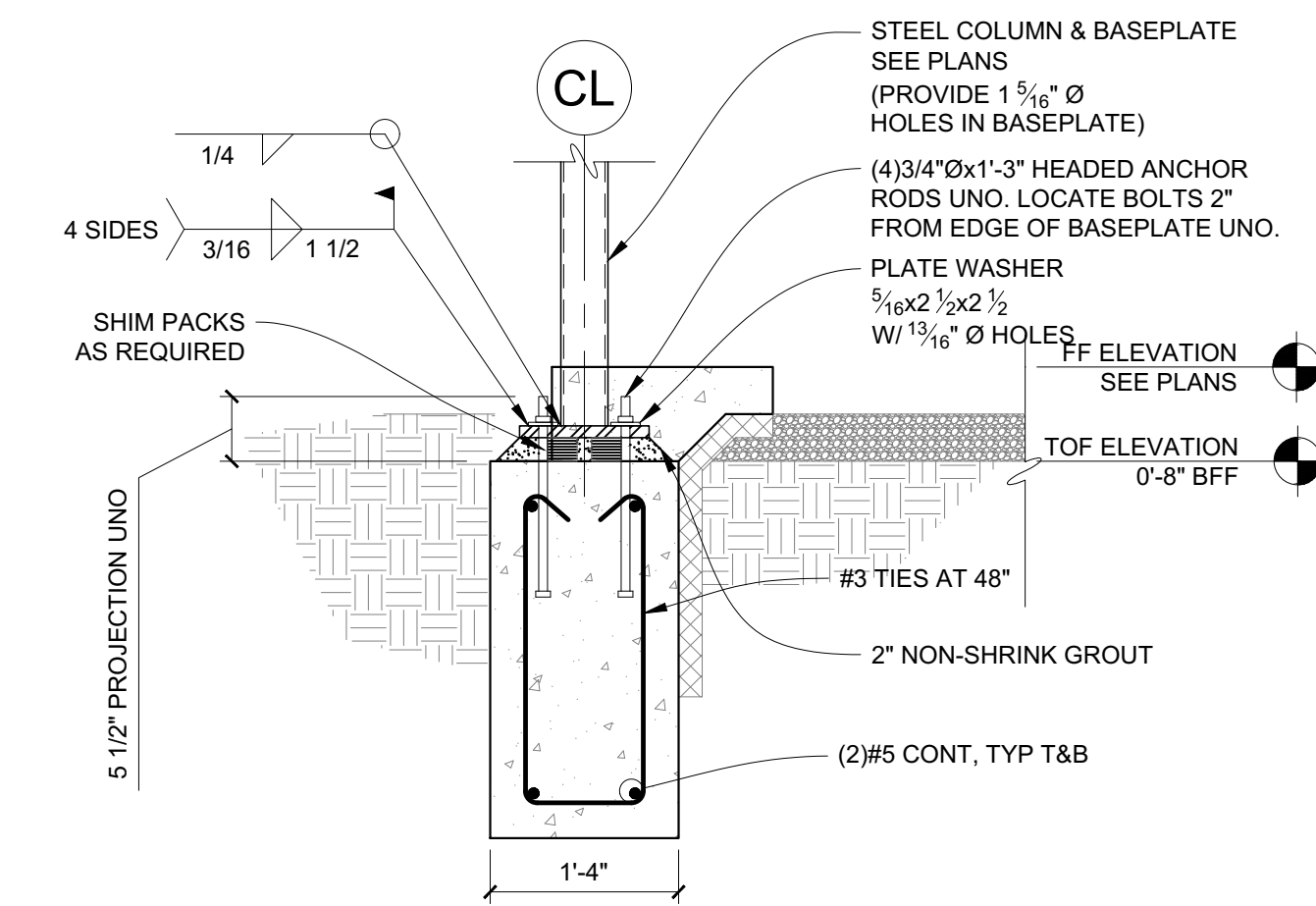
32  
S300  
NO SCALE

**GRADE BEAM AT BUMPOUT**



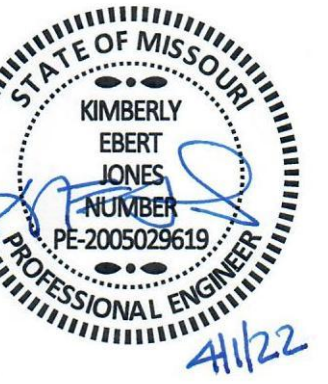
33  
S300  
3/4" = 1'-0"

**TYP WALL FTG DETAIL**



34  
S300  
NO SCALE

**EXT COL FTG DETAIL**



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**22-015**

ISSUE DATE:

**3/6/2022**

SHEET NAME:

**FOUNDATION  
DETAILS**

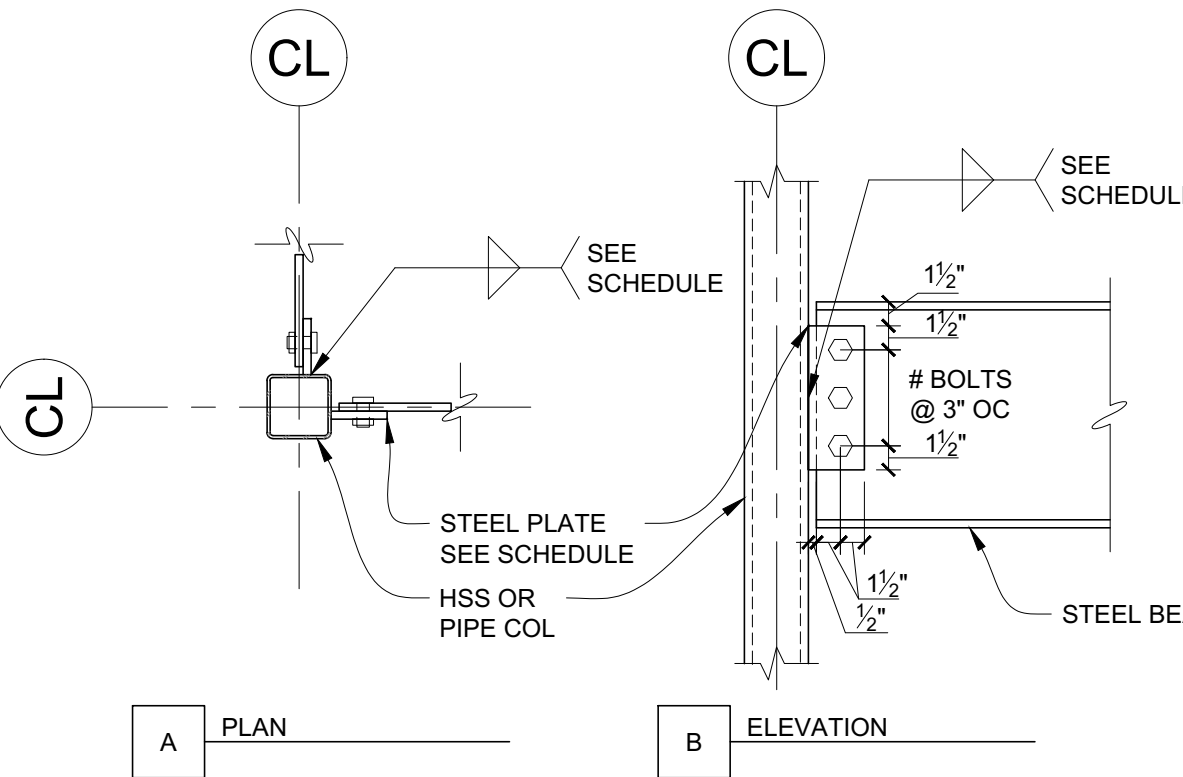
SHEET NUMBER:

**S300**



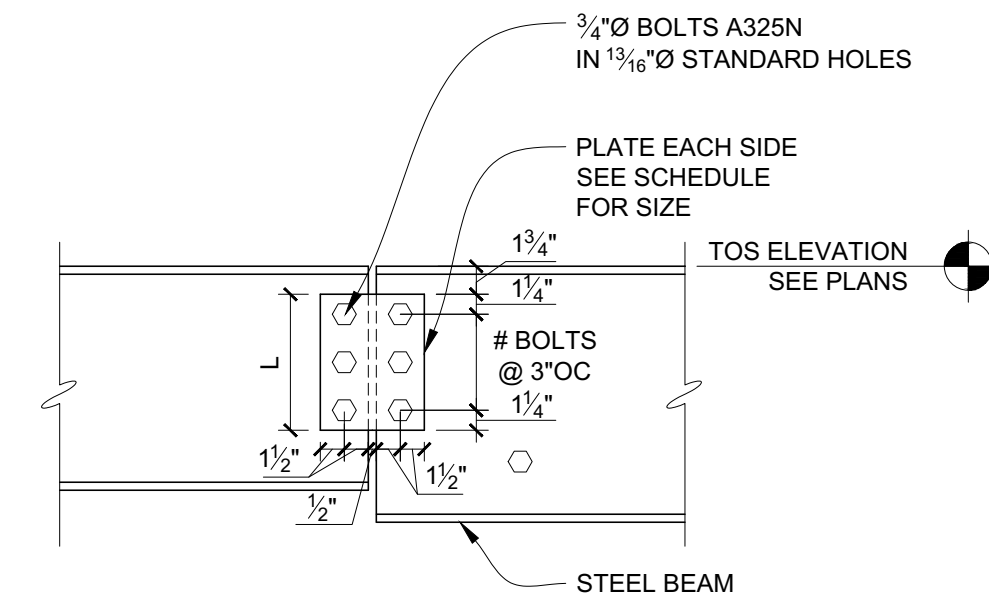
CONNECTION SCHEDULE (LRFD)					
MINIMUM BEAM SIZE	NUMBER OF BOLTS	L = PLATE LENGTH	PLATE THICKNESS	WELD SIZE	SHEAR CAPACITY
W8 W10	2	6"	¼"	⅜"	18K
W12 W14	3	9"	¼"	⅜"	36K
W16 W18	4	12"	¼"	⅜"	53K
W21	5	15"	⅝"	¼"	70K
W24	6	18"	⅝"	¼"	87K
W27	7	21"	⅝"	¼"	99K
W30 W33	8	24"	⅝"	⅝"	111K
W36	9	27"	⅞"	⅝"	123K

NOTES:  
1. BOLTS ARE ¾"Ø A325N BOLTS. HOLES ARE 13⁄16"Ø HOLES IN SUPPORT MEMBER AND 13⁄16" x 1" HORIZONTAL SHORT SLOTS IN PLATES.

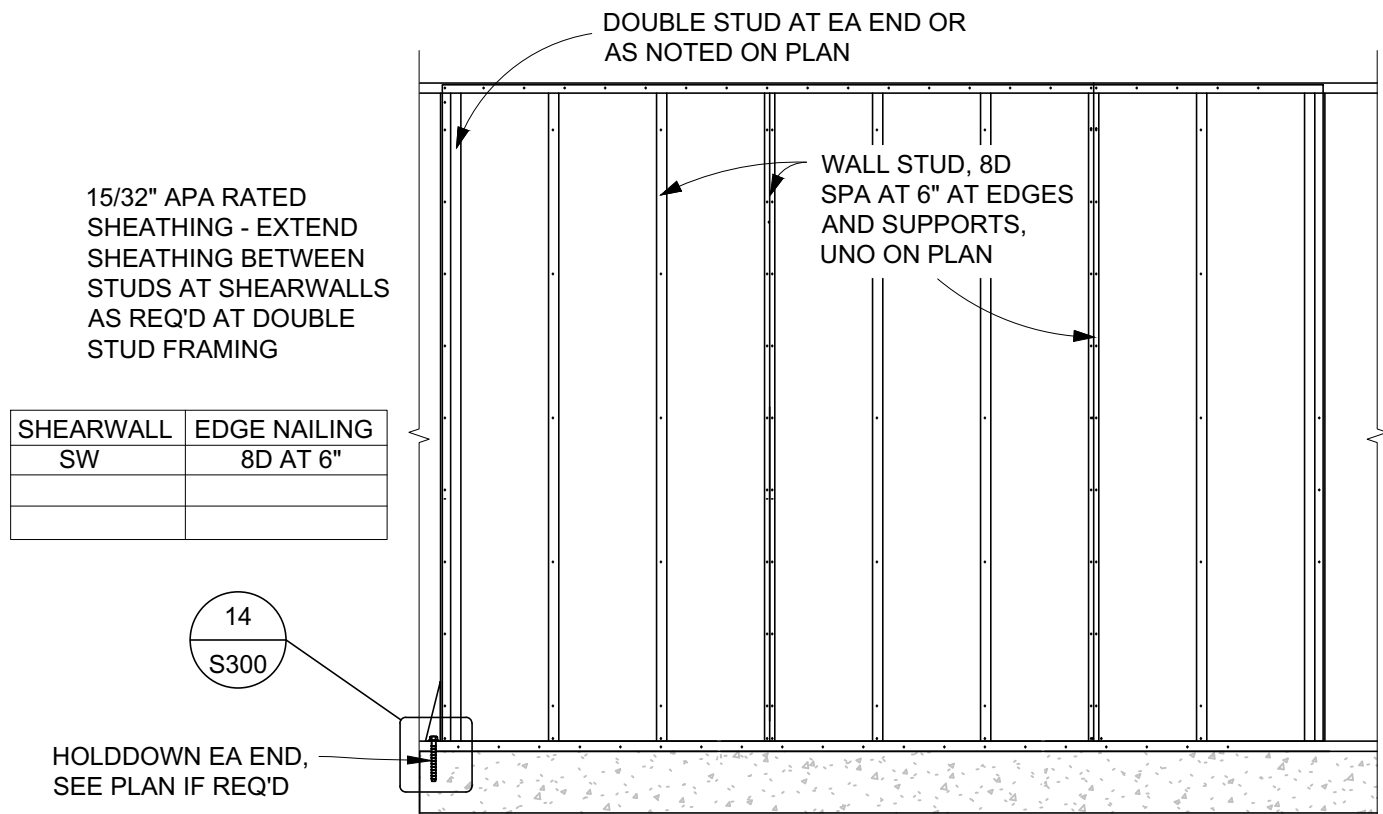


21  
S400  
TYP STEEL BEAM/COLUMN CONN  
NO SCALE

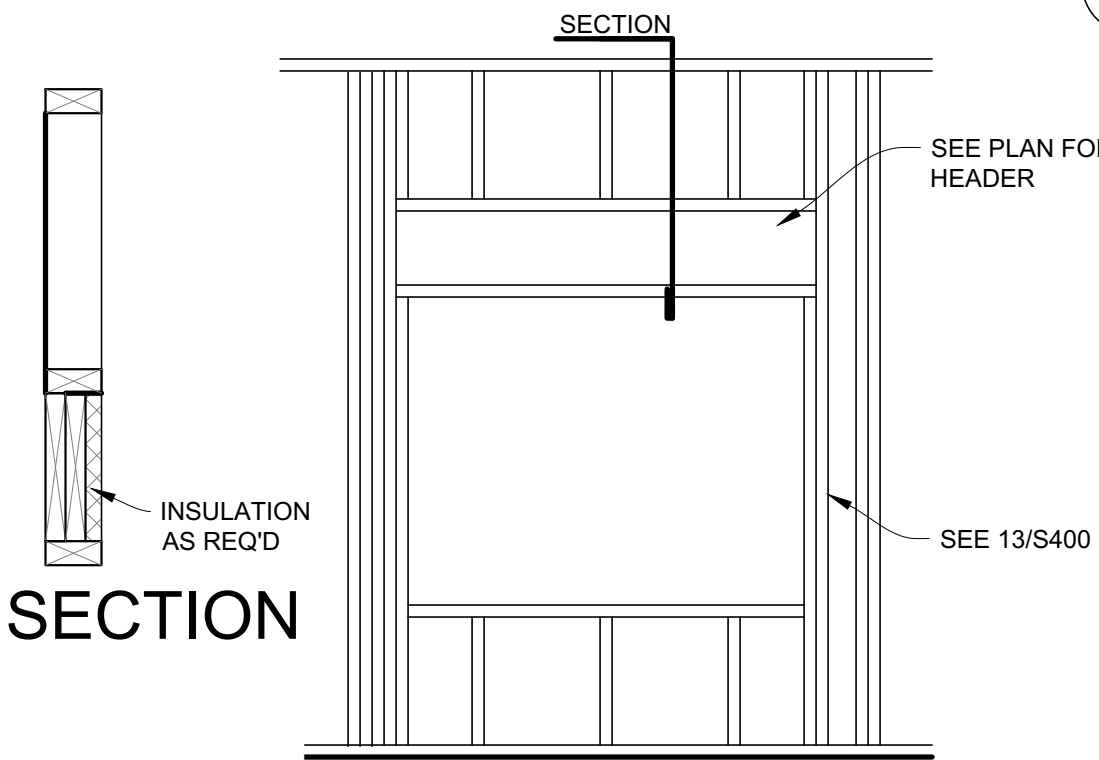
CONNECTION SCHEDULE (LRFD)					
BEAM SIZE	NUMBER OF BOLTS	L = PLATE LENGTH	PLATE THICKNESS	SHEAR CAPACITY	
W8 W10	2	5 ½"	¼"	18K	
W12 W14	3	8 ½"	¼"	36K	
W16 W18	4	11 ½"	¼"	73K	
W21	5	14 ½"	¼"	135K	
W24	6	17 ½"	¼"	165K	
W27	7	20 ½"	¼"	193K	
W30 W33	8	23 ½"	⅝"	239K	
W36	9	26 ½"	⅝"	271K	



