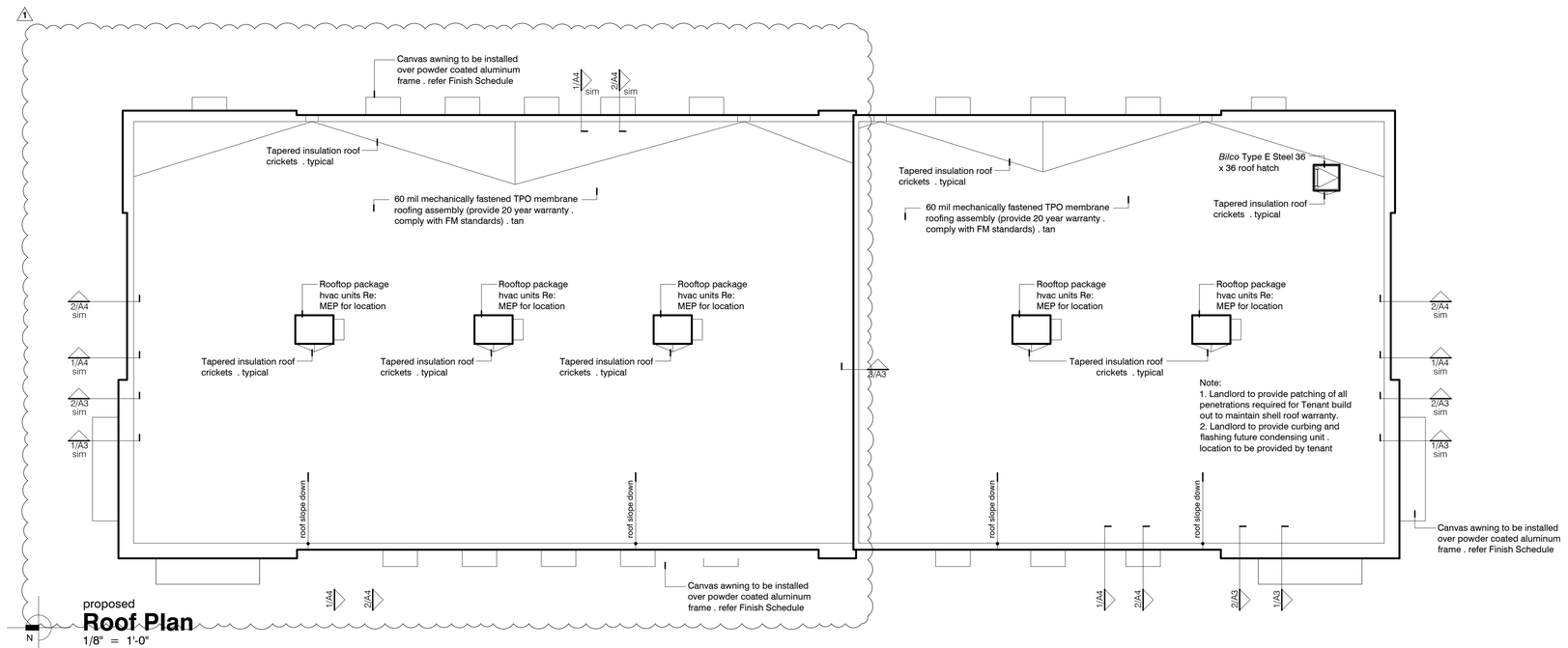
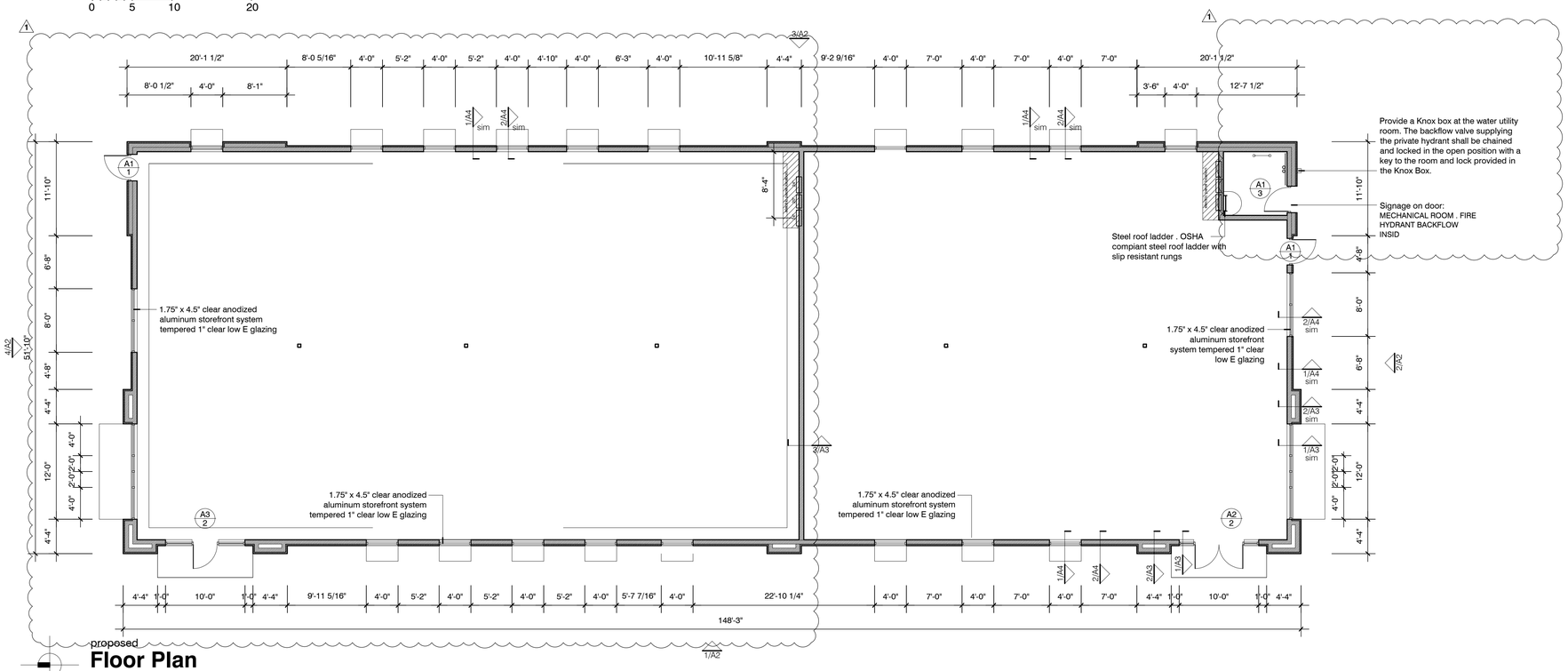


proposed
Roof Plan
1/8" = 1'-0"
0 5 10 20



proposed
Floor Plan
1/8" = 1'-0"
0 5 10 20

New Building for
Marketstreet Center
M291 and SW Market Street

Lee's Summit . Missouri
Building Package

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 6 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 (eifs) 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

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signed 18 March 2022
Project Number 21.188.05

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Revisions
1 **2 May 2022**
City Comments

new shell building
Market Street Center
M291 and SW Market Street
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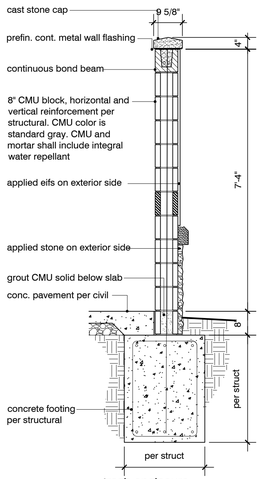
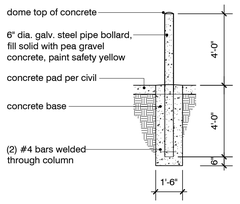
sheet
A1
Project Information
Floor & Roof Plan

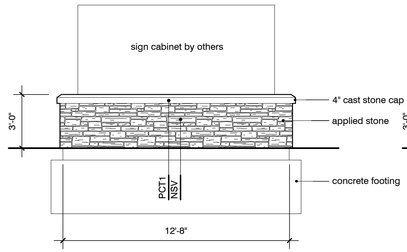
Permit
04 March 2022



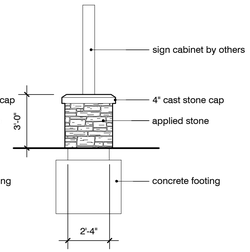
9 trash enclosure
Section
1/4" = 1'-0"