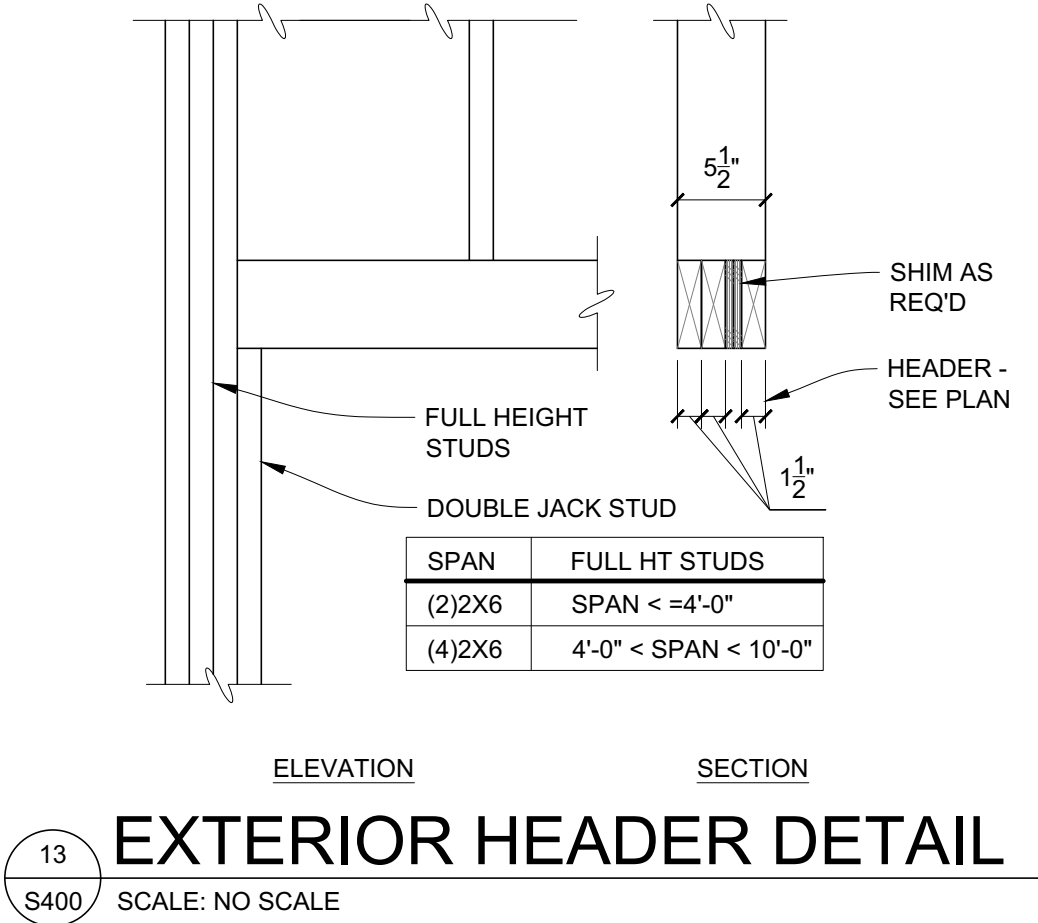
22  
S400  
TYPICAL BEAM SPLICE DETAIL  
NO SCALE



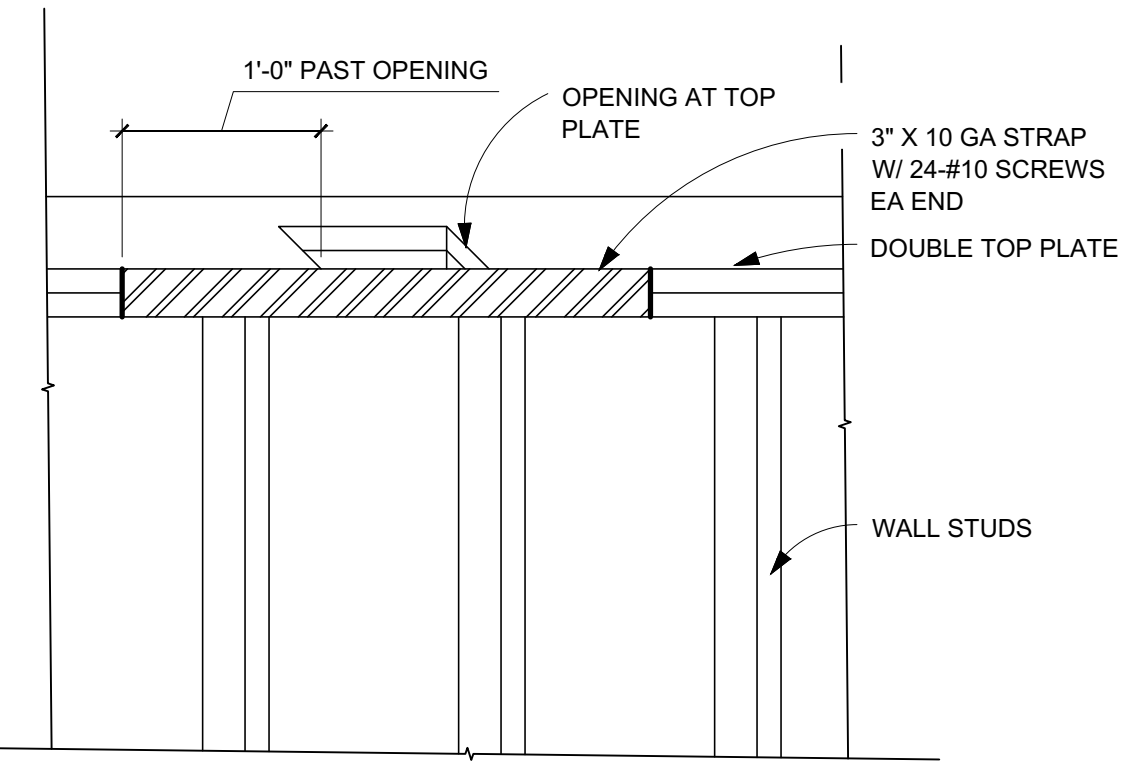
42  
S400  
TYPICAL SHEARWALL DETAIL  
NO SCALE



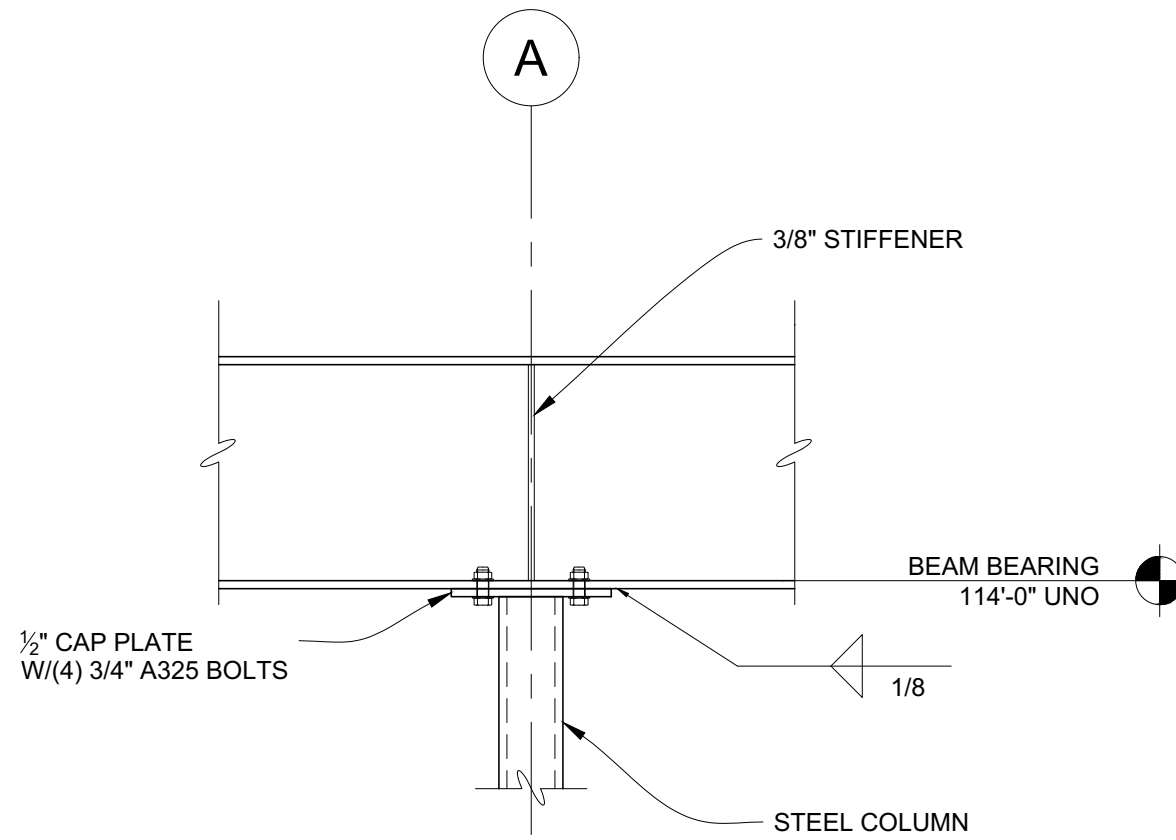
43  
S400  
TYPICAL HEADER DETAIL  
SCALE: NO SCALE



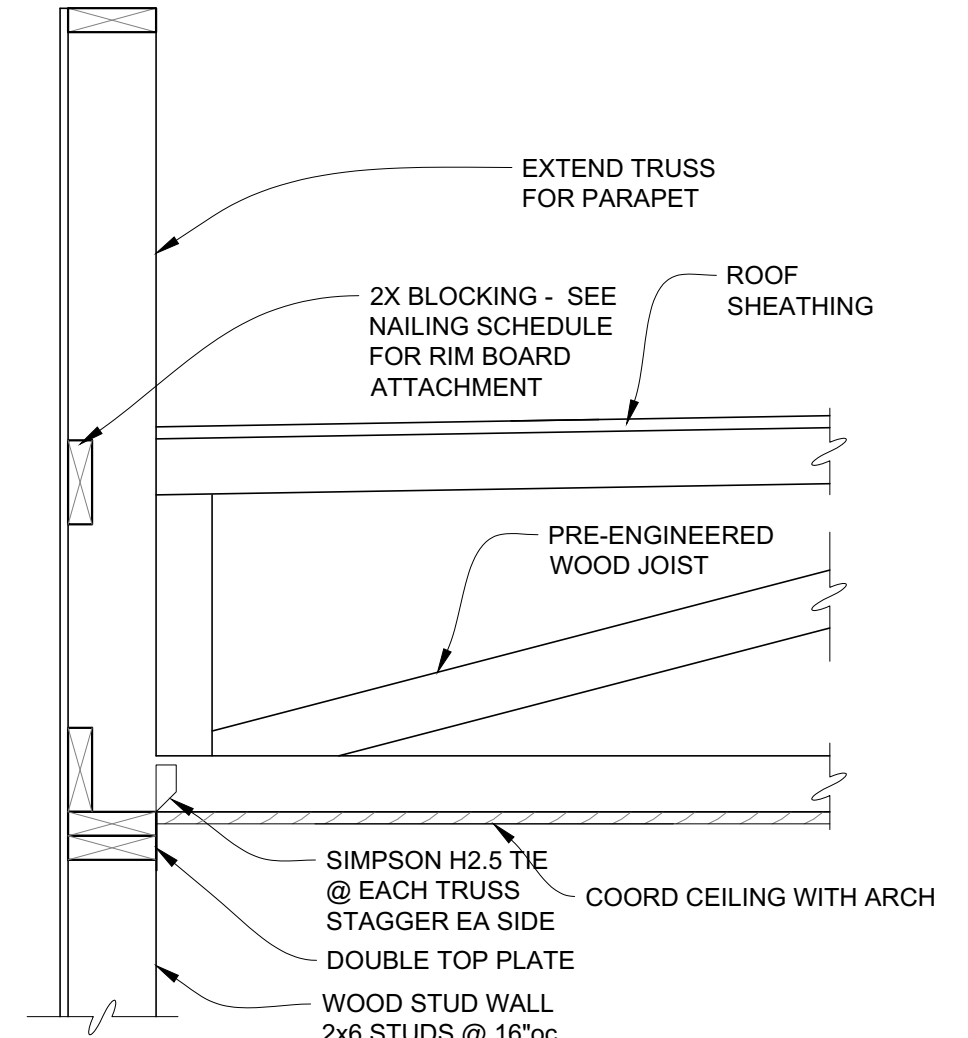
13  
S400  
EXTERIOR HEADER DETAIL  
SCALE: NO SCALE



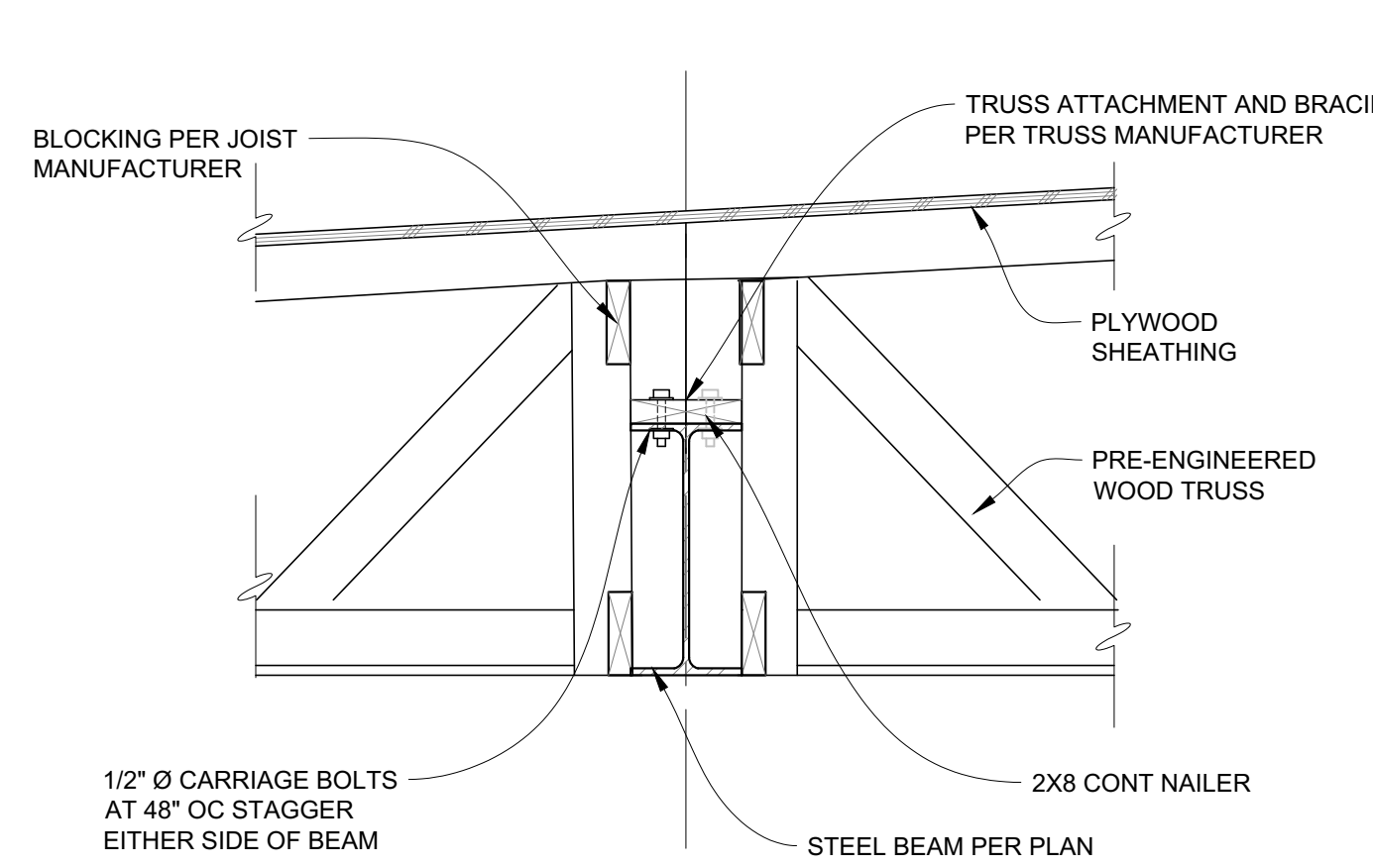
14  
S400  
SPLICE DETAIL  
SCALE: NO SCALE



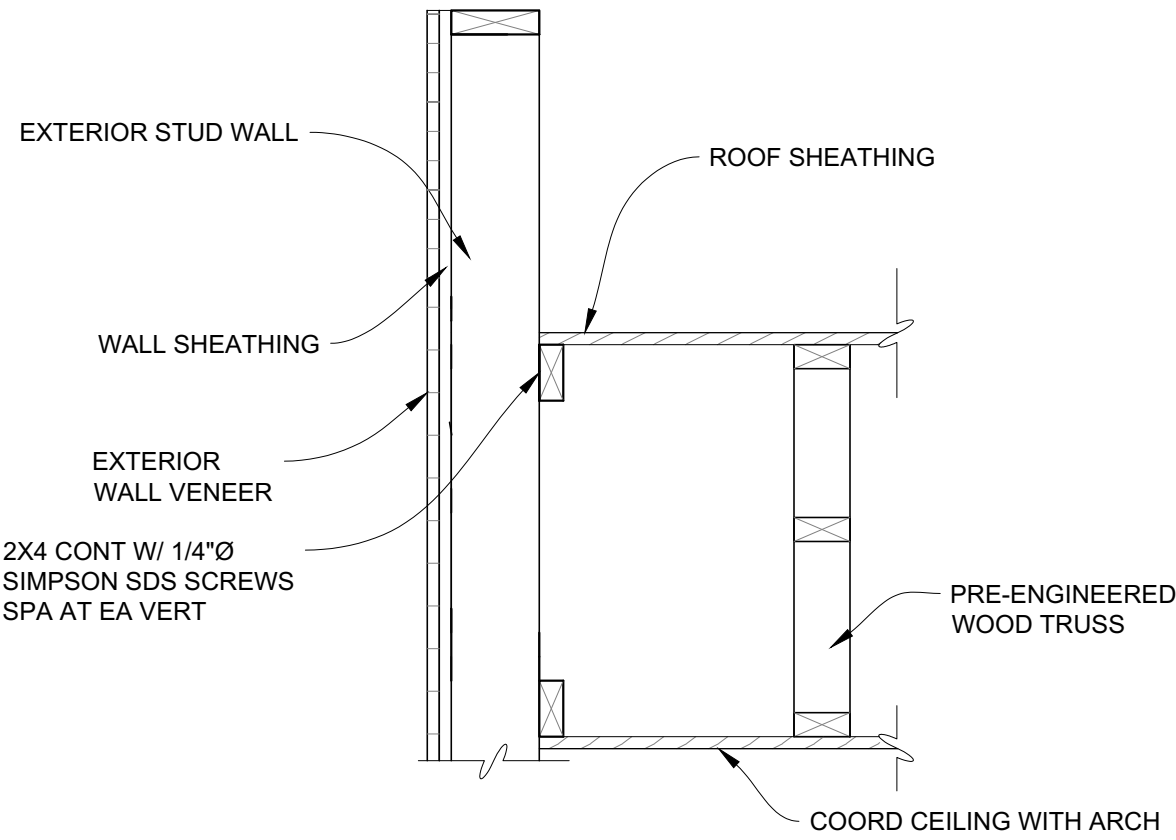
23  
S400  
TYP COL BEAM DETAIL  
NO SCALE



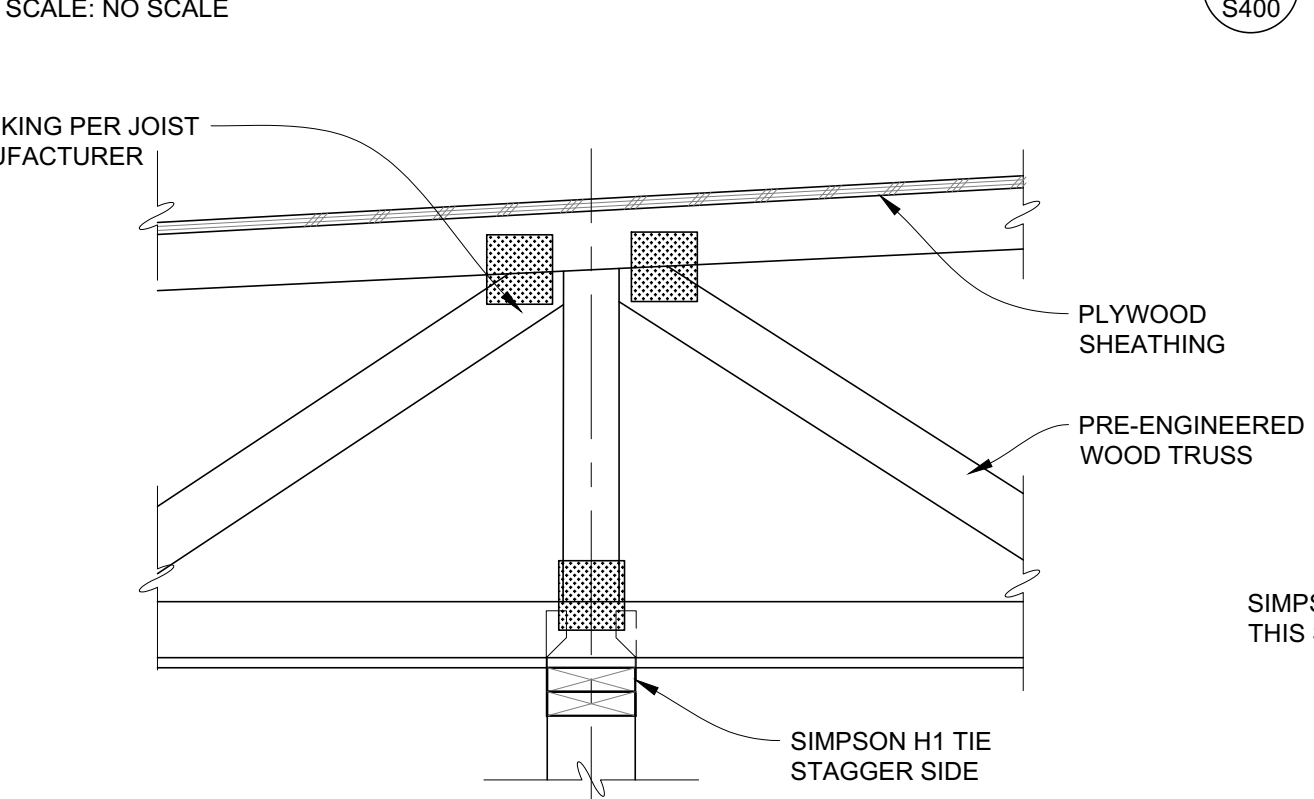
24  
S400  
TYPICAL TRUSS BEARING DETAIL  
SCALE: NO SCALE



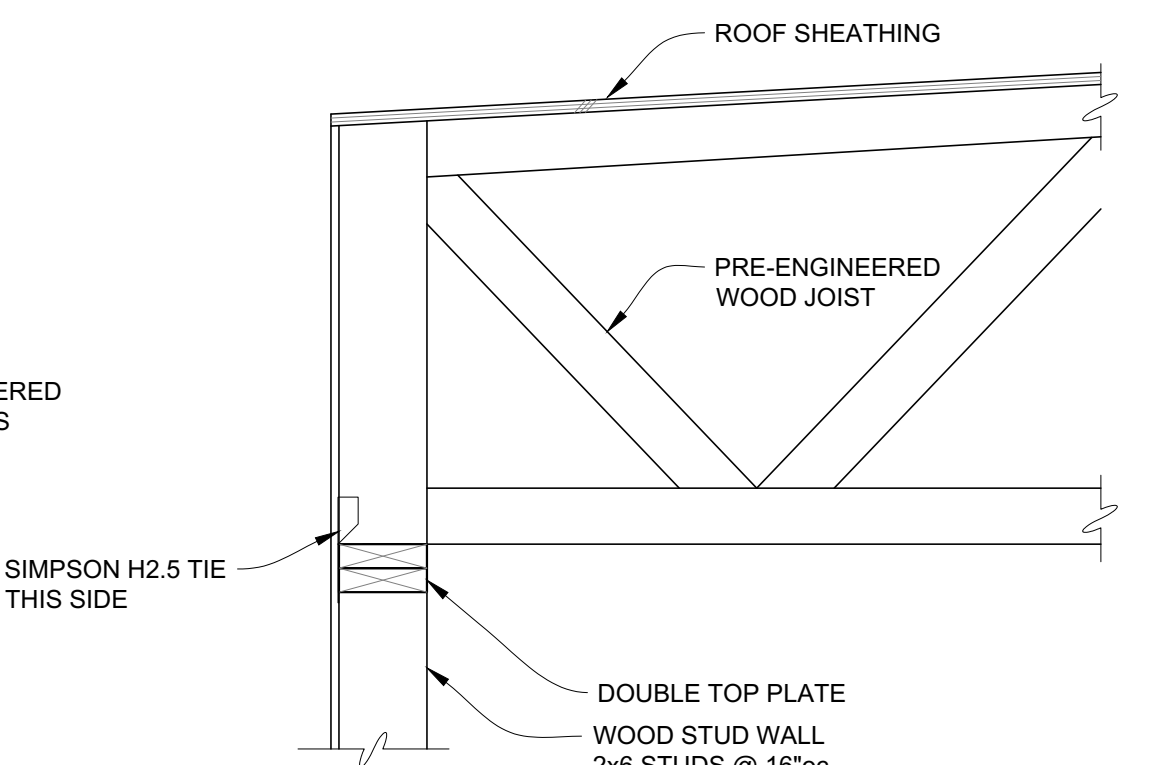
33  
S400  
INT TRUSS BEARING ON STEEL  
SCALE: NO SCALE



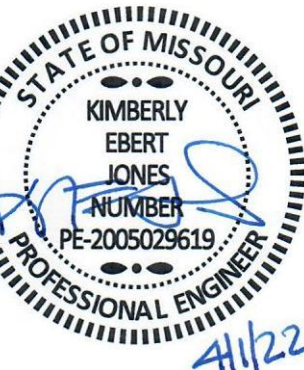
34  
S400  
TYP NON-BEARING DETAIL  
SCALE: NO SCALE



43  
S400  
TRUSS BRG AT SHEARWALL  
SCALE: NO SCALE



44  
S400  
TYP TRUSS BEARING DETAIL  
SCALE: NO SCALE



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291 AND SW MARKET STREET  
LEE'S SUMMIT, MO

PROJECT NUMBER:  
**22-015**  
ISSUE DATE:  
**3/6/2022**

SHEET NAME:  
**FRAMING DETAILS**

SHEET NUMBER:  
**S400**

GENERAL NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW GENERAL NOTES, SPECIFICATIONS AND OTHER DISCIPLINE'S DRAWINGS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, TENANT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. EXISTING CONDITIONS WERE TAKEN FROM AS BUILT DRAWINGS AND SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. COORDINATE DEMOLITION WORK AND NEW WORK WITH EXISTING CONDITIONS AND OTHER TRADES PRIOR TO CONSTRUCTION.
3. REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE PLUMBING SYSTEMS. VERIFY CHASE AND PENETRATION LOCATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR PIPING MEET REQUIREMENTS.
4. INSTALL PIPING PARALLEL TO BUILDING LINES, UNLESS NOTED OTHERWISE.
5. COORDINATE LOCATION OF EQUIPMENT AND SUPPORTS WITH LOCATION OF ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT. IF NO ACCESS PANEL IS SHOWN, PROVIDE ACCESS PANEL IN SIZE REQUIRED FOR MAINTENANCE OF EQUIPMENT. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
6. SEAL PENETRATIONS THROUGH BUILDING COMPONENTS IN ACCORDANCE WITH LOCAL CODES. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.

PLAN NOTES:

- 1 PROVIDE THERMOSTAT, HANG LOOSE FROM UNIT WITH 100' OF CABLE. WOUND UP FOR FUTURE USE.
- 2 SUPPLY AIR AND RETURN AIR DUCTS UP TO RTU ABOVE.
- 3 4" SAN, RE: CIVIL FOR CONTINUATION.
- 4 1-1/2" CW, RE: CIVIL FOR CONTINUATION.
- 5 1-1/2" CW UP TO 1-1/2" RPZ TYPE BACKFLOW PREVENTOR, COORDINATE LOCATION WITH ELECTRICAL SERVICE PANEL.
- 6 1" CW, METER AND SHUTOFF, STUB OUT AND CAP FOR FUTURE USE.
- 7 1" RTU CONDENSATE, ROUTE TO NEAREST ROOF DRAIN & TERMINATE. SUPPORT ON POLYETHYLENE BLOCKS ON 4" CENTERS. SECURE PIPE TO BLOCK WITH PIPE CLIP. PAINT PIPE IN COLOR SELECTED BY ARCHITECT FOR UV PROTECTION.
- 8 DUCT DETECTOR TO BE INSTALLED IN THE RETURN DUCT OF THE UNIT BY THE ELECTRICAL CONTRATOR. REFER TO THE ELECTRICAL PLAN.
- 9 2-1/2" G (1730 CFH) DOWN TO NEW GAS METER BELOW.
- 10 4" SAN, STUB UP FOR FUTURE USE.
- 11 1-1/2" G (390 CFH) DOWN TO NEW GAS METER BELOW.
- 12 1" CW, METER, AND SHUT OFF DOWN BELOW SLAB FOR IRRIGATION. RE: CIVIL FOR CONTINUATION.
- 13 2-1/2" G DOWN TO BELOW ROOF, STUB FOR FUTURE USE BY TENANT.

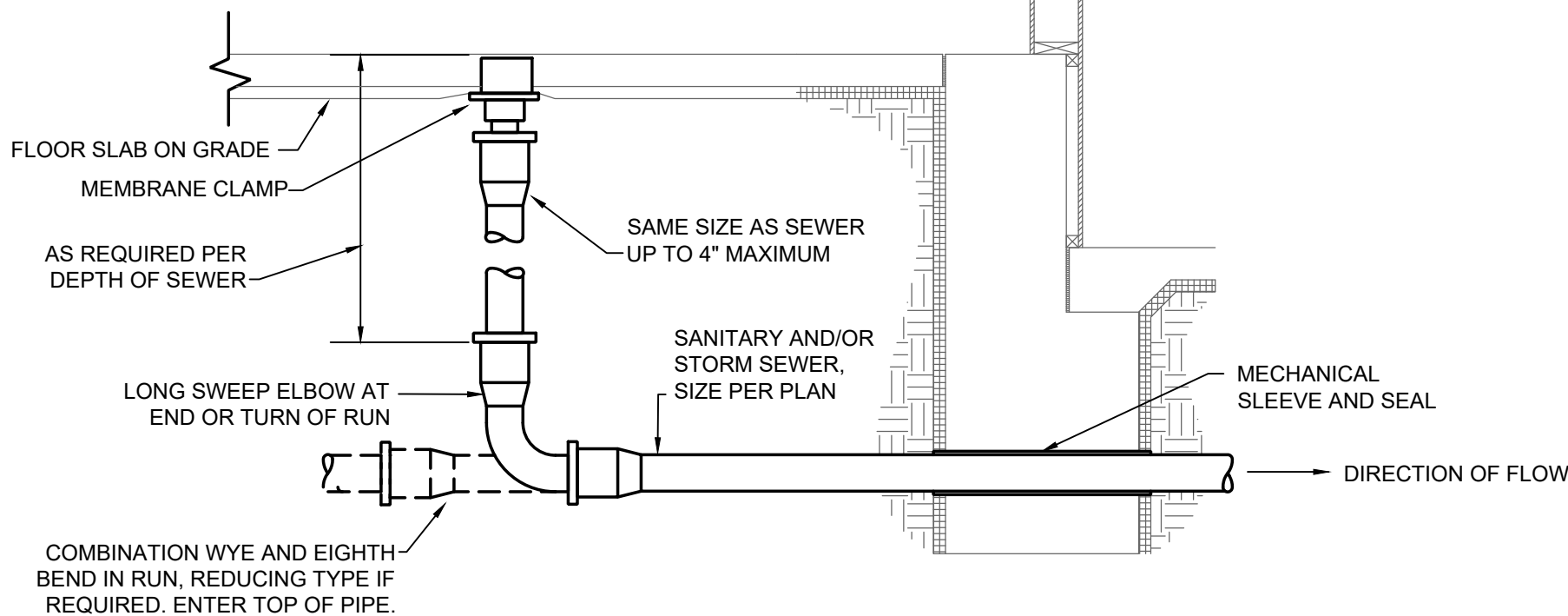
PLUMBING FIXTURE SCHEDULE

PLAN MARK	MANUFACTURER AND MODEL	FIXTURE DESCRIPTION
3"FS-1	WATTS FS56	PVC DEEP SUMP FLOOR SINK WITH SQUARE TOP AND SQUARE LOOSE SET PVC GRATE.

ELECTRIC UNIT HEATER SCHEDULE

UNIT CALLOUT	UNIT INFORMATION				NOTES
	MFG	MODEL NO.	CAP (KW)	VOLT/ PHASE	
UH-1	TRANE	UHEC	2.0	208/1	1

- NOTES:
1. PROVIDE WITH MOUNTING BRACKET AND THERMOSTAT.