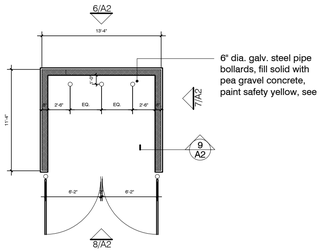
10 detail
Bollard
1/4" = 1'-0"



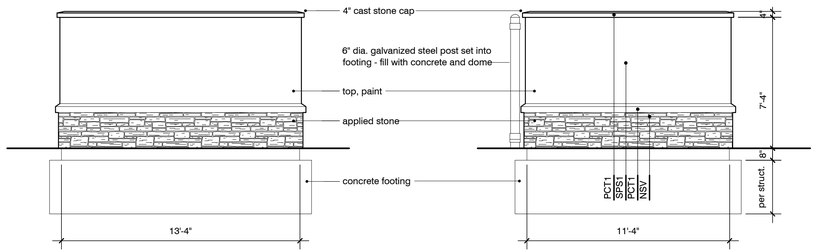
11 monument sign
Elevation
1/4" = 1'-0"



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

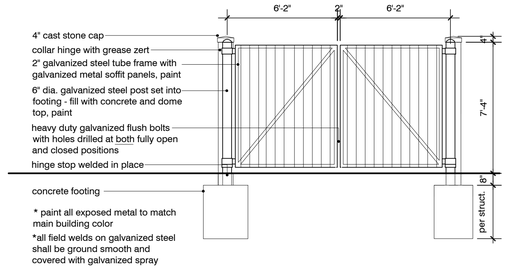


5 trash enclosure
Plan
1/4" = 1'-0"

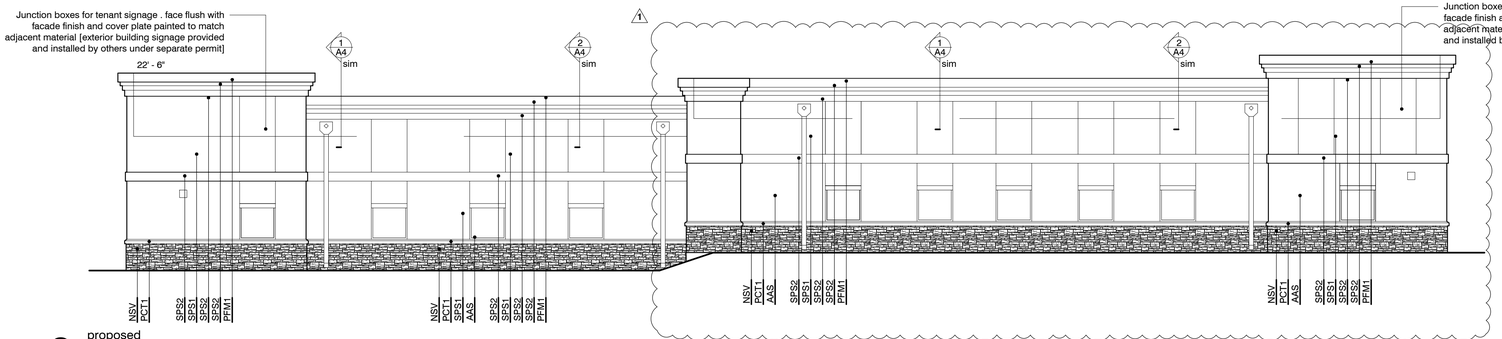


6 trash enclosure
Elevation
1/4" = 1'-0"

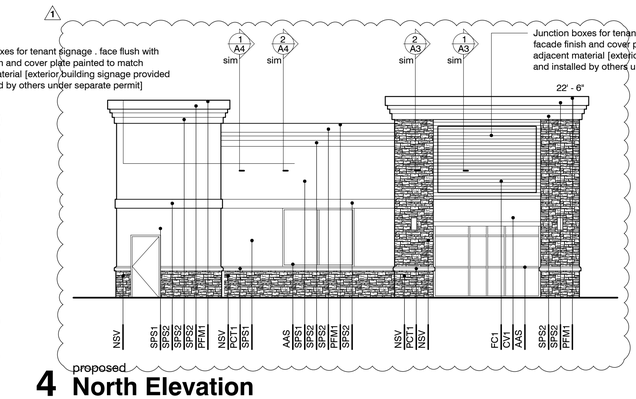
7 trash enclosure
Elevation
1/4" = 1'-0"



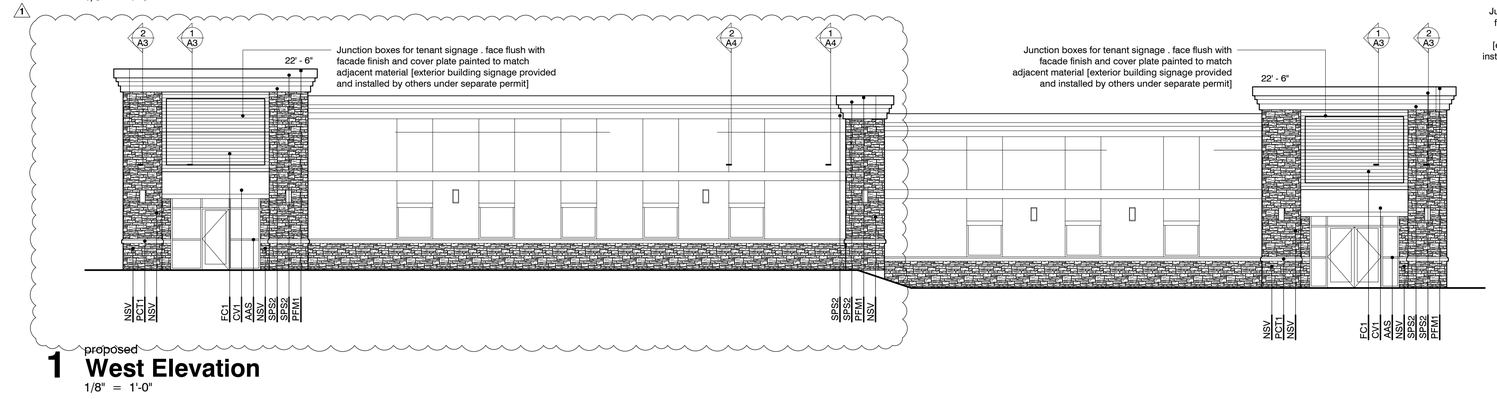
8 trash enclosure
Elevation
1/4" = 1'-0"



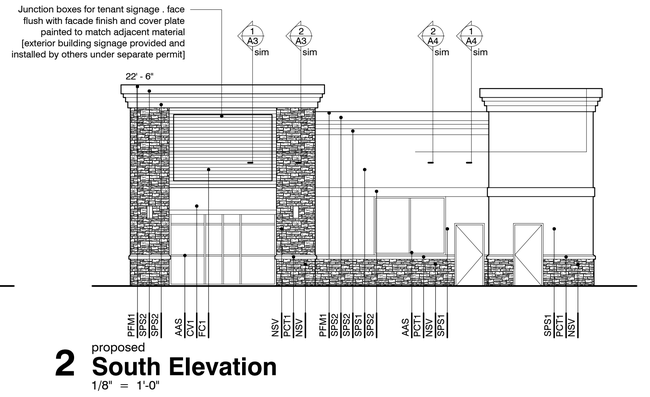
proposed
3 East Elevation
1/8" = 1'-0"



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



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



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

Exterior Finish Schedule

All masonry to be sealed with 'Sure Klean' *Siloxane PD* water repellant [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 annodized 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:
1. Signage shown for reference only.
2. 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.
3. Provide j-box with pull string for future building signage. Locate signage disconnect inside building space adjacent to sign.
4. Provide ¾" marine grade blocking for exterior signage. Extend blocking 8" beyond edge of signage, typical.