4 FLOOR CLEANOUT DETAIL  
NO SCALE

GENERAL

- 1 MECHANICAL NOTE REFERENCE
- 2 DEMOLITION NOTE REFERENCE
- 3 REVISION NOTE REFERENCE
- 4 CONNECT TO EXISTING WORK

HVAC

- D HVAC CONDENSATE DRAIN
- T THERMOSTAT
- SD SUPPLY DIFFUSER
- RG RETURN GRILLE/EXHAUST REGISTER
- RAE RETURN AND EXHAUST AIR FLOW INDICATOR
- DMB DUCT MOUNTED MANUAL BALANCING DAMPER

PLUMBING

- SAN SOIL OR WASTE ABOVE GRADE OR FLOOR
- SSAN SOIL OR WASTE BELOW GRADE OR FLOOR
- V PLUMBING VENT
- DCW DOMESTIC COLD WATER
- DHW DOMESTIC HOT WATER
- G GAS (NATURAL)
- FCO FLOOR CLEAN OUT
- WCO WALL CLEAN OUT
- HB HOSE BIBB
- FSD FLOOR SINK, FLOOR DRAIN, AREA DRAIN
- P# PLUMBING VENT RISER CALL-OUT
- ED ELBOW DOWN
- EU ELBOW UP
- TU TEE UP
- TD TEE DOWN

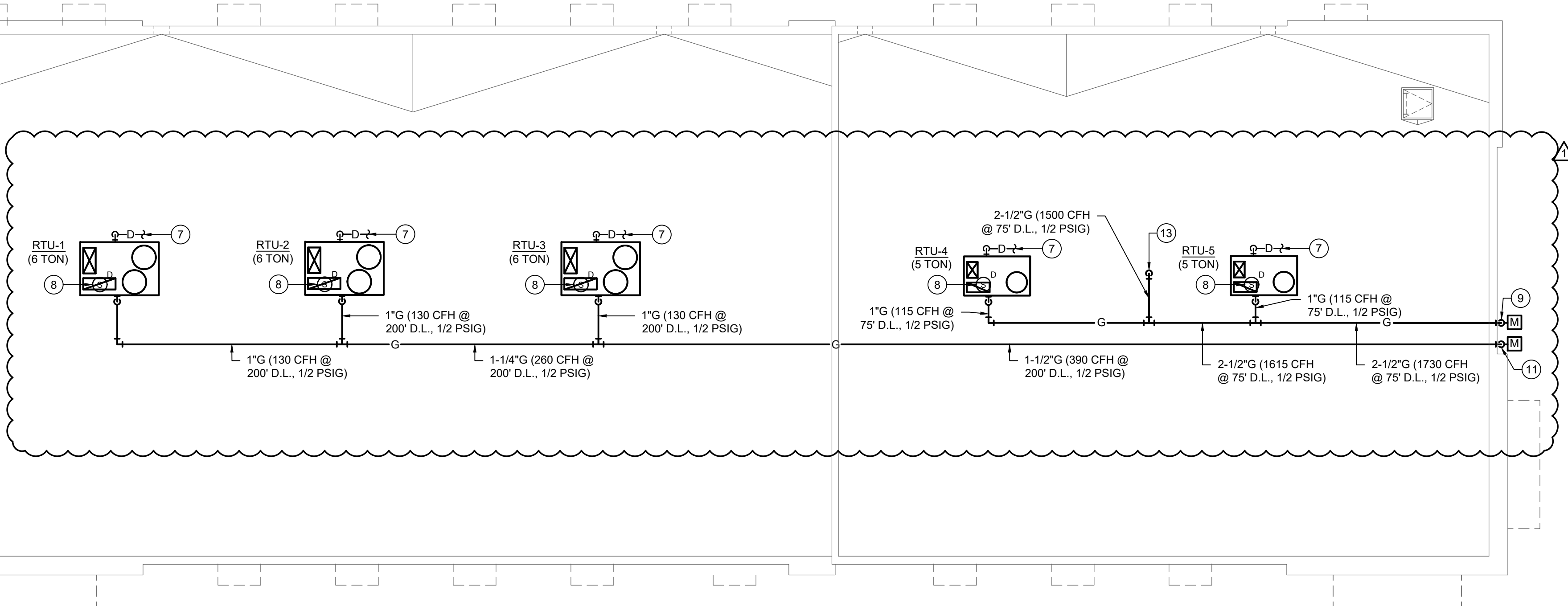
3 MECHANICAL SYMBOLS

ROOF TOP UNIT SCHEDULE

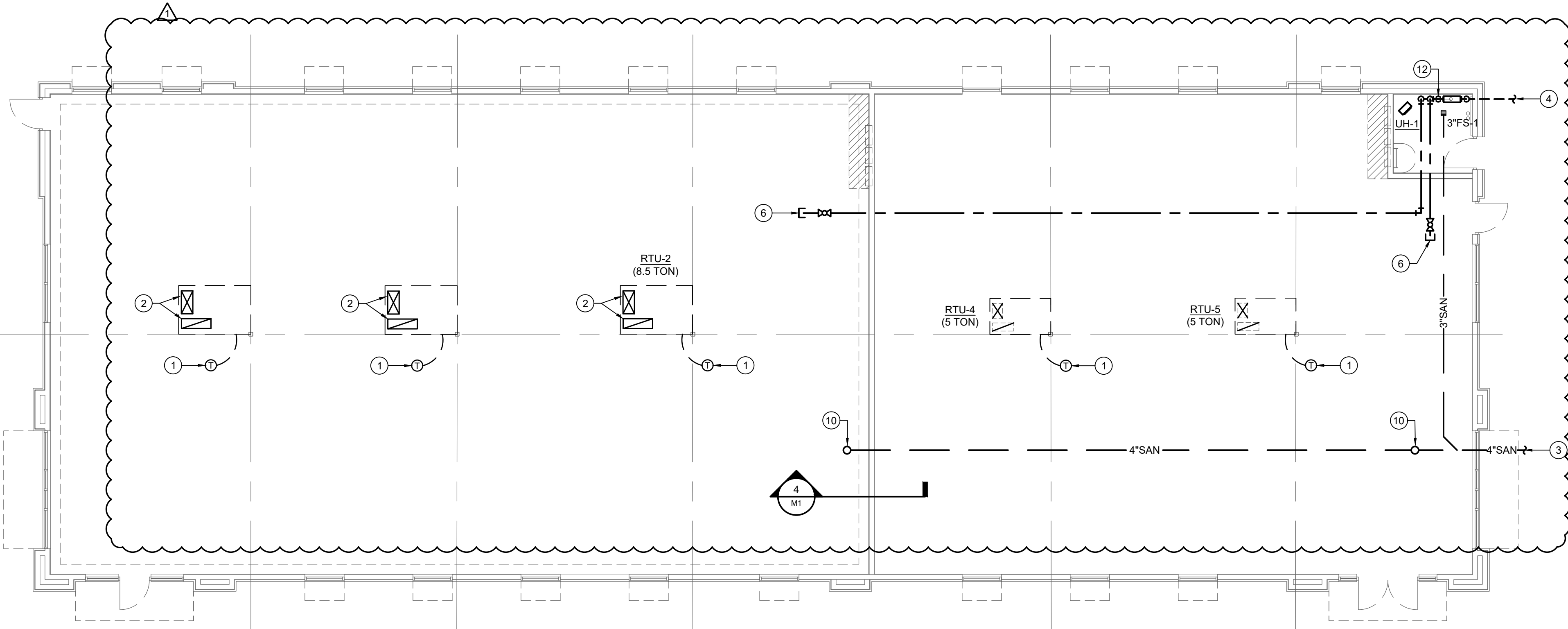
UNIT CALLOUT	WEIGHT (LBS)	NOMINAL TONS	UNIT INFORMATION								GAS BURNER INFORMATION						DX COIL INFORMATION						FILTER		NOTES	
			MFG	MODEL NO.	VOLT/ PHASE	MCA	MOCP (AMPS)	EXT STATIC (IN WC)	FLOW (CFM)	HP	GAS TYPE	EFF. (%)	GAS INPUT (MBH)	GAS OUTPUT (MBH)	EAT (°F)	LAT (°F)	EAT (°F)	LAT (°F)	SHC (MBH)	THC (MBH)	STEPS #	FAN NUM	# OF COMP	AMB TEMP (°F)		TYPE
RTU-1	836	6	CARRIER	48HC	208/3	31	45	0.9	2400	1	NAT	80	130	104	65	105.1	80	55	64.8	72	3	2	2	100	2" PLEATED	1,3
RTU-2	836	6	CARRIER	48HC	208/3	31	45	0.9	2400	1	NAT	80	130	104	65	105.1	80	55	64.8	72	3	2	2	100	2" PLEATED	1,3
RTU-3	836	6	CARRIER	48HC	208/3	31	45	0.9	2400	1	NAT	80	130	104	65	105.1	80	55	64.8	72	3	2	2	100	2" PLEATED	1,3
RTU-4	999	5	CARRIER	48LC	208/3	32	45	0.9	2000	1	NAT	80	115	89	65	106.2	80	55	54.0	60	3	1	1	100	2" PLEATED	1,2
RTU-5	999	5	CARRIER	48LC	208/3	32	45	0.9	2000	1	NAT	80	115	89	65	106.2	80	55	54.0	60	3	1	1	100	2" PLEATED	1,2

NOTES:

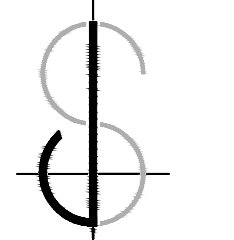
1. SUPPLY UNIT WITH THE FOLLOWING OPTIONS:
  - A. FACTORY ROOF CURB/ CURB ADAPTOR.
  - B. CONDENSER COIL HAIL GUARDS.
  - C. ECONOMIZER WITH BAROMETRIC RELIEF, SET TO OPERATE AT 55 DEG F AND BELOW. ECONOMIZER SHALL BE SHIPPED LOOSE TO EXPEDITE LEAD TIMES.
  - D. OUTDOOR AND RELIEF AIR HOODS, WITH INSECT SCREEN.
  - E. CARRIER COMFORT PRO PROGRAMMABLE THERMOSTAT WITH WIRED REMOTE SENSOR - NO EXCEPTIONS. ALL THERMOSTAT AND SENSOR WIRING SHALL BE SHIELDED, NO EXCEPTIONS.
  - F. PROVIDE OWNER TRAINING FOR THERMOSTAT OPERATION. SET THERMOSTAT TO 68 DEGREES F IN OCCUPIED AND UNOCCUPIED MODE.
  - G. THE UNIT SUPPLY FAN SHALL BE SET TO AUTO.
  - H. VARIABLE SPEED COOLING CAPACITY WITH HUMID-MIZER SYSTEM
2. SUPPLY WITH 2 STAGE COMPRESSOR.
3. SUPPLY WITH 2 COMPRESSORS.



2 ROOF PLAN - MECHANICAL  
1/8"=1'-0"



1 FLOOR PLAN - MECHANICAL  
1/8"=1'-0"



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Project Number 21.188.05

Revisions

- 29 March 2022  
Owner Revisions

new shell building  
**Market Street Center**

M291 and SW Market Street  
Lee's Summit, Missouri

sheet  
**M1**

MECHANICAL PLANS

Permit  
04 March 2022



MECHANICAL SPECIFICATIONS

1. COMMON WORK RESULTS FOR HVAC

PRODUCTS

PIPE, TUBE, AND FITTINGS  
Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

JOINING MATERIALS  
Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.

Welding Filler Metals: Comply with AWS D10.12.

Solvent Cements for Joining Plastic Piping:  
CPVC Piping: ASTM F 493.  
PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

MECHANICAL SLEEVE SEALS  
Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

Pressure Plates: Plastic. Include two for each sealing element.

Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one of each sealing element.

SLEEVES

Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

EXECUTION

PIPING SYSTEMS - COMMON REQUIREMENTS  
Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.  
Install piping to permit valve servicing. Install piping at indicated slopes.  
Install piping free of sags and bends. Install fittings for changes in direction and branch connections.  
Install piping to allow application of insulation. Select system components with pressure rating equal or greater than system operating pressure.  
Install escutcheons for penetrations of walls, ceilings, and floors. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Verify final equipment locations for roughing-in.  
Refer to manufacturer's equipment specifications for roughing-in requirements.

PIPING JOINT CONSTRUCTION

Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.  
Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

PIPING CONNECTIONS

Install shut off valves with unions, in piping, adjacent to each valve and at final connection to each piece of equipment. Install shut off valves with unions, in piping, adjacent to each valve and at final connection to each piece of equipment.

EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.  
Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations. Install equipment to allow right of way for piping installed at required slope.

2. HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT

DEFINITIONS  
Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

PERFORMANCE REQUIREMENTS

Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.  
Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

PRODUCTS

STEEL PIPE HANGERS AND SUPPORTS  
Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

TRAPEZE PIPE HANGERS  
Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

METAL FRAMING SYSTEMS  
Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

EXECUTION  
HANGER AND SUPPORT APPLICATIONS  
Specific hanger and support requirements are specified in Sections specifying piping systems and equipment. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types: Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750). Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200). Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42 (DN 50 to DN 1050), if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.

Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.

Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types: Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.  
Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.

3. HVAC INSULATION

PRODUCTS

INSULATION MATERIALS  
Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

FiberGlass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells, with factory applied AL Service Jacket (ASJ) painted in color selected by architect.

Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

FIRE-RATED INSULATION SYSTEMS  
Fire-Rated Blanket: High-temperature, flexible, blanket insulation with FSK jacket that is tested and certified to provide a 2-hour fire rating by a NRTL acceptable to authority having jurisdiction.

INSULATING CEMENTS  
Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449/C 449M.

ADHESIVES  
Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

Cellular-Glass Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F (minus 59 to plus 149

deg C).

Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

ASJ Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket to seams and joints.  
For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

MASTICS  
Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on above ambient services.

SEALANTS  
Joint Sealants: Materials shall be compatible with insulation materials, jackets, and substrates.

FACTORY-APPLIED JACKETS  
Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:  
ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.

TAPES  
ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

EXECUTION

Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types: Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750). Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200). Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42 (DN 50 to DN 1050), if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.

Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

GENERAL INSTALLATION REQUIREMENTS  
Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.  
Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.  
Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.  
Install insulation with longitudinal seams at top and bottom of horizontal runs. Install multiple layers of insulation with longitudinal and end seams staggered.  
Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.  
Keep insulation materials dry during application and finishing.  
Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer. Install insulation with least number of joints practical.

Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.  
Install insulation continuously through hangers and around anchor attachments.

For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.

Insert insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses. Apply mastic on seams and joints and at ends adjacent to duct and pipe flanges and fittings.

Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.  
Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

PENETRATIONS  
Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions. Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent duct insulation and overlap duct insulation at least 2 inches (50 mm).  
Insulation Installation at Floor Penetrations:  
Duct: Install insulation continuously through floor penetrations that are not fire rated. For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches (50 mm).

Pipe: Install insulation continuously through floor penetrations. Seal penetrations through fire-rated assemblies.

DUCT INSULATION SCHEDULE, GENERAL  
Plenums and Ducts Requiring Insulation:  
Indoor, concealed supply and outdoor air:  
Indoor, exposed outdoor air:  
Indoor, concealed return located in nonconditioned space.  
Indoor, concealed, Type I, commercial, kitchen hood exhaust.

INDOOR DUCT AND PLENUM INSULATION SCHEDULE  
Supply-Air, Return-Air and Make-Up Air Duct Insulation: Fiberglass blanket, 1-1/2 inches (38 mm) thick and 1.5-lb/cu. ft. (24-kg/cu. M) nominal density.  
Kitchen Hood Exhaust Duct Insulation: 2 hour fire-rated blanket.

PIPING INSULATION SCHEDULE, GENERAL  
Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

INDOOR PIPING INSULATION SCHEDULE  
Domestic: Cold Water, Hot Water and Hot Water Recirc. FiberGlass: 3/4 inches) thick.

Refrigerant Suction and Hot-Gas Piping: Flexible elastomeric.

4. DOMESTIC WATER PIPING

PRODUCTS

PIPING MATERIALS  
Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

COPPER TUBE AND FITTINGS  
Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B)  
Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A)

PIPING JOINING MATERIALS  
Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

FLEXIBLE CONNECTORS  
Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.

SLEEVES  
Cast-Iron Wall Pipes: Fabricated of cast iron, and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

EXECUTION

PIPING INSTALLATION  
Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

Install piping adjacent to equipment and specialties to allow service and maintenance.  
Install piping to permit valve servicing. Install piping free of sags and bends. Install fittings for changes in direction and branch connections. Install shut off valves with unions in copper tubing at final connection to each piece of equipment, machine, and specialty.  
Install thermostats in hot-water circulation piping. Install thermometers on outlet piping from water heater. Comply with requirements in

JOINT CONSTRUCTION  
Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

VALVE INSTALLATION  
Install shutoff (ball) valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops.

Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.

TRANSITION FITTING INSTALLATION  
Install transition couplings at joints of dissimilar piping.

FLEXIBLE CONNECTOR INSTALLATION  
Install flexible connectors in suction and discharge piping connections to each domestic water pump.  
Install bronze-hose flexible connectors in copper domestic water tubing.  
Install stainless-steel-hose flexible connectors in steel domestic water piping.

CONNECTIONS  
Drawings indicate general arrangement of piping, fittings, and specialties. Install piping adjacent to equipment and machines to allow service and maintenance.  
Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

ESCUTCHEON INSTALLATION  
Install escutcheons for penetrations of walls, ceilings, and floors.

PIPING SCHEDULE  
Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated. Under-building-slab, domestic water, building service piping shall be Soft copper tube:

Aboveground domestic water piping, shall be Hard copper tube, ASTM B 88, Type L.  
Aboveground 140 deg F domestic water piping, shall be Hard copper tube, ASTM B 88, Type L.

VALVE SCHEDULE  
Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:  
Shutoff Duty: Use ball valves for piping NPS 2 (DN 50) and smaller. Use butterfly, ball, or gate valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.  
Throttling Duty: Use ball valves for piping NPS 2 (DN 50) and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.  
Hot-Water Circulation Piping, Balancing Duty: Memory-stop balancing valves.  
Drain Duty: Hose-end drain valves.

Use check valves to maintain correct direction of domestic water flow to and from equipment.  
Iron grooved-end valves may be used with grooved-end piping.  
CPVC and PVC valves matching piping materials may be used.

5. INTERIOR SANITARY WASTE AND VENT PIPING

PRODUCTS

PIPING MATERIALS  
Hubless Cast-Iron Pipe and Fittings: ASTM A 888 or CISPI 301.  
PVC Pipe: ASTM D 2665, solid-wall drain, waste, and vent.  
EXECUTION

PIPING APPLICATIONS  
Aboveground, Interior, soil, waste, and vent piping shall be PVC Pipe with socket fittings and solvent welded joints. Underground, soil, waste, and vent shall be PVC Pipe with socket fittings and solvent welded joints.

PIPING INSTALLATION  
Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Install cast-iron soil piping according to CISPI's "Cast Iron Soil

Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings." Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.  
Install soil and waste drainage and vent piping at the code required minimum slopes.  
Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing. Install PVC soil and waste drainage and vent piping according to ASTM D 2665. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

JOINT CONSTRUCTION  
Cast-Iron, Soil-Piping Joints: Make joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."  
PVC Nonpressure Piping Joints: Join piping according to ASTM D 2665.

6. FACILITY NATURAL-GAS PIPING

PRODUCTS

PIPES, TUBES, AND FITTINGS  
Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.

JOINING MATERIALS  
Joint Compound and Tape: Suitable for natural gas.  
Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

MANUAL GAS SHUTOFF VALVES  
Bronze Plug Valves: MSS SP-78.

MOTORIZED GAS VALVES  
Electrically Operated Valves: Comply with UL 429.

EXECUTION

OUTDOOR PIPING INSTALLATION  
Comply with NFPA 54 for installation and purging of natural-gas piping.

INDOOR PIPING INSTALLATION  
Comply with NFPA 54 for installation and purging of natural-gas piping. Arrange for pipe spaces, chases, slots, sleeves, and openings in building structure during progress of construction, to allow for mechanical installations. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal. Locate valves for easy access. Install natural-gas piping at uniform grade of 2 percent down toward drip and sediment traps. Install piping free of sags and bends. Install fittings for changes in direction and branch connections. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Verify final equipment locations for roughing-in. Drips and Sediment Traps: Install drips at points where condensate may collect, including service-meter outlets. Locate where accessible to permit cleaning and emptying. Do not install where condensate is subject to freezing. Extend relief vent connections for service regulators, line regulators, and vapressure protection devices to outdoors and terminate with weatherproof vent cap. Conceal pipe installations in walls, pipe spaces, utility spaces, above ceilings, below grade or floors, and in floor channels unless indicated to be exposed to view.

CONNECTIONS  
Connect to utility's gas main according to utility's procedures and requirements. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70. Install piping adjacent to appliances to allow service and maintenance of appliances. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches (1800 mm) of each gas-fired appliance and equipment. Install union between valve and appliances or equipment. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

OUTDOOR PIPING SCHEDULE  
Aboveground natural-gas piping shall be Steel pipe with wrought-steel fittings and welded joints.

INDOOR PIPING SCHEDULE  
Aboveground, piping shall be Steel pipe with wrought-steel fittings and welded joints.

7. FUEL-FIRED WATER HEATERS

SUBMITTALS  
Product Data: For each type and size of water heater indicated, include rated capacities, operating characteristics, furnished specialties, and accessories. Shop Drawings: Diagram power, signal, and control wiring. Operation and maintenance data.

MANUFACTURERS  
Commercial, Power-Burner, Storage, Gas Water Heaters: Comply with NSI Z21.10/CSA 4.3.

WATER HEATER ACCESSORIES  
Gas Shutoff Valves: ANSI Z21.15/CGA 9.1, manually operated. Furnish for installation in piping. Gas Pressure Regulators: ANSI Z21.18, appliance type. Include pressure rating, capacity, and pressure differential required between gas supply and water heater.  
Piping-Type Heat Steel: Field-fabricated piping arrangement according to ASHRAE/IESNA 90.1-2004.

EXECUTION  
WATER HEATER INSTALLATION  
Install commercial water heaters on concrete bases. Install water heaters level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible. Install gas water heaters according to NFPA 54. Install combination temperature and pressure relief valves in top portion of storage tanks. Use relief valves with sensing elements that extend into tank. Extend commercial, water-heater, relief-valve outlet, with drain piping same as domestic water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain. Install water heater drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping for water heaters that do not have connect to building sanitary sewers. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Install cast-iron soil piping according to CISPI's "Cast Iron Soil

CONNECTIONS  
Install piping adjacent to water heaters to allow service and maintenance. Arrange piping for easy removal of water heaters.

8. DIRECT-FIRED H&V UNITS

SUBMITTALS  
Product Data: Include rated capacities, furnished specialties, and accessories.  
PACKAGED UNITS  
Factory-assembled, prewired, self-contained unit consisting of cabinet, supply fan, controls, filters, and direct-fired gas furnace to be installed outside the building.

OUTDOOR-AIR INTAKE  
Outdoor-Air Hood: Galvanized steel with rain baffles, bird screen complying with ASHRAE 62.1-2004, and finish to match cabinet; and sized to supply maximum 100 percent outdoor air.

AIR FILTERS  
Comply with NFPA 90A.

DIRECT-FIRED GAS FURNACE  
Description: Factory assembled, piped, and wired; and complying with ANSI Z83.4, "Direct Gas-Fired Make-Up Air Heaters"; ANSI Z83.18, "Direct Gas-Fired Industrial Air Heaters"; and NFPA 54, "National Fuel Gas Code."

CONTROLS  
Factory-wired, fuse-protected control transformer, connection for power supply and field-wired unit to remote control panel.

EXECUTION

INSTALLATION  
Install gas-fired units according to NFPA 54, "National Fuel Gas Code." Install roof curb on roof structure, according to ARI Guidelines. Install controls and equipment shipped by manufacturer for field installation with direct-fired H&V units.

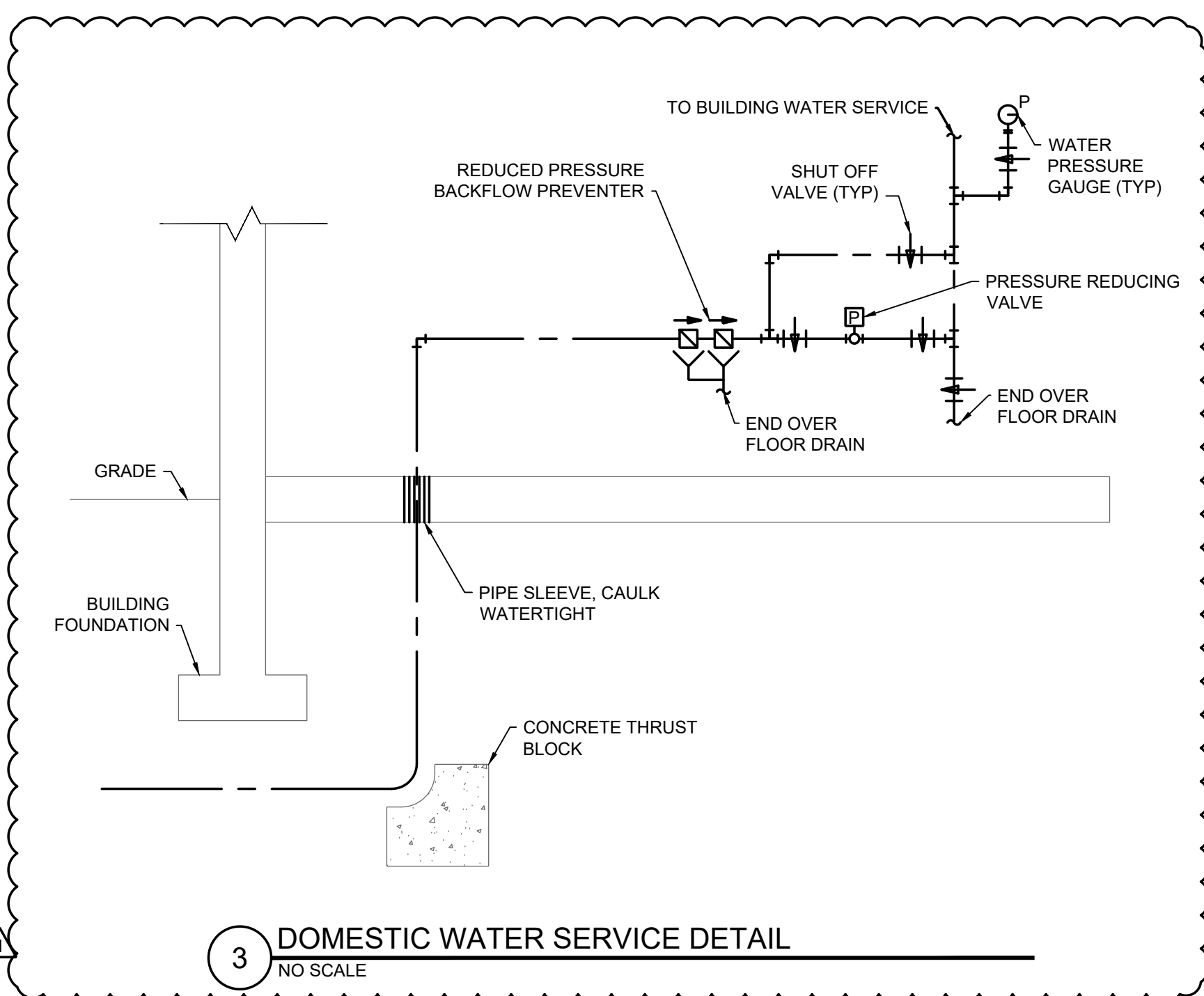
9. METAL DUCTS

RECTANGULAR DUCTS AND FITTINGS  
General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.  
Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-4, "Transverse (Girth) Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 1-5, "Longitudinal Seams - Rectangular Ducts," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 2, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

ROUND DUCTS AND FITTINGS  
General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Transverse Joints - Round Duct," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Seams - Round Duct and Fittings," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible." Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "90 Degree Tees and Laterals," and Figure 3-5, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

SHEET METAL MATERIALS  
General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.  
Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

EXECUTION



- NOTES:  
1. INSTALL ROOFTOP UNIT PER MANUFACTURER'S RECOMMENDATION AND INSTALLATION MANUAL.  
2. COORDINATE ROOF OPENINGS WITH STRUCTURAL DRAWINGS.  
3. DUCT TRANSITIONS SHALL BE MADE IN THE TRUSS SPACE ABOVE THE CEILING AND BELOW THE ROOF.

2 ROOFTOP UNIT INSTALLATION DETAIL  
NO SCALE

1 MECHANICAL SPECIFICATIONS

3 DOMESTIC WATER SERVICE DETAIL  
NO SCALE

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Project Number 21.188.05

Revisions

29 March 2022

Owner Revisions

new shell building

Market Street Center

M291 and SW Market Street  
Lee's Summit, Missouri

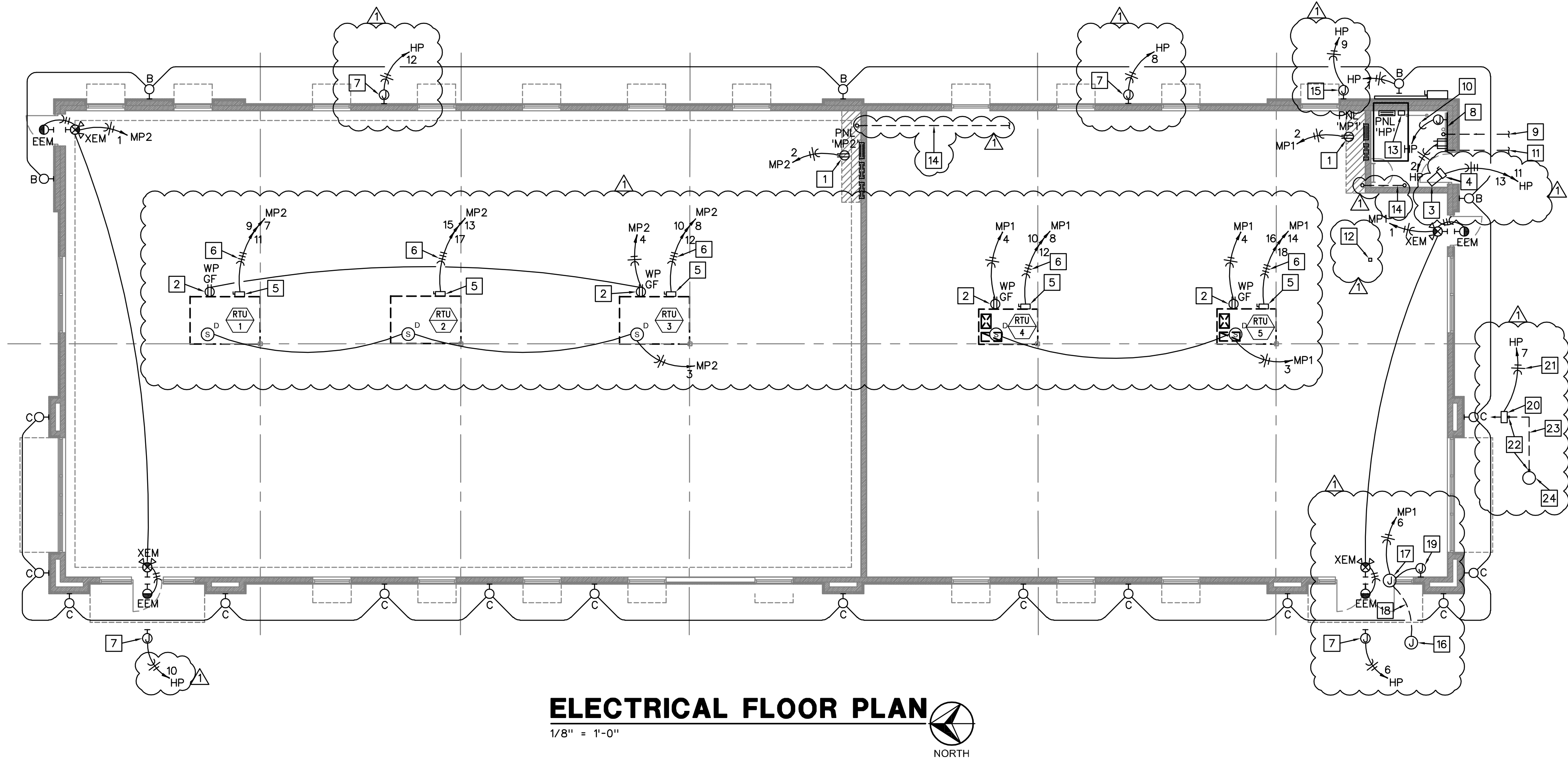
sheet

M2

MECHANICAL SPECIFICATIONS

Permit  
04 March 2022





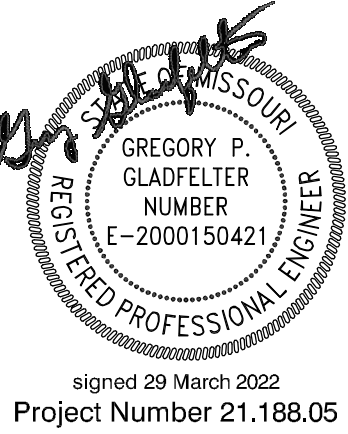
**ELECTRICAL FLOOR PLAN**

1/8" = 1'-0"

NORTH

**ELECTRICAL FLOOR PLAN NOTES**

1. INSTALL OUTLET BOX FOR WIRING DEVICE WITH TOP FLUSH TO BOTTOM OF PANEL.
2. WP/GF RECEPTACLE INSTALLED ON SIDE OF UNIT. DO NOT INSTALL ON ACCESS PANEL.
3. VERIFY EXACT LOCATION OF UNIT HEATER WITH MECHANICAL PLANS PRIOR TO INSTALLATION.
4. 30A/2P, NON-FUSED, NEMA 1 DISCONNECT SWITCH INSTALLED ON SIDE OF UNIT. DO NOT INSTALL ON ACCESS PANELS.
5. 60A/3P, NON-FUSED, NEMA 3R DISCONNECT SWITCH INSTALLED ON SIDE OF UNIT FOR DISCONNECTING MEANS. DO NOT INSTALL ON ACCESS PANEL.
6. 3/4" CONDUIT WITH 3-#8 (CU) AND 1-#10 (CU) GROUND WIRE.
7. J-BOX INSTALLED HIGH ON WALL FOR CONNECTION OF BUILDING SIGNAGE. INSTALL 24"x24" ACCESS DOOR FOR CONNECTION AND MAINTENANCE. VERIFY EXACT HEIGHT AND LOCATION WITH LANDLORD/TENANT PRIOR TO ROUGH-IN.
8. 4'-0" HIGH X 4'-0" LONG X 3/4" THICK FIRE TREATED PLYWOOD BACKBOARD 'TTB' FOR TELEPHONE SERVICE. INSTALL W/ TOP 6'-0" AFF.
9. ROUTE (3) 4" PVC CONDUITS FOR PHONE CABLES TO PROPERTY LINE. INSTALL WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
10. ROUTE TO GROUND BUS OF PANEL INDICATED.
11. 1" PVC CONDUIT TO MONUMENT SIGN. INSTALL WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE. VERIFY EXACT LOCATION OF MONUMENT SIGN WITH LANDLORD PRIOR TO INSTALLATION.
12. PHOTO-CELL ON ROOF. FACE NORTH.
13. LOCATION OF PHOTO-CELL CONTROLLED LIGHTING CONTACTOR 'C1'.
14. ROUTE (2) 2" PVC CONDUITS UNDERSLAB TO THE MECHANICAL ROOM AND STUB UP 6" ON BOTH ENDS. VERIFY EXACT LOCATION OF STUB UP WITH LANDLORD/ARCHITECT PRIOR TO INSTALLATION.
15. J-BOX INSTALLED ON WALL FOR CONNECTION OF IRRIGATION CONTROLS. VERIFY EXACT LOCATION WITH LANDLORD/ARCHITECT PRIOR TO INSTALLATION.
16. J-BOX INSTALLED IN SIDEWALK FOR CONNECTION OF ADA PUSH BUTTON TO CONTROL DOORS. VERIFY EXACT LOCATION WITH LANDLORD/ARCHITECT PRIOR TO INSTALLATION.
17. J-BOX INSTALLED ABOVE DOOR FOR CONNECTION OF DOOR OPENER MOTOR. VERIFY EXACT LOCATION WITH LANDLORD/TENANT PRIOR TO INSTALLATION.
18. 1" CONDUIT INSTALLED BELOW GRADE FOR CONNECTION OF ADA CONTROLS. VERIFY EXACT ROUTING OF CONDUIT WITH LANDLORD/TENANT PRIOR TO INSTALLATION.
19. J-BOX INSTALLED ON WALL FOR CONNECTION OF ADA PUSH BUTTON TO CONTROL DOORS. VERIFY EXACT LOCATION WITH LANDLORD/ARCHITECT PRIOR TO INSTALLATION.
20. E/ONE GRINDER PUMP ALARM PANEL AND ALARM DEVICE INSTALLED ON WALL FOR CONNECTION OF E/ONE WH472-77 GRINDER PUMP. VERIFY EXACT HEIGHT AND LOCATION WITH LANDLOED/EQUIPMENT SUPPLIER PRIOR TO INSTALLATION.
21. 3/4" CONDUIT WITH 2-#8 (CU) AND 1-#10 (CU) GROUND WIRE.
22. 1-1/4" PVC CONDUIT INSTALLED VERTICALLY TO A MINIMUM DEPTH OF 24" BELOW FINISHED GRADE FOR THE PROVIDED DIRECT BURIAL SUPPLY CABLE. CONDUIT TO BE SEALED PER NEC 300.5 AND NEC 300.7.
23. PROVIDED DIRECT BURIAL SUPPLY CABLE. INSTALL CABLE AT A MINIMUM DEPTH OF 24" BELOW FINISHED GRADE. LEAVE 6"-12" SETTLING LOOP AT EACH END BEFORE ENTERING CONDUIT BELOW GRADE. VERIFY EXACT REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLATION.
24. E/ONE WH472-77 120V DUPLEX GRINDER PUMP SYSTEM. INSTALLED IN GRADE. VERIFY EXACT LOCATION WITH CIVIL DRAWINGS. VERIFY EXACT INSTALLATION REQUIREMENTS WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLATION.