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Revisions

1 **2 May 2022**
City Comments

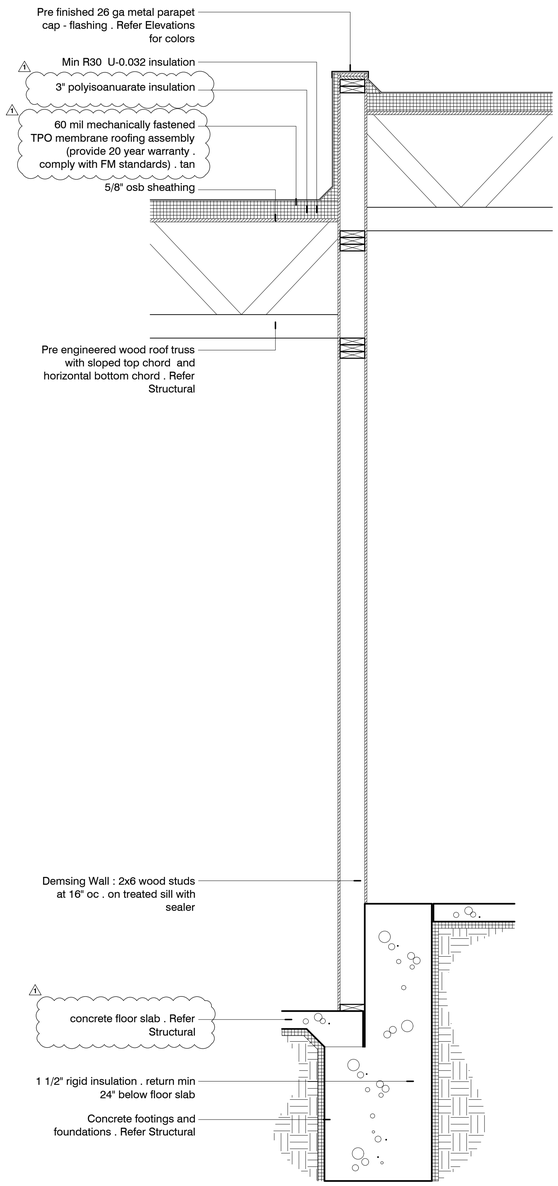
new shell building

Market Street Center

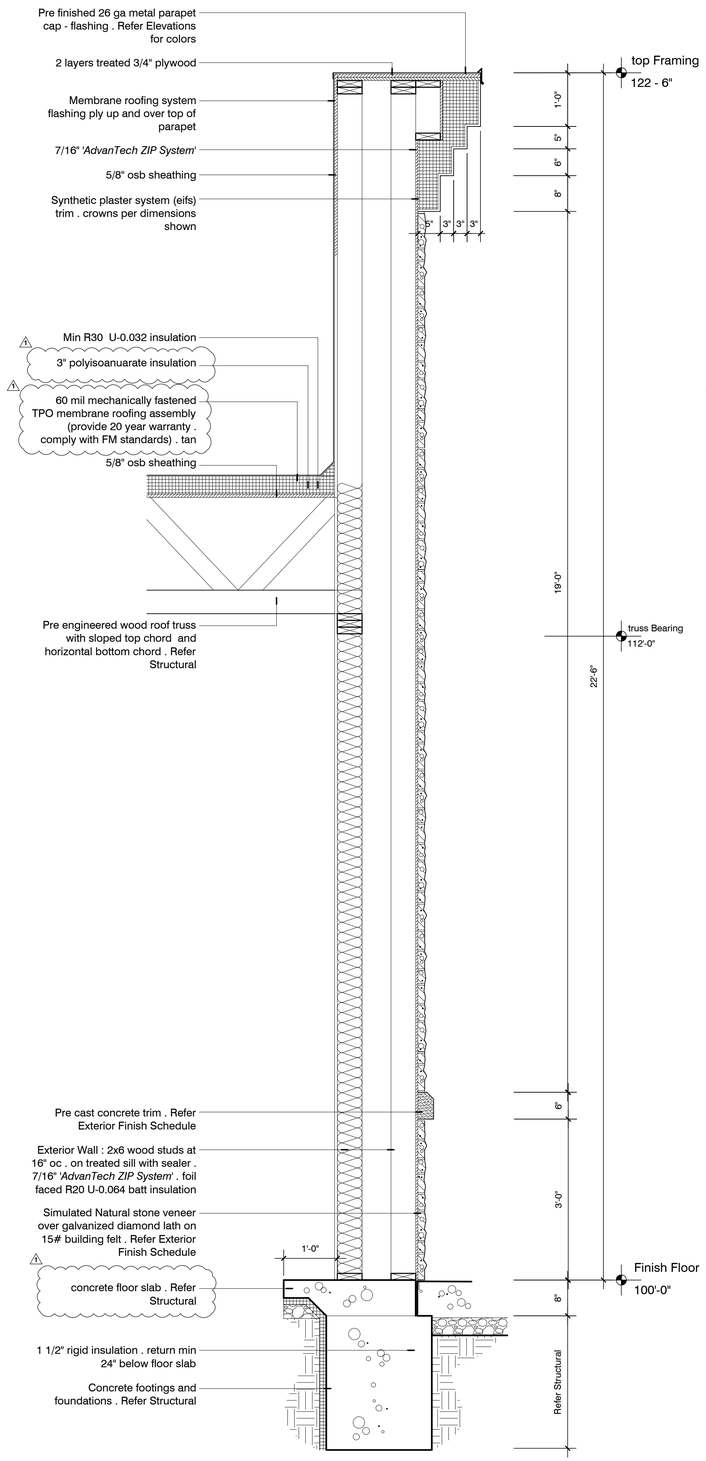
M291 and SW Market Street
Lee's Summit . Missouri

sheet
A2
Elevations
Trash Enclosure

Permit
04 March 2022



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



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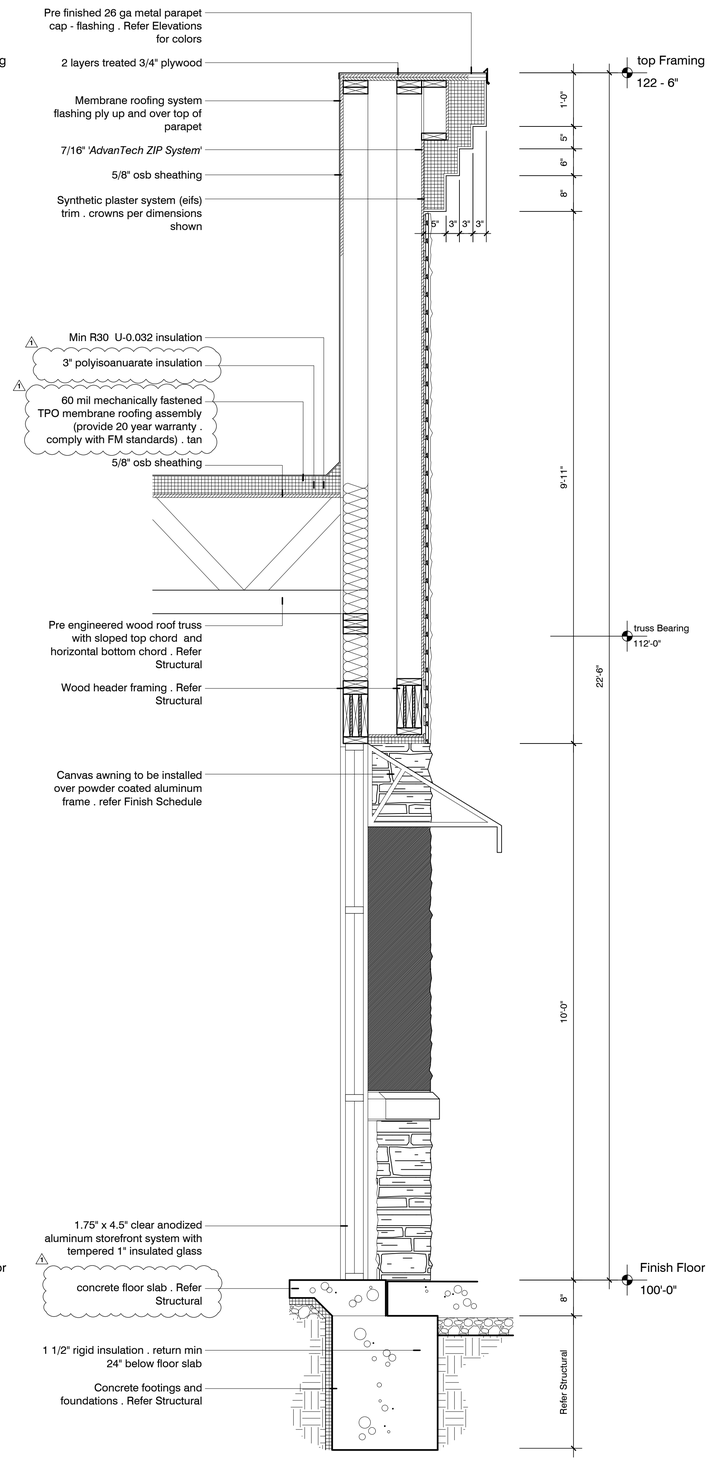