Revisions
<b>29 March 2022</b>
Owner Revisions

new shell building

**Market Street Center**

M291 and SW Market Street  
Lee's Summit, Missouri

PANEL		HP	120/208	VOLTS		■ 200. A. BUS		□ SERVICE ENTRANCE			
			3	PHASE		■ 200. A. MAIN BREAKER		□ FEED THRU LUGS			
SECTION		1	OF	1	4	WIRE		□ MAIN LUGS ONLY			
								□ SUBFEED LUGS			
CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA	
1	BUILDING LIGHTS	20	1	903	A	2	4-PLEX - TTB	20	1	500	
3	PARKING LOT LITS	20	1	1656	B	4	MONUMENT SIGN	20	1	1500	
5	CONTACTOR 'C1'	20	1	250	C	6	BUILDING SIGN	20	1	1500	
7	GRINDER PUMP ALARM AND CONTROL PANEL	40	1	3600	A	8	BUILDING SIGN	20	1	1500	
9	IRRIGATION	20	1	500	B	10	BUILDING SIGN	20	1	1500	
11	UNIT HEATER UH-1	20	2	1000	C	12	BUILDING SIGN	20	1	1500	
13				1000	A	14	SPARE	20	1	-	
15	SPARE	20	1	-	B	16	SPARE	20	1	-	
17	SPARE	20	1	-	C	18	SPARE	20	1	-	
19	SPARE	20	1	-	A	20	SPARE	20	1	-	
21					B	22	SPARE	20	1	-	
23	SPARE	30	2	-	C	24	SPARE	20	1	-	
25	SPACE	-	-	-	A	26	SPACE	-	-	-	
27	SPACE	-	-	-	B	28	SPACE	-	-	-	
29	SPACE	-	-	-	C	30	SPACE	-	-	-	
TOTAL CONNECTED LOAD 16909 VA				DEMAND FACTORS: LIGHTS @ 125 % = 12887 VA RECEPTS @ 100 % = 500 VA RECEPTS @ 50 % = - VA OTHER @ 100 % = 6100 VA TOTAL DEMAND LOAD = 19487 VA				NEUTRAL BUS 100 % POWER FACTOR 100 % DEMAND CURRENT 54.1 AMPS			
■ SURFACE MOUNTED											
□ FLUSH MOUNTED											

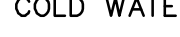
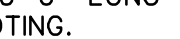
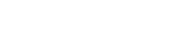
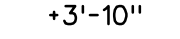
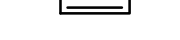
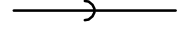
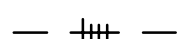
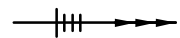
PANEL		MP1		120/208		VOLTS		<input checked="" type="checkbox"/> 400		A. BUS		<input type="checkbox"/> SERVICE ENTRANCE	
				3		PHASE		<input checked="" type="checkbox"/> 400		A. MAIN BREAKER		<input type="checkbox"/> FEED THRU LUGS	
SECTION		1		OF		1		4		WIRE		<input type="checkbox"/> MAIN LUGS ONLY	
												<input type="checkbox"/> SUBFEED LUGS	
CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA			
1	EXIT LTS	20	1	100	A	2	PANEL RECEPTACLE	20	1	180			
3	SMOKE DETECTORS	20	1	500	B	4	WP/GF REC - RTU	20	1	180			
5	SPACE	-	-	-	C	6	ADA DOOR CONTROLS	20	1	250			
7	SPACE	-	-	-	A	8	RTU-4	45	3	3840			
9	SPACE	-	-	-	B	10				3840			
11	SPACE	-	-	-	C	12				3840			
13	SPACE	-	-	-	A	14				3840			
15	SPACE	-	-	-	B	16	RTU-5	45	3	3840			
17	SPACE	-	-	-	C	18				3840			
19	SPACE	-	-	-	A	20	SPACE	-	-	-			
21	SPACE	-	-	-	B	22	SPACE	-	-	-			
23	SPACE	-	-	-	C	24	SPACE	-	-	-			
25	SPACE	-	-	-	A	26	SPACE	-	-	-			
27	SPACE	-	-	-	B	28	SPACE	-	-	-			
29	SPACE	-	-	-	C	30	SPACE	-	-	-			
31	SPACE	-	-	-	A	32	SPACE	-	-	-			
33	SPACE	-	-	-	B	34	SPACE	-	-	-			
35	SPACE	-	-	-	C	36	SPACE	-	-	-			
37	SPACE	-	-	-	A	38	SPARE	150	3	-			
39	SPACE	-	-	-	B	40				-			
41	SPACE	-	-	-	C	42				-			
TOTAL CONNECTED LOAD		24250		VA		DEMAND FACTORS:		125		VA		NEUTRAL BUS	
						LIGHTS @		100		VA		100 %	
						RECEPTS @		50		VA		POWER FACTOR	
						OTHER @		100		VA		DEMAND CURRENT	
						TOTAL DEMAND LOAD		=		24275		67.4 AMPS	

## PANEL SCHEDULE NOTES

- INSTALL LOCK-ON CLIP ON CIRCUIT BREAKER.

PANEL		MP2	120/208		VOLTS		<input checked="" type="checkbox"/> 600	A. BUS		<input type="checkbox"/> SERVICE ENTRANCE	
		3		PHASE		<input checked="" type="checkbox"/> 600	A. MAIN BREAKER		<input type="checkbox"/> FEED THRU LUGS		
SECTION		1	OF	1	4	WIRE		<input checked="" type="checkbox"/> MAIN LUGS ONLY		<input type="checkbox"/> SUBFEED LUGS	
CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. AMPS	BRKR. POLES	VA	
1	EXIT LTS	20	1	100	A	2	PANEL RECEPTACLE	20	1	180	
3	SMOKE DETECTORS	20	1	750	B	4	WP/GF REC - RTU	20	1	360	
5	SPACE	20	1	-	C	6	SPACE	-	-	-	
7				3720	A	8				3720	
9	RTU-1	45	3	3720	B	10	RTU-3	45	3	3720	
11				3720	C	12				3720	
13				3720	A	14	SPACE	-	-	-	
15	RTU-2	45	3	3720	B	16	SPACE	-	-	-	
17				3720	C	18	SPACE	-	-	-	
19	SPACE	20	1	-	A	20	SPACE	-	-	-	
21	SPACE	20	1	-	B	22	SPACE	-	-	-	
23	SPACE	20	1	-	C	24	SPACE	-	-	-	
25	SPACE	20	1	-	A	26	SPACE	-	-	-	
27	SPACE	20	1	-	B	28	SPACE	-	-	-	
29	SPACE	20	1	-	C	30	SPACE	-	-	-	
31	SPACE	-	-	-	A	32	SPACE	-	-	-	
33	SPACE	-	-	-	B	34	SPACE	-	-	-	
35	SPACE	-	-	-	C	36	SPACE	-	-	-	
37				-	A	38				-	
39	SPARE	150	3	-	B	40	SPARE	150	3	-	
41				-	C	42				-	
TOTAL CONNECTED LOAD		34870		VA		DEMAND FACTORS:		LIGHTS @ 125 % = 125 VA		NEUTRAL BUS 100 %	
RECEPTS @ 100 % = 540 VA		RECEPTS @ 50 % = 270 VA		OTHER @ 100 % = 34230 VA		TOTAL DEMAND LOAD = 34895 VA		POWER FACTOR 100 %		DEMAND CURRENT 96.9 AMPS	
<input type="checkbox"/> SURFACE MOUNTED		<input checked="" type="checkbox"/> FLUSH MOUNTED									