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sheet
A3
Wall Sections

Permit
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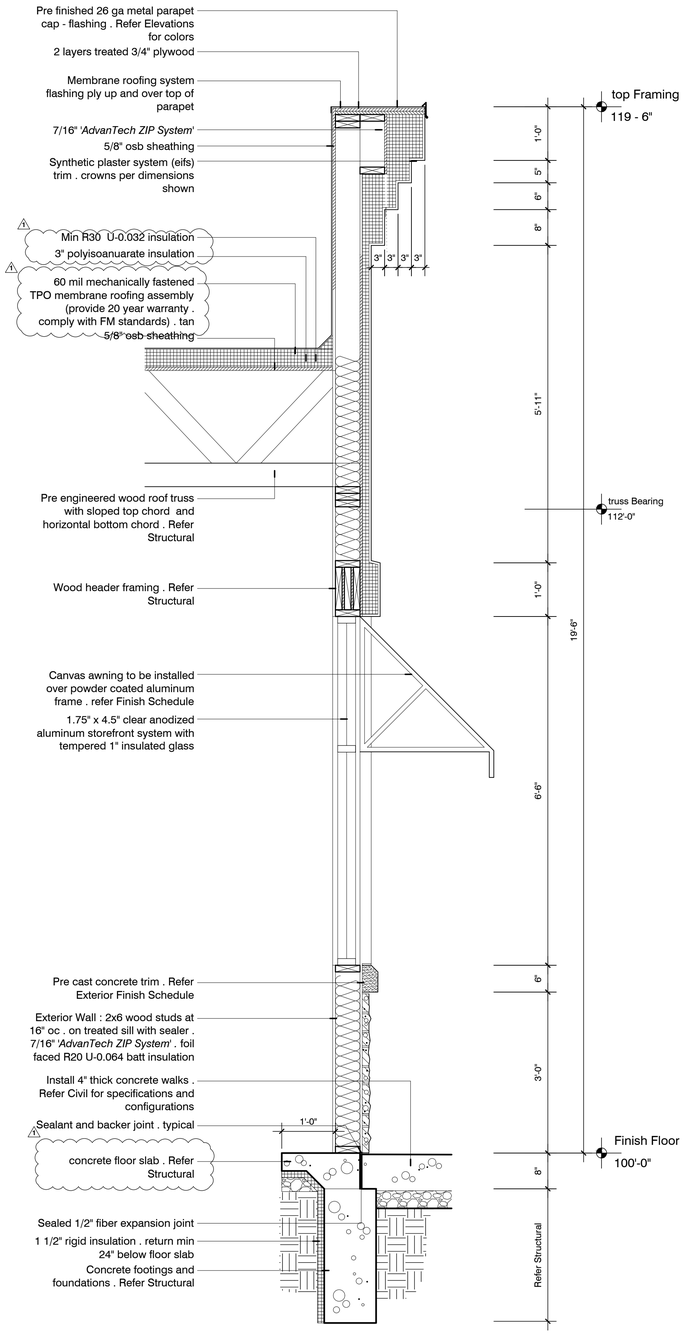
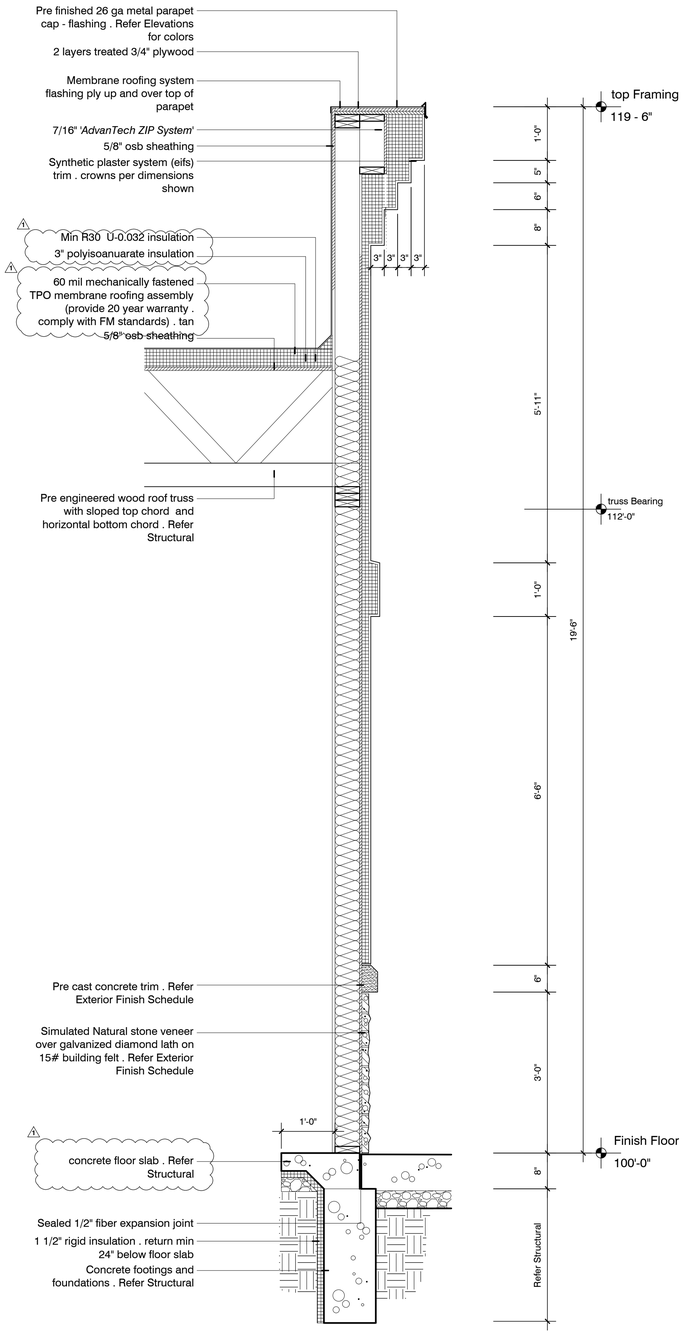


2 typical
Wall Section
3/4" = 1'-0"



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

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sheet
A4
Wall Sections

Permit
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STRUCTURAL NOTES

2018 INTERNATIONAL BUILDING CODE

GENERAL NOTES:
1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE.

2. 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.

3. 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.

4. 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.

5. 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.

6.

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 Ct = 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 S1 = 0.0668
SPECTRAL RESPONSE COEFFICIENTS: Sds = 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:
1. 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.

2. MINIMUM FROST DEPTH: 3'-0"

CONCRETE:
1. 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)

2. 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.

3. THE CONTRACTOR SHALL REJECT ANY CONCRETE THAT EXCEEDS THE SLUMP LIMITS NOTED ABOVE OR EXCEEDS THE TOTAL ALLOWABLE MIXING TIME.

4. FLY ASH MAY BE INCLUDED IN FOUNDATION CONCRETE.

5. NO ALUMINUM SHALL BE PLACED IN CONCRETE.

6. 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."

7. 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:
1. REINFORCING STEEL SHALL BE ASTM A615, GRADE 60.

2. 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"

3. 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:
1. ALL WOOD FRAMING MEMBERS INDICATED ARE NOMINAL SIZES. PROVIDE ACTUAL DRESSED SIZES, KILN DRIED, WITH MAXIMUM IN PLACE MOISTURE CONTECT OF 19%.

2. ALL BOLTS ARE A36 OR A307, GRADE A, AND ALL NAILS ARE BOX NAILS UNLESS NOTED OTHERWISE.

3. WALL SHEATHING IS 7/16" STRUCTURAL SHEATHING, 8d NAILS AT 6" OC. BLOCK ALL PANEL EDGES. REFERENCE PLANS FOR HOLDDOWN LOCATIONS AND SIZES.

4. 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.

5. UNLESS NOTED OTHERWISE, FASTENER QUALITY, QUANTITY SIZE AND SPACING SHALL COMPLY WITH THE 2016IBC FASTENING SCHEDULE (TABLE 2304.9)

6. ALL WOOD IN CONTRACT WITH THE CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESERVATIVE TREATED.

7. 15/32" ROOF SHEATHING STRUCTURAL WITH 8D NAILS AT 6" OC.

8. JOIST HEADERS AND WALL STUDS TO BE #2 DOUGLAS FIR AND LVL -E=2,000,000 PSI

PRE-FABRICATED WOOD TRUSSES:

1. 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.

2. 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.

3. TRUSS SPACING IS AS DETERMINED BY TRUSS MANUFACTURER. MAXIMUM SPACING IS 24" OC.

4. 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.

5. TRUSS MANUFACTURER IS RESPONSIBLE FOR DESIGNING ALL TRUSS-TO-TRUSS, TRUSS-TO-WALL AND TRUSS-TO-BEAM CONNECTIONS UNLESS NOTED OTHERWISE.

6. COORDINATE ROOF ANCHOR LOCATIONS WITH ROOF ANCHOR MANUFACTURER.

STRUCTURAL STEEL:
1. 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.

2. 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.

3. STRUCTURAL STEEL SHALL MEET ASTM A36 UNLESS NOTED OTHERWISE. STRUCTURAL STEEL WIDE FLANGE SHAPES SHALL MEET ASTM A992.

4. STEEL TUBES SHALL MEET ASTM A500, GRADE B.

5. STEEL PIPE SHALL MEET ASTM A53, TYPE E OR S, GRADE B.

R 6. BOLTS SHALL BE 3/4" DIAMETER A325-N UNLESS OTHERWISE NOTED.

7. 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.

8. 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.

9. ALL FIELD WELDING SHALL BE VISUALLY INSPECTED BY THE TESTING LABORATORY.

10. HOT DIP GALVANIZE ALL EXPOSED STEEL MEMBERS TO MEET ASTM 525 G60.

11. 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.

12. SEE ARCHITECTURAL DRAWINGS FOR ANY ADDITIONAL STRUCTURAL STEEL NOT CALLED OUT ON STRUCTURAL DRAWINGS.

POST-INSTALLED ANCHORS:

1. 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.

2. 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

3. 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.

4. ANCHORS ARE NOT TO BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED ITS DESIGN STRENGTH.

DEFERRED SUBMITTALS:

1. THE FOLLOWING ITEMS ARE DEFERRED SUBMITTAL ITEMS:
- PRE-ENGINEERED WOOD TRUSS

2. 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:
1. 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.

2. 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

3. VERIFICATION OF SOILS: PER SECTION 1705.6 AND TABLE 1705.6.

4. CONCRETE: PER SECTION 1705.3 AND TABLE 1705.3.(ALL CONCRETE EXCEPT SLABS-ON-GRADE AND SIDEWALKS). ANCHOR BOLTS SHALL BE INSPECTED.

5. 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.

6. EXPANSION BOLT, SCREW ANCHOR AND EPOXY ANCHOR INSTALLATION TO VERIFY INSTALLATION IN ACCORD WITH ICBO REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.

7. THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO BE CERTAIN IT CONFORMS WITH THE APPROVED DESIGN DRAWINGS AND SPECIFICATIONS.

8. 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.

9. 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:
1. 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.

2. 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.

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
JT	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

CONCRETE SPLICE LENGTH TABLE

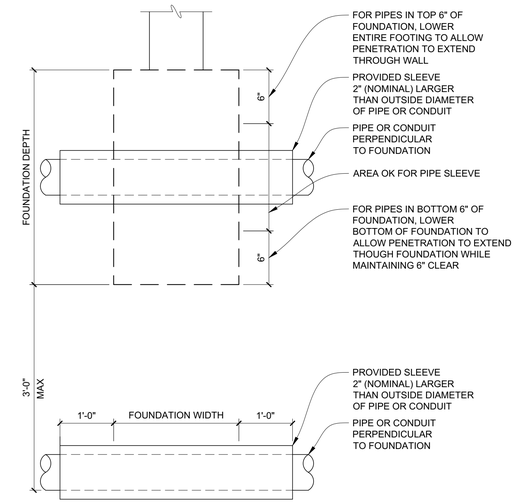
BAR SIZE	FOOTING OR GRADE BEAM	WALL (VERTICAL)	WALL (HORIZONTAL)	SLAB	COLUMN	BEAM (BOTTOM)	BEAM (TOP)
#3	-	1'-8"	1'-8"	1'-8"	-	-	-
#4	2'-3"	2'-3"	2'-3"	2'-3"	-	-	-
#5	2'-9"	2'-9"	2'-9"	2'-9"	2'-0"	2'-7"	3'-5"
#6	3'-4"	3'-4"	3'-4"	3'-4"	2'-5"	3'-1"	4'-1"
#7	4'-10"	4'-10"	4'-10"	4'-10"	3'-6"	4'-6"	5'-11"
#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:
1. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED, THE LARGER SPLICE LENGTH SHALL BE USED.
2. BEAM TOP BAR IS DEFINED AS ANY HORIZONTAL BAR THAT HAS MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
3. TABLE SHALL ONLY BE USED WHEN:
- CONCRETE IS NORMAL WEIGHT
- REINFORCEMENT STEEL IS UNCOATED
- REINFORCEMENT STEEL MEETS ASTM A615, GRADE 60

EPOXY EMBEDMENT TABLE

BAR SIZE	REINFORCING STEEL			THREADED ROD ANCHORS	
	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:
1. CONTRACTOR HAS THE OPTION TO EPOXY DOWELS AS AN ALTERNATE TO HOOKED OR CAST-IN-PLACE DOWELS WHERE NOTED ON DETAILS.
2. SEE GENERAL STRUCTURAL NOTES FOR APPROVED EPOXY.