## ELECTRICAL SYMBOLS





<div><div>Electrical Specifications</div><div>1. COMMON WORK RESULTS FOR ELECTRICAL</div><div>COORDINATION</div><div>COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT: TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIED MOUNTING HEIGHTS THAT REDUCE HEADROOM ARE INDICATED. INCLUDE TWO FOR EACH SEALING ELEMENT. TO PROVIDE FOR EASE OF DISCONNECTING THE EQUIPMENT WITH MINIMUM INTERFERENCE TO OTHER INSTALLATIONS. TO ALLOW RIGHT OF WAY FOR PIPING AND CONDUIT INSTALLED AT REQUIRED SLOPE. SO CONNECTING RACEWAYS, CABLES, WIREWAYS, CABLE TRAYS, AND BUSWAYS WILL BE CLEAR OF OBSTRUCTIONS AND OF THE WORKING AND ACCESS SPACE OF OTHER EQUIPMENT. COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL ITEMS THAT ARE BEHIND FINISHED SURFACES OR OTHERWISE CONCEALED.</div><div>PRODUCTS</div><div>SLEEVE SEALS</div><div>DESCRIPTION: MODULAR SEALING DEVICE, DESIGNED FOR FIELD ASSEMBLY, TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE.</div><div>MANUFACTURERS:</div><div>ADVANCE PRODUCTS &amp; SYSTEMS, INC. CALPICO, INC. METRAFLUX CO. PIPELINE SEAL AND INSULATOR, INC.</div><div>SEALING ELEMENTS: EPDM INTERLOCKING LINKS SHAPED TO FIT SURFACE OF CABLE OR CONDUIT. INCLUDE TYPE AND NUMBER REQUIRED FOR MATERIAL AND SIZE OF RACEWAY OR CABLE. PRESSURE PLASTIC, INCLUDE TWO FOR EACH SEALING ELEMENT. CONNECTING BOLTS AND NUTS: STAINLESS STEEL OF LENGTH REQUIRED TO SECURE PRESSURE PLATES TO SEALING ELEMENTS. INCLUDE ONE FOR EACH SEALING ELEMENT.</div><div>EXECUTION</div><div>COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION</div><div>COMPLY WITH NECA 1.</div><div>SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS</div><div>ELECTRICAL PENETRATIONS OCCUR WHEN RACEWAYS, CABLES, WIREWAYS, CABLE TRAYS, OR BUSWAYS PENETRATE CONCRETE SLABS, CONCRETE OR MASONRY WALLS, OR FIRE-RATED FLOOR AND WALL ASSEMBLIES.</div><div>CONCRETE SLABS AND WALLS: INSTALL SLEEVES FOR PENETRATIONS UNLESS CORE-DRILLED HOLES OR FORMED OPENINGS ARE USED. INSTALL SLEEVES DURING ERECTION OF SLABS AND WALLS.</div><div>USE PIPE SLEEVES UNLESS PENETRATION ARRANGEMENT REQUIRES RECTANGULAR SLEEVED OPENING.</div><div>FIRE-RATED ASSEMBLIES: INSTALL SLEEVES FOR PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES UNLESS OPENINGS COMPATIBLE WITH FIRESTOP SYSTEM USED ARE FABRICATED DURING CONSTRUCTION OF FLOOR OR WALL.</div><div>CUT SLEEVES TO LENGTH FOR MOUNTING FLUSH WITH BOTH SURFACES OF WALLS.</div><div>INTERIOR PENETRATIONS OF NON-FIRE-RATED WALLS AND FLOORS: SEAL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE, USING JOINT SEALANT APPROPRIATE FOR SIZE, DEPTH, AND LOCATION OF JOINT.</div><div>FIRE-RATED-ASSEMBLY PENETRATIONS: MAINTAIN INDICATED FIRE RATING OF WALLS, PARTITIONS, CEILINGS, AND FLOORS AT RACEWAY AND CABLE PENETRATIONS. INSTALL SLEEVES AND SEAL RACEWAY AND CABLE PENETRATION SLEEVES WITH FIRESTOP MATERIALS.</div><div>ROOF-PENETRATION SLEEVES: SEAL PENETRATION OF INDIVIDUAL RACEWAYS AND CABLES WITH FLEXIBLE BOOT-TYPE FLASHING UNITS APPLIED IN COORDINATION WITH ROOFING WORK.</div><div>ABOVEGROUND, EXTERIOR WALL PENETRATIONS: SEAL PENETRATIONS USING STEEL PIPE SLEEVES AND MECHANICAL SLEEVE SEALS. SELECT SLEEVE SIZE TO ALLOW FOR 1-INCH (25-MM) ANNULAR CLEAR SPACE BETWEEN PIPE AND SLEEVE FOR INSTALLING MECHANICAL SLEEVE SEALS.</div><div>UNDERGROUND, EXTERIOR WALL PENETRATIONS: SEAL PENETRATIONS USING STEEL PIPE SLEEVES. SIZE SLEEVES TO ALLOW FOR 1-INCH (25-MM) ANNULAR CLEAR SPACE BETWEEN RACEWAY OR CABLE AND SLEEVE FOR INSTALLING MECHANICAL SLEEVE SEALS.</div><div>SLEEVE-SEAL INSTALLATION</div><div>UNDERGROUND, EXTERIOR WALL PENETRATIONS: INSTALL STEEL PIPE SLEEVES. SIZE SLEEVES TO ALLOW FOR 1-INCH (25-MM) ANNULAR CLEAR SPACE BETWEEN RACEWAY OR CABLE AND SLEEVE FOR INSTALLING MECHANICAL SLEEVE SEALS.</div><div>FIRESTOPPING</div><div>APPLY FIRESTOPPING TO PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES FOR ELECTRICAL INSTALLATIONS TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.</div><div>2. GROUNDING AND BONDING</div><div>QUALITY ASSURANCE</div><div>ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.</div><div>COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.</div><div>PRODUCTS</div><div>CONDUCTORS</div><div>INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.</div><div>BARE COPPER CONDUCTORS</div><div>SOLID CONDUCTORS: ASTM B 3.</div><div>STRANDED CONDUCTORS: ASTM B 8.</div><div>GROUNDING ELECTRODES</div><div>GROUND RODS: COPPER-CLAD; 3/4 INCH BY10 FEET (19 MM BY 3 M) IN DIAMETER.</div><div>EXECUTION</div><div>APPLICATIONS</div><div>CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER, UNLESS OTHERWISE INDICATED.</div><div>GROUNDING BUS: INSTALL IN ELECTRICAL AND TELEPHONE EQUIPMENT ROOMS, IN ROOMS HOUSING SERVICE EQUIPMENT, AND ELSEWHERE AS INDICATED. INSTALL BUS ON INSULATED SPACERS 1 INCH (25 MM), MINIMUM, FROM WALL 6 INCHES (150 MM) ABOVE FINISHED FLOOR, UNLESS OTHERWISE INDICATED.</div><div>EQUIPMENT GROUNDING</div><div>INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.</div><div>METAL POLES SUPPORTING OUTDOOR LIGHTING FIXTURES: INSTALL GROUNDING ELECTRODE AND A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO GROUNDING CONDUCTOR INSTALLED WITH BRANCH-CIRCUIT CONDUCTORS.</div><div>INSTALLATION</div><div>BONDING STRAPS AND JUMPERS: INSTALL IN LOCATIONS ACCESSIBLE FOR INSPECTION AND MAINTENANCE, EXCEPT WHERE ROUTED THROUGH SHORT LENGTHS OF CONDUIT.</div><div>BONDING TO STRUCTURE: BOND STRAPS DIRECTLY TO BASIC STRUCTURE, TAKING CARE NOT TO PENETRATE ANY ADJACENT PARTS.</div><div>BONDING TO EQUIPMENT MOUNTED ON VIBRATION ISOLATION HANGERS AND SUPPORTS: INSTALL SO VIBRATION IS NOT TRANSMITTED TO RIGIDLY MOUNTED EQUIPMENT.</div><div>USE EXOTHERMIC-WELDED CONNECTORS FOR OUTDOOR LOCATIONS, BUT IF A DISCONNECT-TYPE CONNECTION IS REQUIRED, USE A BOLTED CLAMP.</div><div>GROUNDING AND BONDING FOR PIPING</div><div>METAL WATER SERVICE PIPE: INSTALL INSULATED COPPER GROUNDING CONDUCTORS, IN CONDUIT, FROM BUILDING'S MAIN SERVICE EQUIPMENT, OR GROUNDING BUS, TO MAIN METAL WATER SERVICE ENTRANCES TO BUILDINGS. CONNECT GROUNDING CONDUCTORS TO MAIN METAL WATER SERVICE PIPES, USING A BOLTED CLAMP CONNECTOR OR BY BOLTING A PIPE CONNECTOR TO A PIPE FLANGE, USING ONE OF THE LUG BOLTS OF THE FLANGE, WHERE A DIELECTRIC MAIN WATER FITTING IS INSTALLED, CONNECT GROUNDING CONDUCTOR ON STREET SIDE OF FITTING. BOND METAL GROUNDING CONDUCTOR OR CONDUIT TO BUILDING STRUCTURE.</div><div>WATER METER PIPING: USE BRAIDED-TYPE BONDING JUMPERS TO ELECTRICALLY BYPASS WATER METERS. CONNECT TO PIPE WITH A BOLTED CONNECTOR.</div><div>BOND EACH ABOVEGROUND PORTION OF GAS PIPING SYSTEM DOWNSTREAM FROM EQUIPMENT SHUTOFF VALVE.</div><div>GROUNDING FOR STEEL BUILDING STRUCTURE: INSTALL A DRIVEN GROUND ROD AT BASE OF EACH CORNER COLUMN AND AT INTERMEDIATE EXTERIOR COLUMNS AT DISTANCES NOT MORE THAN 60 FEET (18 M) APART.</div><div>3. HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS</div><div>QUALITY ASSURANCE</div><div>COMPLY WITH NFPA 70.</div><div>PRODUCTS</div><div>SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS</div><div>RACEWAY AND CABLE SUPPORTS: AS DESCRIBED IN NECA 1 AND NECA 101.</div><div>CONDUIT AND CABLE SUPPORT DEVICES: STEEL AND MALLEABLE-IRON HANGERS, CLAMPS, AND ASSOCIATED FITTINGS, DESIGNED FOR TYPES AND SIZES OF RACEWAY OR CABLE TO BE SUPPORTED.</div><div>SUPPORT FOR CONDUCTORS IN VERTICAL CONDUIT: FACTORY-FABRICATED ASSEMBLY CONSISTING OF THREADED BODY AND INSULATING WEDGING PLUG OR PLUGS FOR NON-ARMORED ELECTRICAL CONDUCTORS OR CABLES IN RISER CONDUITS. PLUGS SHALL HAVE NUMBER, SIZE, AND SHAPE OF CONDUCTOR GRIPPING PIECES AS REQUIRED TO SUIT INDIVIDUAL CONDUCTORS OR CABLES SUPPORTED. BODY SHALL BE MALLEABLE IRON.</div><div>EXECUTION</div><div>APPLICATION</div><div>COMPLY WITH NECA 1 AND NECA 101 FOR APPLICATION OF HANGERS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND SYSTEMS EXCEPT IF REQUIREMENTS IN THIS ARTICLE ARE STRICTER.</div><div>MAXIMUM SUPPORT SPACING AND MINIMUM HANGER ROD SIZE FOR RACEWAY: SPACE SUPPORTS FOR EMT, IMC, AND RMC AS REQUIRED BY NFPA 70. MINIMUM ROD SIZE SHALL BE 1/4 INCH (6 MM) IN DIAMETER.</div><div>MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZIE-TYPE SUPPORTS FABRICATED WITH STEEL.</div><div>SLOTTED SUPPORT SYSTEM, SIZED SO CAPACITY CAN BE INCREASED BY AT LEAST 25 PERCENT IN FUTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOAD LIMITS. SECURE RACEWAYS AND CABLES TO THESE SUPPORTS WITH TWO-BOLT CONDUIT CLAMPS.</div><div>SUPPORT INSTALLATION</div><div>COMPLY WITH NECA 1 AND NECA 101 FOR INSTALLATION REQUIREMENTS EXCEPT AS SPECIFIED IN THIS ARTICLE.</div><div>RACEWAY SUPPORT METHODS: IN ADDITION TO METHODS DESCRIBED IN NECA 1, EMT, IMC, AND RMC MAY BE SUPPORTED BY OPENINGS THROUGH STRUCTURE MEMBERS, AS PERMITTED IN NFPA 70.</div><div>MOUNTING AND ANCHORAGE OF SURFACE-MOUNTED EQUIPMENT AND COMPONENTS: ANCHOR AND FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTS TO BUILDING STRUCTURAL ELEMENTS BY THE FOLLOWING METHODS UNLESS OTHERWISE INDICATED BY CODE: TO WOOD: FASTEN WITH LAG SCREWS OR THROUGH BOLTS. TO NEW CONCRETE: BOLT TO CONCRETE INSERTS. TO MASONRY: APPROVED TOGGLE-TYPE BOLTS ON HOLLOW MASONRY UNITS AND EXPANSION ANCHOR FASTENERS ON SOLID MASONRY UNITS. TO EXISTING CONCRETE: EXPANSION ANCHOR FASTENERS. INSTEAD OF EXPANSION ANCHORS, POWDER-ACTUATED DRIVEN THREADED STUDS PROVIDED WITH LOCK WASHERS AND NUTS MAY BE USED IN EXISTING STANDARD-WEIGHT CONCRETE 4 INCHES (100 MM) THICK OR GREATER. DO NOT USE FOR ANCHORAGE TO LIGHTWEIGHT-AGGREGATE CONCRETE OR FOR SLABS LESS THAN 4 INCHES (100 MM) THICK. TO STEEL: BEAM CLAMPS (MSS TYPE 19, 21, 23, 25, OR 27) COMPLYING WITH MSS SP-69. TO LIGHT STEEL: SHEET METAL SCREWS. ITEMS MOUNTED ON HOLLOW WALLS AND NONSTRUCTURAL BUILDING SURFACES: MOUNT</div></div>	<div><div>Cabinets, Panelboards, Disconnect Switches, Control Enclosures, Pull and Junction Boxes, Transformers, and Other Devices on Slotted-Channel Racks Attached to Substrate</div><div>4. CONDUCTORS AND CABLES</div><div>QUALITY ASSURANCE</div><div>ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.</div><div>COMPLY WITH NFPA 70.</div><div>PRODUCTS</div><div>CONDUCTORS AND CABLES</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: ALCAN PRODUCTS CORPORATION; ALCAN CABLE DIVISION AMERICAN INSULATED WIRE CORP.; A LEVITON COMPANY. GENERAL CABLE CORPORATION. SENATOR WIRE &amp; CABLE COMPANY. SOUTH-WIRE COMPANY.</div><div>COPPER CONDUCTORS: COMPLY WITH NEMA WC 70.</div><div>CONDUIT OR INSULATION: COMPLY WITH NEMA WC 70 FOR TYPE 1THN-THWN.</div><div>MULTI-CONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR METAL-CLAD CABLE, TYPE MC WITH GROUND WIRE.</div><div>CONNECTORS AND SPLICES</div><div>AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: AFC CABLE SYSTEMS, INC. HUBBELL POWER SYSTEMS, INC. O-Z-GEDNEY; EGS ELECTRICAL GROUP LLC. 3M. ELECTRICAL PRODUCTS DIVISION.</div><div>DESCRIPTION: FACTORY-FABRICATED CONNECTORS AND SPLICES OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS FOR APPLICATION AND SERVICE INDICATED.</div><div>EXECUTION</div><div>CONDUCTOR MATERIAL APPLICATIONS</div><div>FEEDERS: COPPER, SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.</div><div>BRANCH CIRCUITS: COPPER, SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.</div><div>CONDUIT OR INSULATION AND MULTI-CONDUCTOR CABLE APPLICATIONS AND WIRING METHODS</div><div>SERVICE ENTRANCE, FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.</div><div>BRANCH CIRCUITS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.</div><div>BRANCH CIRCUITS NOT CONCEALED IN CONCRETE: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY OR METAL-CLAD CABLE, TYPE MC.</div><div>INSTALLATION OF CONDUCTORS AND CABLES</div><div>CONCRETE, METAL, CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.</div><div>INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OF EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.</div><div>IDENTIFY AND COLOR-CODE ALL CONDUCTORS AND CABLES ACCORDING TO SECTION "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."</div><div>5. RACEWAYS AND BOXES</div><div>QUALITY ASSURANCE</div><div>ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.</div><div>COMPLY WITH NFPA 70.</div><div>PRODUCTS</div><div>METAL CONDUIT AND TUBING</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: ALLIED TUBE &amp; CONDUIT, A TYCO INTERNATIONAL LTD. CO. O-Z-GEDNEY; A UNIT OF GENERAL SIGNAL. WHEATLAND TUBE COMPANY.</div><div>FITTINGS FOR CONDUIT (INCLUDING ALL TYPES AND FLEXIBLE AND LIQUIDTIGHT), EMT, AND CABLE: NEMA FB 1, LISTED FOR TYPE AND SIZE RACEWAY WITH WHICH USED, AND FOR APPLICATION AND ENVIRONMENT IN WHICH INSTALLED.</div><div>CONDUIT FITTINGS FOR HAZARDOUS (CLASSIFIED) LOCATIONS: COMPLY WITH UL 886.</div><div>FITTINGS FOR EMT, STEEL, OR DIE-CAST, SET-SCREW OR COMPRESSION TYPE FOR CONCEALED LOCATIONS, STEEL OR DIE-CAST, COMPRESSION TYPE FOR EXPOSED LOCATIONS.</div><div>NONMETALLIC CONDUIT AND TUBING</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: CANTEX INC. CERTANTEED CORP.; PIPE &amp; PLASTICS GROUP. RACO, A HUBBELL COMPANY. THOMAS &amp; BETTS CORPORATION.</div><div>BOXES, ENCLOSURES, AND CABINETS</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: HOFFMAN. HUBBELL INCORPORATED; KILLARK ELECTRIC MANUFACTURING CO. DIVISION. O-Z-GEDNEY; A UNIT OF GENERAL SIGNAL. RACO, A HUBBELL COMPANY. THOMAS &amp; BETTS CORPORATION. WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE).</div><div>EXECUTION</div><div>RACEWAY APPLICATION</div><div>OUTDOORS: APPLY RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED.</div><div>EXPOSED AND CONCEALED CONDUIT: RIGID STEEL CONDUIT.</div><div>UNDERGROUND CONDUIT: RNC, TYPE EPC-40-PVC, DIRECT BURIED.</div><div>CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): LFNC.</div><div>BOXES AND ENCLOSURES: ABOVEGROUND, TYPE 1, EXCEPT USE NEMA 250, TYPE 4R.</div><div>COMPLY WITH THE FOLLOWING INDOOR APPLICATIONS, UNLESS OTHERWISE INDICATED: EXPOSED: EMT. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT, UNLESS MC ALLOWED PER "CONDUCTORS AND CABLES" SECTION. CONDUCTORS AND CABLES' SECTION. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): FMC, EXCEPT USE LFMC IN DAMP OR WET LOCATIONS. SILICON-BY-BOLTING AND AUTOMATION, INC. DAMP OR WET LOCATIONS: RIGID STEEL CONDUIT.</div><div>RACEWAYS FOR OPTICAL FIBER OR COMMUNICATIONS CABLE: EMT.</div><div>RACEWAYS AND ENCLOSURES FOR WET LOCATIONS NOT SERVING TO DISBURSE PHYSICAL DAMAGE IN DAMP OR WET LOCATIONS.</div><div>MINIMUM RACEWAY SIZE: 1/2-INCH (12-MM) TRADE SIZE.</div><div>DO NOT INSTALL ALUMINUM CONDUITS IN CONTACT WITH CONCRETE.</div><div>INSTALLATION</div><div>COMPLY WITH NECA 1 FOR INSTALLATION REQUIREMENTS APPLICABLE TO PRODUCTS SPECIFIED IN PART 2 EXCEPT WHERE REQUIREMENTS ON DRAWINGS OR IN THIS ARTICLE ARE STRICTER.</div><div>INSTALL RACEWAYS AT LEAST 6 INCHES (150 MM) AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. INSTALL HORIZONTAL RACEWAYS RUNS ABOVE WATER AND STEAM PIPING.</div><div>SUPPORT RACEWAYS AS SPECIFIED IN "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."</div><div>ARRANGE STUD-BOLTS CURVED ABOVE OR BELOW THE END OF BENDS ARE NOT VISIBLE ABOVE THE FINISHED SLAB.</div><div>INSTALL NO MORE THAN THE EQUIVALENT OF THREE 90-DEGREE BENDS IN ANY CONDUIT RUN EXCEPT FOR COMMUNICATIONS CONDUITS, FOR WHICH FEWER BENDS ARE ALLOWED.</div><div>CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.</div><div>RACEWAYS EMBEDDED IN SLABS:</div><div>RUN CONDUIT LARGER THAN 1-INCH (27-MM) TRADE SIZE, PARALLEL OR AT RIGHT ANGLES TO MAIN REINFORCEMENT, WHERE AT RIGHT ANGLES TO REINFORCEMENT, PLACE CONDUIT CLOSE TO SLAB SUPPORT.</div><div>ARRANGE RACEWAYS TO CROSS BUILDING EXPANSION JOINTS AT RIGHT ANGLES WITH EXPANSION JOINTS.</div><div>CHANGE FROM EMT TO RNC, TYPE EPC-40-PVC, RIGID STEEL CONDUIT, OR IMC BEFORE RISING ABOVE THE FLOOR.</div><div>RACEWAY TERMINATIONS AT LOCATIONS SUBJECT TO MOISTURE OR VIBRATION: USE INSULATING BUSHINGS TO PROTECT CONDUCTORS.</div><div>UNLESS OTHERWISE INDICATED, RACEWAYS SHALL BE: COMPLY WITH NECA 1.</div><div>IDENTIFICATION</div><div>COMPLY WITH REQUIREMENTS IN SECTION "ELECTRICAL IDENTIFICATION."</div><div>IDENTIFY FIELD-INSTALLED CONDUCTORS, INTERCONNECTING WIRING, AND COMPONENTS; PROVIDE WARNING SIGNS.</div><div>9. PANELBOARDS</div><div>SUBMITTALS</div><div>PRODUCT DATA: FOR EACH TYPE OF PANELBOARD, SWITCHING AND OVERCURRENT PROTECTIVE DEVICE, TRANSIENT VOLTAGE SUPPRESSION DEVICE, ACCESSORY, AND COMPONENT INDICATED.</div><div>INCLUDE DIMENSIONS AND MANUFACTURER'S TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.</div><div>OPERATION AND MAINTENANCE DATA: FOR PANELBOARDS AND COMPONENTS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.</div><div>QUALITY ASSURANCE</div><div>SOURCE LIMITATIONS: OBTAIN PANELBOARDS, OVERCURRENT PROTECTIVE DEVICES, COMPONENTS, AND ACCESSORIES FROM SINGLE SOURCE FROM SINGLE MANUFACTURER.</div><div>PRODUCT SELECTION FOR RESTRICTED SPACE: DRAWINGS INDICATE MAXIMUM DIMENSIONS FOR PANELBOARDS INCLUDING CLEARANCES BETWEEN PANELBOARDS AND ADJACENT SURFACES AND OTHER ITEMS. COMPLY WITH INDICATED MAXIMUM DIMENSIONS.</div><div>ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.</div><div>COMPLY WITH NEMA PB 1.</div><div>COMPLY WITH NFPA 70.</div><div>COORDINATE LAYOUT AND INSTALLATION OF PANELBOARDS AND COMPONENTS WITH OTHER CONSTRUCTION THAT PENETRATES WALLS OR IS SUPPORTED BY THEM, INCLUDING ELECTRICAL AND OTHER TYPES OF EQUIPMENT, PIPING, AND RACEWAYS, WITHIN THE SPACE, INCLUDING CLEARANCE REQUIREMENTS, AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.</div><div>WARRANTY</div></div>	<div><div>Special Warranty</div><div>MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE TRANSIENT VOLTAGE SUPPRESSION DEVICES THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY PERIOD: FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.</div><div>EXTRA MATERIALS</div><div>KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.</div><div>PRODUCTS</div><div>GENERAL REQUIREMENTS FOR PANELBOARDS</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: EATON ELECTRICAL INC.; CUTLER-HAMMER BUSINESS UNIT. GENERAL ELECTRIC COMPANY; GE CONSUMER &amp; INDUSTRIAL - ELECTRICAL DISTRIBUTION. SIEMENS ENERGY &amp; AUTOMATION, INC. SQUARE D, A BRAND OF SCHNEIDER ELECTRIC.</div><div>ENCLOSURES: FLUSH- AND SURFACE-MOUNTED CABINETS AS SCHEDULED.</div><div>RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.</div><div>INDOOR DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1.</div><div>OUTDOOR LOCATIONS: NEMA 250, TYPE 3R.</div><div>OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250, TYPE 4.</div><div>FINISHES</div><div>PANELS AND TRIM: STEEL, FACTORY FINISHED IMMEDIATELY AFTER CLEANING AND PRETREATING WITH MANUFACTURER'S STANDARD TWO-COAT, BAKED-ON FINISH CONSISTING OF PRIME COAT AND THERMOSETTING TOPCOAT.</div><div>BACK BOXES: GALVANIZED STEEL.</div><div>PHASE, NEUTRAL, AND GROUND BUSES</div><div>NEUTRAL AND GROUND BUSES: SUPPORTED BY THEM, INCLUDING CLEARANCE REQUIREMENTS, AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.</div><div>EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH-CIRCUIT EQUIPMENT GROUNDING CONDUCTORS; BONDED TO BOX.</div><div>CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MATERIAL AND SIZES.</div><div>MATERIAL: HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.</div><div>MAIN AND NEUTRAL LUGS: MECHANICAL TYPE.</div><div>GROUND LUGS AND BUS-CONFIGURED TERMINATORS: MECHANICAL TYPE.</div><div>FEED-THROUGH LUGS: MECHANICAL TYPE, SUITABLE FOR USE WITH CONDUCTOR MATERIAL.</div><div>LOCATE AT OPPOSITE END OF BUS FROM INCOMING LUGS OR MAIN DEVICE.</div><div>SERVICE EQUIPMENT LABEL: NRTL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS OR LOAD CENTERS WITH ONE OR MORE MAIN SERVICE DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES.</div><div>PANELBOARD SHORT-CIRCUIT CURRENT RATING: RATED FOR SERIES-CONNECTED SYSTEM WITH INTEGRAL OR REMOTE UPSTREAM OVERCURRENT PROTECTIVE DEVICES AND LABELED BY AN NRTL.</div><div>LOCATE AT OPPOSITE END OF BUS FROM INCOMING LUGS OR MAIN DEVICE.</div><div>SERVICE EQUIPMENT LABEL: NRTL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS OR LOAD CENTERS WITH ONE OR MORE MAIN SERVICE DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES.</div><div>PANELBOARD SHORT-CIRCUIT CURRENT RATING: RATED FOR SERIES-CONNECTED SYSTEM WITH INTEGRAL OR REMOTE UPSTREAM OVERCURRENT PROTECTIVE DEVICES AND LABELED BY AN NRTL.</div><div>SERIES-CONNECTED SHORT-CIRCUIT RATING BY AN NRTL.</div><div>LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS</div><div>SHORT-CIRCUIT BREAKER OR LUGS ONLY AS SCHEDULED.</div><div>BRANCH OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.</div><div>EXECUTION</div><div>INSTALLATION</div><div>INSTALL PANELBOARDS AND ACCESSORIES ACCORDING TO NEMA PB 1.1.</div><div>MOUNT TOP OF OR TRIM 90 INCHES (2286 MM) ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.</div><div>MOUNT PANELBOARD CABINET PLUMB AND RIGID WITHOUT DISTORTION OF BOX. MOUNT RECESSED BACK BOXES WITH FRONTS UNIFORM FLUSH WITH WALL FINISH AND MATING WITH BACK BOX.</div><div>INSTALL FILLER PLATES IN UNUSED SPACES.</div><div>COMPLY WITH NECA 1.</div><div>IDENTIFICATION</div><div>PANELBOARD NAMEPLATES: LABEL EACH PANELBOARD WITH A NAMEPLATE COMPLYING WITH REQUIREMENTS FOR IDENTIFICATION SPECIFIED IN SECTION "ELECTRICAL IDENTIFICATION."</div><div>10. FUSES</div><div>SUBMITTALS</div><div>PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED, INCLUDE CONSTRUCTION DETAILS, MATERIAL, DIMENSIONS, DESCRIPTIONS OF INDIVIDUAL COMPONENTS, AND FINISHES FOR SPARE-FUSE CABINETS. INCLUDE THE FOLLOWING FOR EACH FUSE TYPE INDICATED: QUALITY ASSURANCE ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION. COMPLY WITH NEMA FU 1 FOR CARTRIDGE FUSES. COMPLY WITH NFPA 70.</div><div>PRODUCTS</div><div>MANUFACTURERS</div><div>MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: COOPER BUSSMANN, INC. EDISON FUSE, INC. FERRAZ SHAWMUT, INC. LITTEL FUSE, INC.</div><div>CARTRIDGE FUSES</div><div>CHARACTERISTICS: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSES WITH VOLTAGE RATINGS CONSISTENT WITH CIRCUIT VOLTAGES.</div><div>EXECUTION</div><div>FUSE APPLICATIONS</div><div>CARTRIDGE FUSES</div><div>SERVICE ENTRANCE: CLASS RK1, FAST ACTING (0-800A); CLASS L, FAST ACTING (600A AND GREATER).</div><div>11. LIGHTING</div><div>SUBMITTALS</div><div>PRODUCT DATA: FOR EACH TYPE OF LIGHTING FIXTURE, ARRANGED IN ORDER OF FIXTURE DESCRIPTION, INCLUDE DATA ON FEATURES, ACCESSORIES, FINISHES, AND THE FOLLOWING: PHYSICAL DESCRIPTION OF LIGHTING FIXTURE INCLUDING DIMENSIONS. EMERGENCY LIGHTING UNITS INCLUDING BATTERY AND CHARGER. BALLAST. ENERGY-EFFICIENCY DATA. PHOTOMETRIC DATA, IN IESNA FORMAT, BASED ON LABORATORY TESTS OF EACH LIGHTING FIXTURE TYPE, OUTFITTED WITH LAMPS, BALLASTS, AND ACCESSORIES IDENTICAL TO THOSE INDICATED FOR THE LIGHTING FIXTURE TO BE PROVIDED. OPERATION AND MAINTENANCE DATA: FOR LIGHTING EQUIPMENT AND FIXTURES TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.</div><div>WARRANTIES: SPECIAL WARRANTIES SPECIFIED IN THIS SECTION.</div><div>QUALITY ASSURANCE</div><div>ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.</div><div>COMPLY WITH NFPA 70.</div><div>COORDINATION</div><div>FIELD LAYOUT AND INSTALLATION OF LIGHTING FIXTURES AND SUSPENSION SYSTEM WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS OR IS SUPPORTED BY THEM, INCLUDING HVAC EQUIPMENT, FIRE-SUPPRESSION SYSTEM, AND PARTITION ASSEMBLIES.</div><div>12. FIRE-ALARM SYSTEM</div><div>SUBMITTALS</div><div>Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.</div><div>Provide voltage drop and battery-size calculations. Show all devices and cable connections between each.</div><div>QUALITY ASSURANCE</div><div>Personnel Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project. Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system. All components shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.</div><div>PRODUCTS</div><div>MANUFACTURERS</div><div>Manufacturers: Provide products by one of the following: Bosch Security Systems. Fire Alarm Manufacturers, Inc.; a Honeywell company. Fire Life Alarms; a Honeywell company. Garnett; a Honeywell company. NOTIFIER; a Honeywell company. Siemens Building Technologies, Inc.; Fire Safety Division. SimplexGrinnell LP, a Tyco International company.</div><div>SYSTEMS OPERATIONAL DESCRIPTION</div><div>Fire-alarm signal initiation shall be by smoke detectors and duct smoke detectors.</div><div>Fire-alarm signal shall continuously operate alarm-notification appliances, identify alarm at the fire-alarm control unit and remote annunciators, transmit an alarm signal to the remote alarm receiving station, switch heating, ventilating, and air conditioning controls to fire-alarm mode, and record events in the system memory.</div><div>System trouble signal shall be initiated by open circuits, shorts, and grounds in designated circuits; opening, tripping, or removing alarm-initiating and supervisory signal-initiating devices; loss of primary power at fire-alarm control unit; ground or a single break in fire-alarm control unit internal circuits; abnormal ac voltage at fire-alarm control unit; a break in standby battery circuitry; failure of battery charging; or an abnormal position of any switch at fire-alarm control unit or annunciator.</div><div>System Trouble and Supervisory Signal Actions shall initiate notification appliance and annunciate at fire-alarm control unit.</div><div>FIRE-ALARM CONTROL UNIT</div><div>Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL. Furnish with addressable control circuits for operation of mechanical equipment and elevator recall capabilities as required.</div><div>Continuously adjustable slider, with single-pole or three-way switching module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source. Sealed lead calcium batteries shall be furnished for secondary power.</div><div>SYSTEM SMOKE DETECTORS</div><div>Photoelectric Smoke Detectors:</div><div>Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.</div><div>Duct Smoke Detectors: Photoelectric type complying with UL 268A.</div><div>Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X, NRTL listed for use with the supplied detector. Furnish with sampling tubes and relay fan shutdown.</div><div>NOTIFICATION APPLIANCES</div><div>Combination devices shall be factory-integrated audible and visible devices in a single-mounting assembly.</div><div>Horns: Electric horns shall be installed in raceways, 24V dc, with provision for hooking to the alarm bell and a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet (3 m) from the horn, using the coded signal prescribed in UL 464 test protocol.</div><div>Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate</div></div>	<div><div>lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- (25-mm-) high letters on the lens. Furnish with white faceplate and 15/30/75/110 cfd field selectable output.</div><div>EXECUTION</div><div>EQUIPMENT INSTALLATION</div><div>Comply with NFPA 72 for installation of fire-alarm equipment.</div><div>Equipment Mounting: Install in dry location unit and annunciator on finished floor with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.</div><div>Audible Alarm-indicating Devices: Install 80" above the floor or 6" below ceiling, whichever is lower. Install bells and horns on flush-mounted back boxes with the device operating in the alarm mode, and record events in the system memory.</div><div>Visible Alarm-indicating Devices: Install adjacent to each alarm bell or alarm horn and at 80" above the floor or 6" below ceiling, whichever is lower.</div><div>Manual Fire Alarm Boxes: Install at 48" to the top of the device.</div></div> <div><div>JOE STEWART</div><div>ARCHITECT</div><div>125 Highland Park Avenue Excelsior Springs, MO 64024</div><div>joe@jsk-kc.com 816 . 830 . 2754</div><div>Drawings and/or Specifications are original proprietary work and property of the Architect intended for the specifically titled project. Use of items contained herein without consent of Architect for titled or other projects is prohibited. Drawings illustrate best information available to Architect. Field verification of actual elements, conditions and dimensions is required.</div><div><div>REGISTRATION</div><div>GREGORY P. GLADEFELTER NUMBER F-2000150421</div><div>REGISTERED PROFESSIONAL ENGINEER</div></div><div><div>signed 18 March 2022</div><div>Project Number 21.188.05</div></div><div><div>Revisions</div><div>new shell building</div><div>Market Street Center</div><div>M291 and SW Market Street Lee's Summit , Missouri</div><div>sheet</div><div>E3</div><div>ELECTRICAL SPECIFICATION</div><div>Permit 04 March 2022</div></div></div>
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$$1'' = 20'-0''$$
[illegible]