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

44 S001 TYPICAL INSTALLATION OF PIPE
NO SCALE (@ FOUNDATIONS)

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

Revisions
1 2 May 2022 City Comments

PROJECT NUMBER: 22-015

ISSUE DATE: 3/6/2022

SHEET NAME: GENERAL STRUCTURAL NOTES

SHEET NUMBER: S001

TABLE 2304.9.1
FASTENING SCHEDULE

CONNECTION	FASTENING (a,m)	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"x6" SUBFLOOR OR LESS TO EACH JOIST	2 - 8d COMMON	FACE NAIL
4. WIDER THAN 1"x6" 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 6d (c,l) 2 3/8"x0.113" NAIL (n) 1 3/4" 16 GAGE (o)	
	19/32" TO 3/4" 8d (d) OR 6d (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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1 **2 May 2022**
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PROJECT NUMBER:
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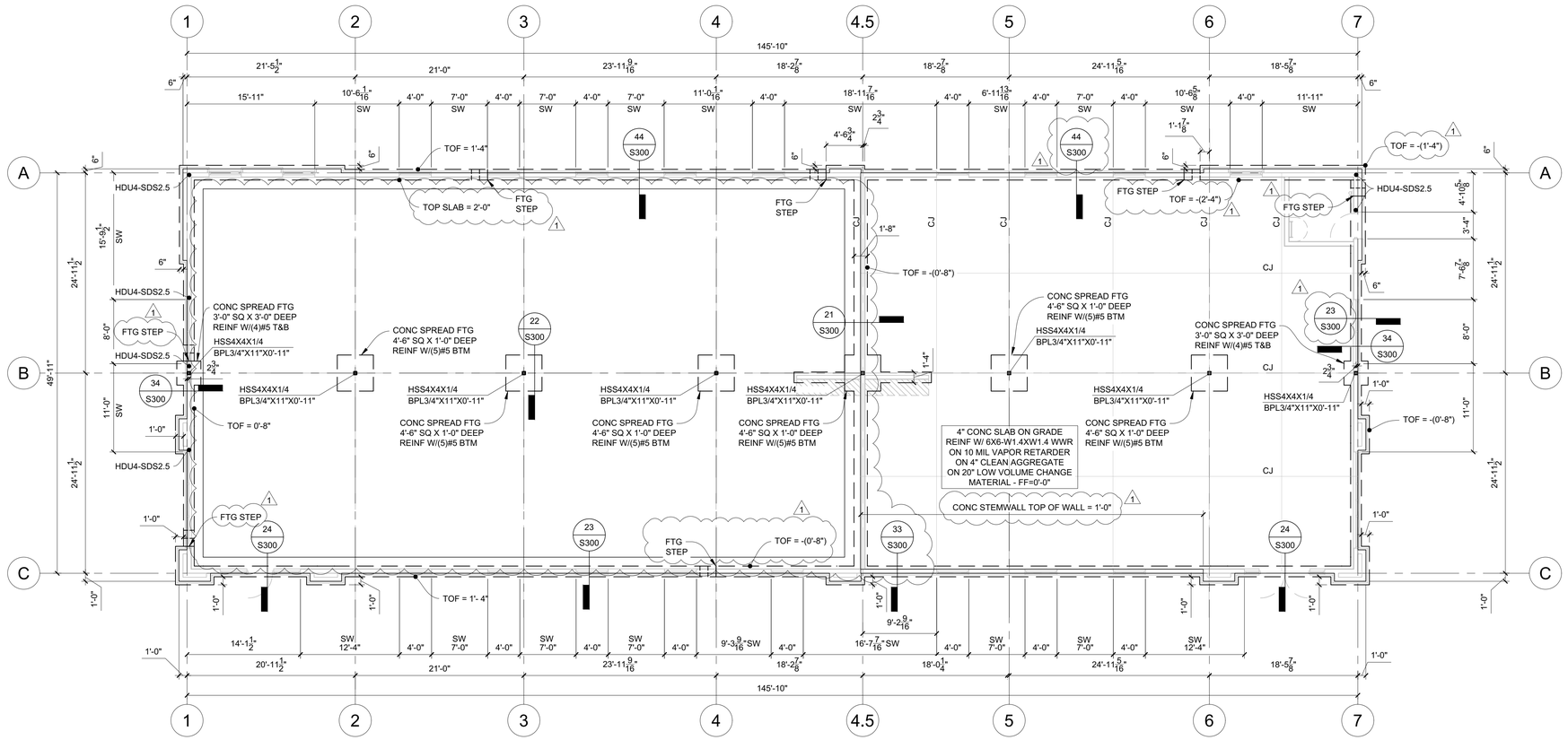
SHEET NAME:
STRUCTURAL NOTES AND FASTENING SCHEDULE

SHEET NUMBER:
S002



FOUNDATION PLAN

1/4" = 1'-0"

FOUNDATION NOTES:

1. 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.
2. COORDINATE TOP OF FOOTING ELEVATIONS WITH LATEST CIVIL DRAWINGS PRIOR TO CONSTRUCTION TO MAINTAIN 3'-0" MINIMUM FROST DEPTH. TOP OF FOOTING ELEVATION = 99'-4" UNLESS OTHERWISE SHOWN THUS.
3. SEE ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS AND WALL OPENINGS AND LOCATION OF THICKENED, SLOPED, RAISED, OR DEPRESSED SLABS.
4. 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.
5. SW-_ INDICATES SHEARWALL. PROVIDE 15/32" SHEATHING - SEE 42/S400
6. ABBV: BPL - BASE PLATE
7. TOP OF FOOTING = 8" BELOW FINISH FLOOR UNLESS NOTED OTHERWISE.

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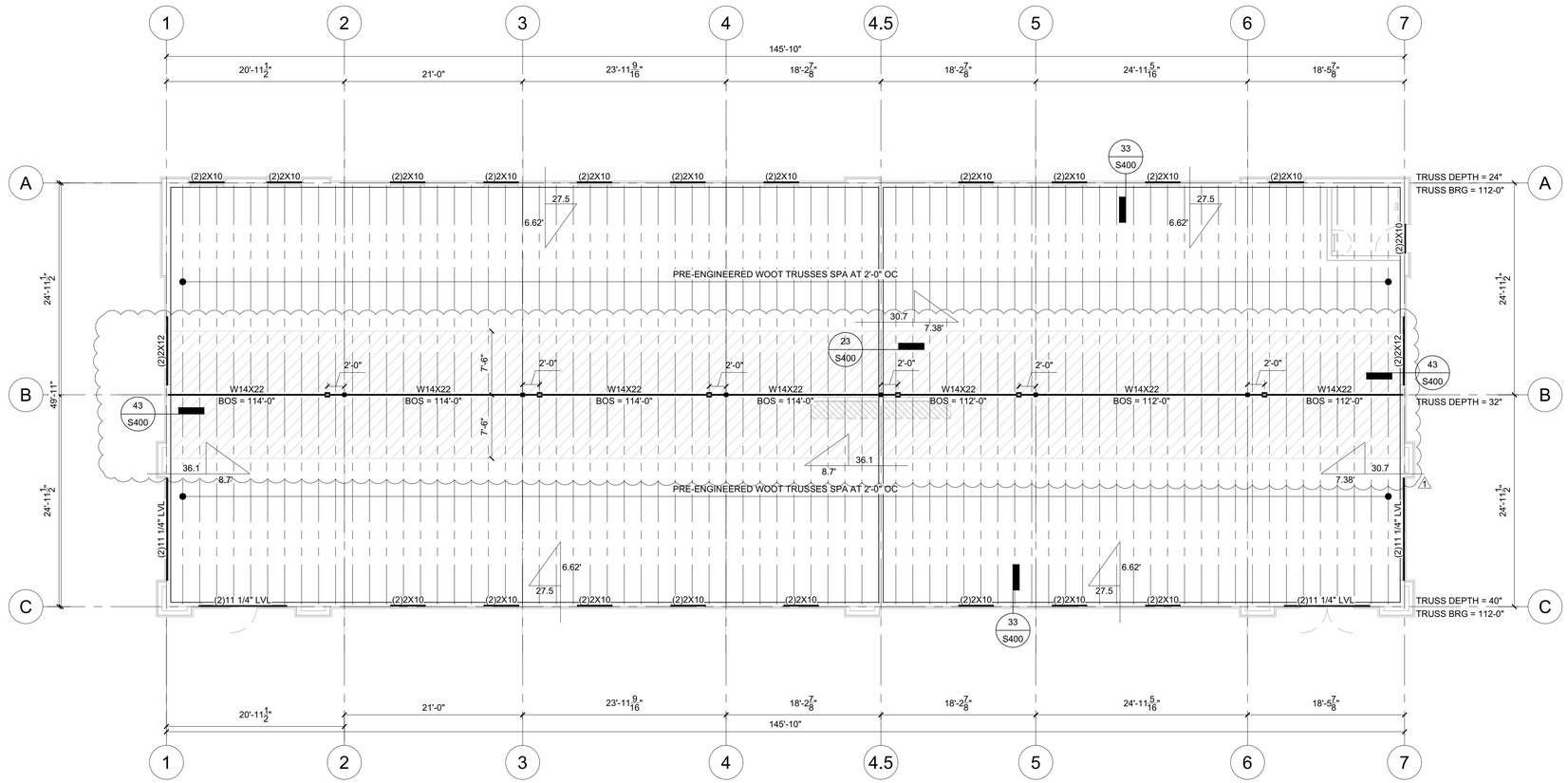
SHEET NAME:
FOUNDATION PLAN

SHEET NUMBER:
S100



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

NOTES:
1. PRE-ENGINEERED WOOD TRUSS SPA AT 24" OC
2. TB INDICATES TRUSS BEARING ELEVATION.
3. SNOW DRIFT (PSF) / WIDTH OF DRIFT
4. INDICATES ADDITIONAL 20 PSF LIVE LOAD IN THE HATCHED AREA 1

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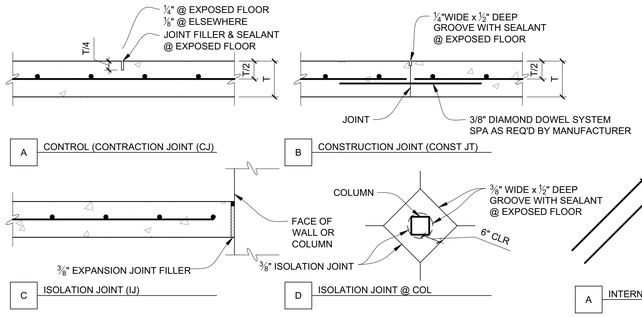
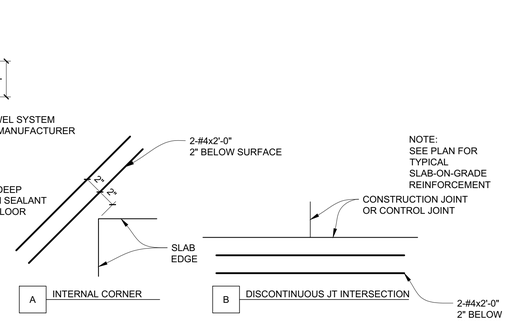
SHEET NAME: FRAMING PLAN

SHEET NUMBER: S200



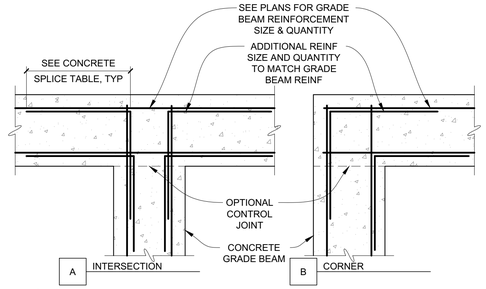
11 S300 NO SCALE

TYPICAL SLAB-ON-GRADE JOINTS



12 S300 NO SCALE

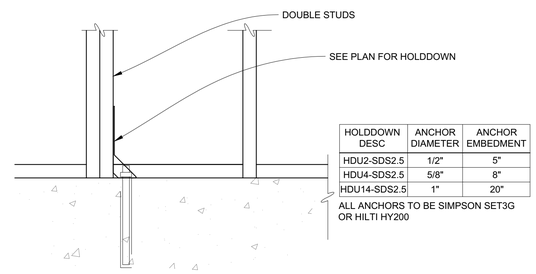
ADDITIONAL SLAB-ON-GRADE REINF



NOTES:
1. SEE CONCRETE SPLICE LENGTH TABLE FOR SPLICE REQUIREMENTS.
2. ADDITIONAL REINFORCEMENT REQUIRED AT TOP AND BOTTOM OF GRADE BEAM.

13 S300 NO SCALE

TYP CORNER REINF DETAIL

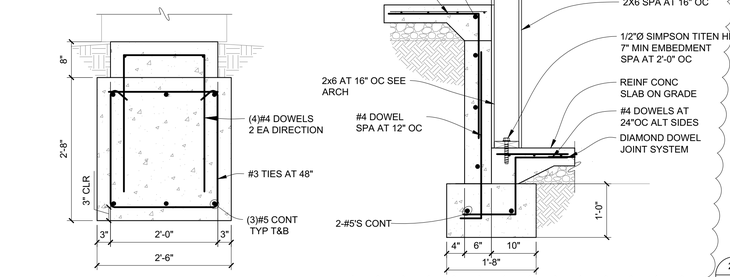


HOLDDOWN DESC	ANCHOR DIAMETER	ANCHOR EMBEDMENT
HDU2-SDS2.5	1/2"	5"
HDU4-SDS2.5	5/8"	8"
HDU14-SDS2.5	1"	20"

ALL ANCHORS TO BE SIMPSON SET3G
OR HILTI HY200

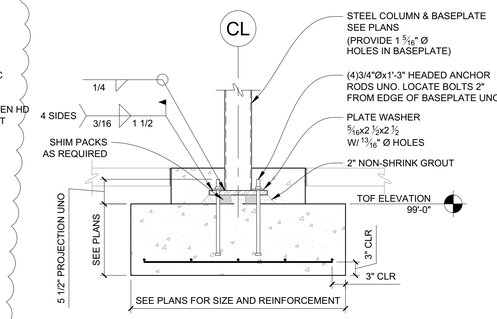
14 S300 NO SCALE

TYPICAL HOLD DOWN DETAIL



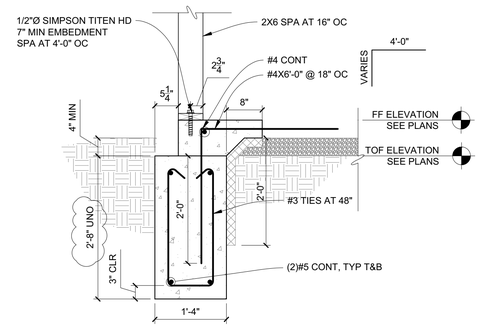
20 S300 3/4" = 1'-0"

MONUMENT SIGN FTG



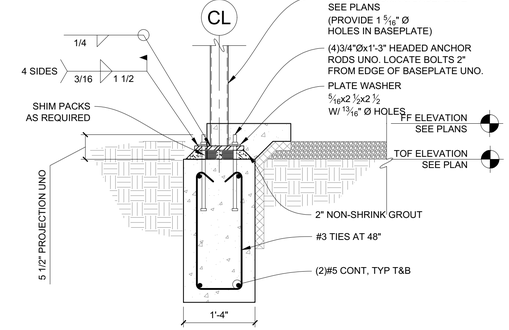
22 S300 NO SCALE

TYP STEEL COL FOOTING DETAIL



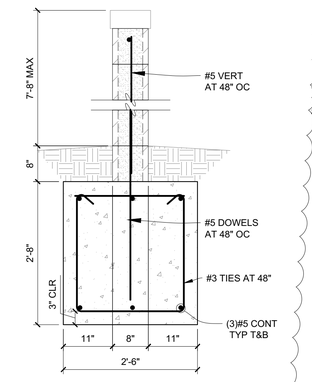
23 S300 NO SCALE

TYP EXT GRADE BEAM DETAIL



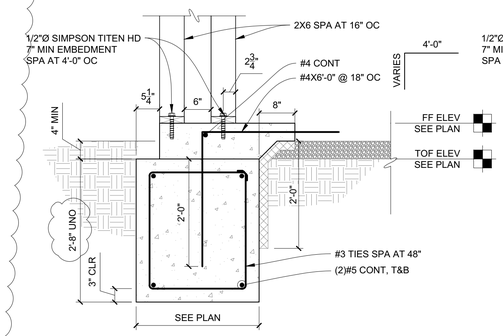
24 S300 NO SCALE

DETAIL AT MAN DOOR



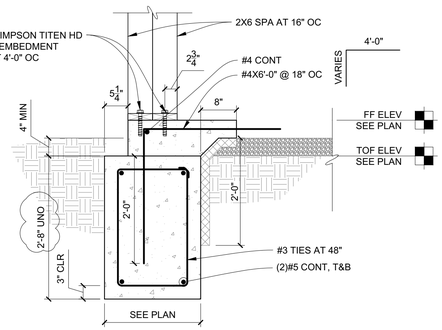
30 S300 3/4" = 1'-0"

TRASH ENC FOOTING



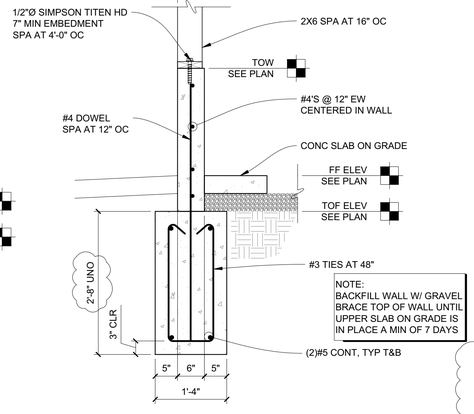
31 S300 NO SCALE

GRADE BEAM AT BUMPOUT



32 S300 NO SCALE

GRADE BEAM AT BUMPOUT

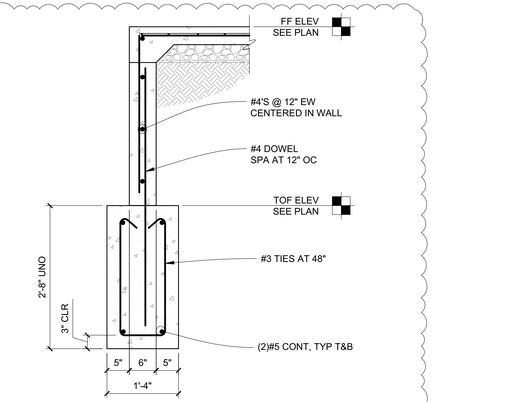


33 S300 3/4" = 1'-0"

TYP WALL FTG DETAIL

34 S300 NO SCALE

EXT COL FTG DETAIL



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

FOUND WALL SECTION

J&S STRUCTURAL
ENGINEERS, P.A.
6640 W 143rd ST, SUITE 250
OVERLAND PARK, KS 66223
P:913.549.4701
www.jsstructuralengineers.com
MO COA #: 2009009344