1

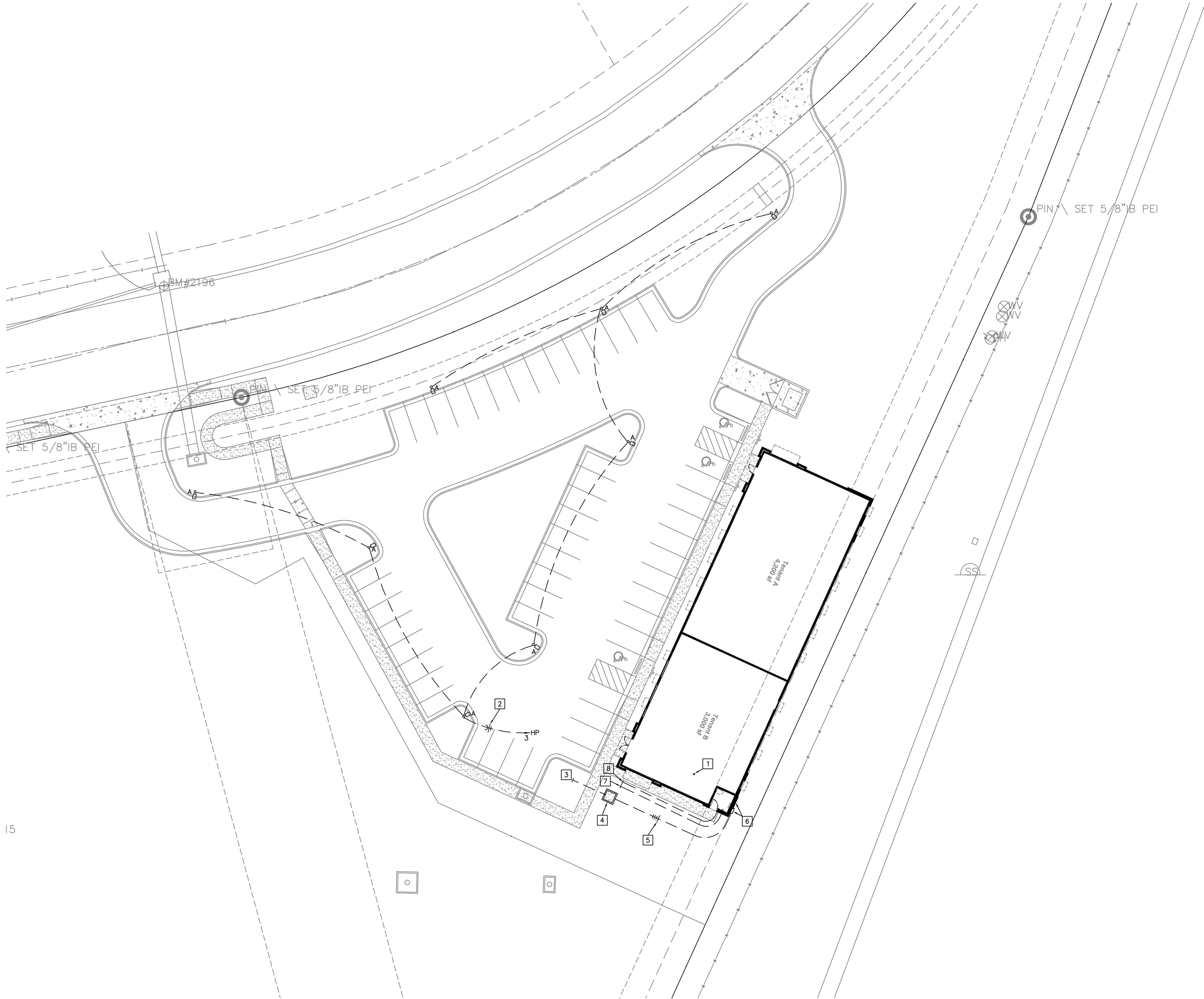
new shell building

# Market Street Center

M291 and SW Market Street

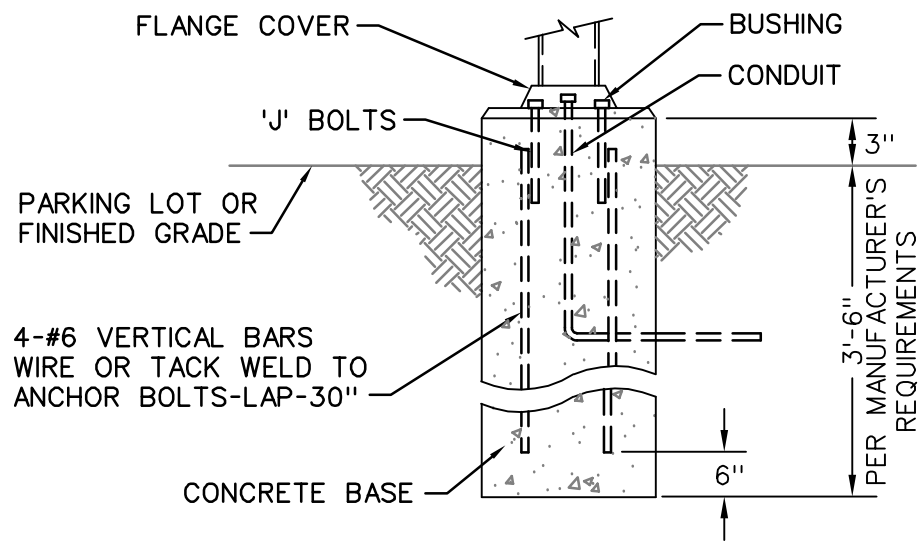
M291 and SW Market Street





ELECTRICAL SITE PLAN NOTES #

- 1. PHOTO-CELL ON ROOF, FACE NORTH.
- 2. ROUTE HOMERUN THRU PHOTO-CELL CONTROLLED CONTACTOR IN MECHAINCAL CLOSET.
- 3. (3) 4" PVC CONDUITS FOR PRIMARY SERVICE CABLES. TERMINATE AT PROPERTY LINE. INSTALL CONDUITS WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
- 4. UTILITY COMPANY PAD MOUNT TRANSFORMER WITH 208Y/120V DELTA PRIMARY. INSTALL CONCRETE PAD PER UTILITY COMPANY STANDARDS.
- 5. (4) SETS OF 3" PVC CONDUIT WITH 4-#350KCMIL (AL) IN EACH. INSTALL CONDUITS WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
- 6. LOCATION OF CT ELECTRICAL SERVICE EQUIPMENT. SEE 'ELECTRICAL RISER DIAGRAM', SHEET E2, FOR SPECIFICATION.
- 7. (2) 4" PVC CONDUIT TO PROPERTY LINE. INSTALL WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
- 8. 1" PVC CONDUIT TO MONUMENT SIGN. INSTALL WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE. VERIFY EXACT LOCATION OF MONUMENT SIGN WITH LANDLORD PRIOR TO INSTALLATION.



POLE BASE DETAIL  
NOT TO SCALE



UTILITY WARNING:  
The existence and location of any underground utility pipes, lines or structures shown on these drawings are obtained by a search of the available records. The contractor is required to take due precautionary measures to protect the utility lines shown, and all other lines not of record or not shown on these drawings by verification of their location in the field prior to the initiation of the actual portion of their work.



signed 29 March 2022  
Project Number 21.188.05

Revisions  
29 March 2022  
Owner Revisions

new shell building  
**Market Street Center**  
M291 and SW Market Street  
Lee's Summit , Missouri

sheet  
**SP2**  
ELECTRICAL  
SITE PLAN  
Permit  
04 March 2022