NEW MULTI-TENANT SHELL BUILDING FOR

MARKET STREET CENTER

291 AND SW MARKET STREET
LEE'S SUMMIT, MO

Revisions

1 **2 May 2022**
City Comments

PROJECT NUMBER:
22-015

ISSUE DATE:
3/6/2022

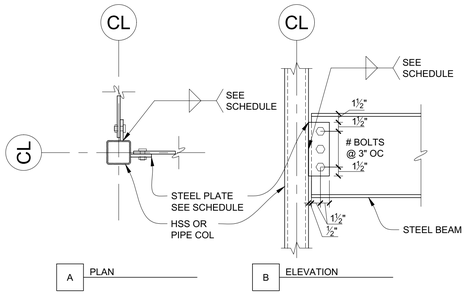
SHEET NAME:
FOUNDATION
DETAILS

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"	3/16"	18K
W12 W14	3	9"	¼"	3/16"	36K
W16 W18	4	12"	¼"	3/16"	53K
W21	5	15"	5/16"	¼"	70K
W24	6	18"	5/16"	¼"	87K
W27	7	21"	⅜"	¼"	99K
W30 W33	8	24"	⅜"	5/16"	111K
W36	9	27"	7/16"	5/16"	123K

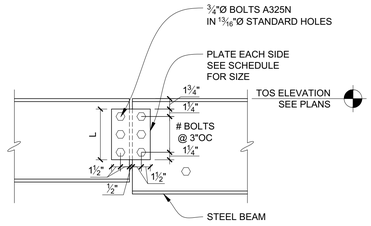
NOTES:

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.

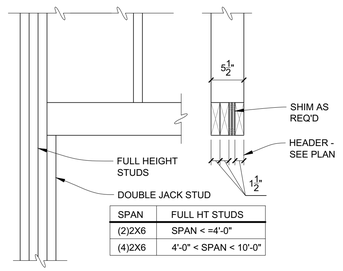


21 / S400 TYP STEEL BEAM/COLUMN CONN
NO SCALE

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"	5/16"	239K
W36	9	26 ½"	5/16"	271K



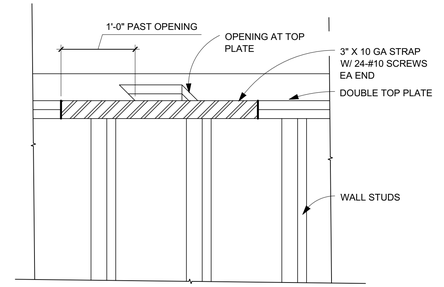
22 / S400 TYPICAL BEAM SPLICE DETAIL
NO SCALE



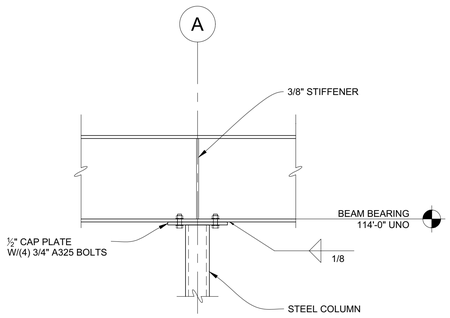
SPAN	FULL HT STUDS
(2)2X6	SPAN < =4'-0"
(4)2X6	4'-0" < SPAN < 10'-0"

ELEVATION SECTION

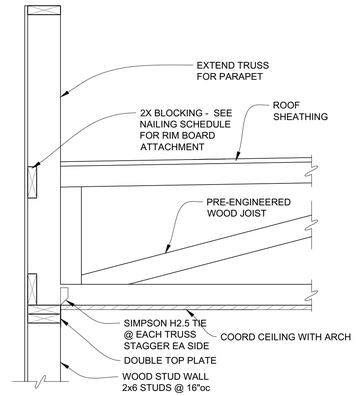
13 / S400 EXTERIOR HEADER DETAIL
SCALE: NO SCALE



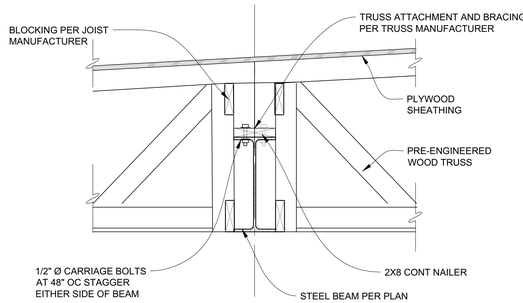
14 / S400 SPLICE DETAIL
SCALE: NO SCALE



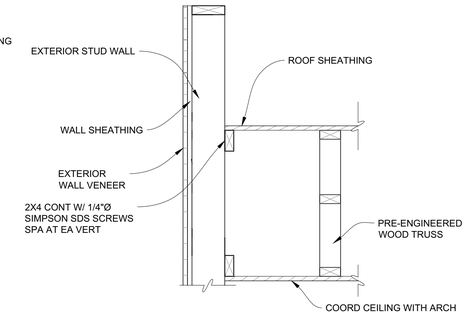
23 / S400 TYP COL BEAM DETAIL
NO SCALE



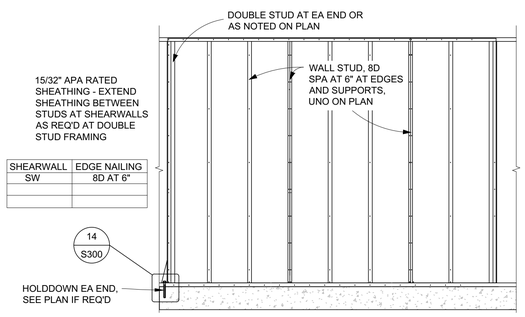
24 / S400 TYPICAL TRUSS BEARING DETAIL
SCALE: NO SCALE



33 / S400 INT TRUSS BEARING ON STEEL
SCALE: NO SCALE

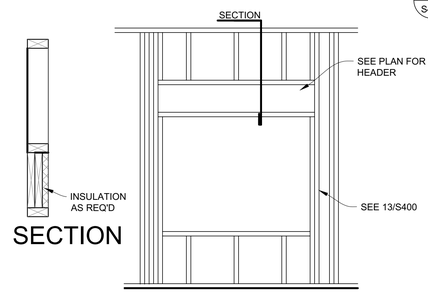


34 / S400 TYP NON-BEARING DETAIL
SCALE: NO SCALE



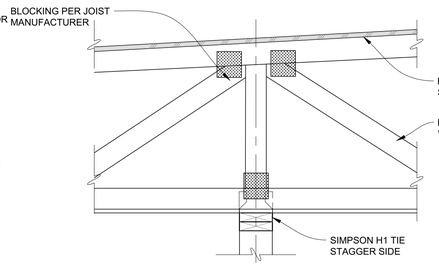
SHEARWALL	EDGE NAILING
SW	8D AT 6"

42 / S400 TYPICAL SHEARWALL DETAIL
NO SCALE

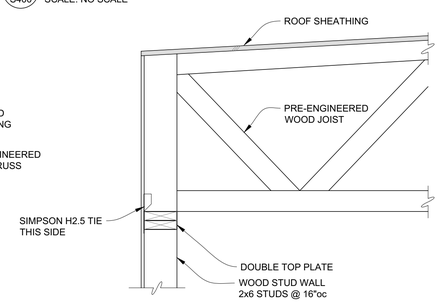


SECTION

43 / S400 TYPICAL HEADER DETAIL
SCALE: NO SCALE



43 / S400 TRUSS BRG AT SHEARWALL
SCALE: NO SCALE



44 / S400 TYP TRUSS BEARING DETAIL
SCALE: NO SCALE

J&S STRUCTURAL ENGINEERS, P.A.
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OVERLAND PARK, KS 66223
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NEW MULTI-TENANT SHELL BUILDING FOR

MARKET STREET CENTER

291 AND SW MARKET STREET
LEE'S SUMMIT, MO

Revisions

1 2 May 2022
City Comments

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. (2)
6. 1-1/2" CW, PROVIDE STUB OUT AND CAP FOR FUTURE USE.
7. 1" RTU CONDENSATE, ROUTE TO NEAREST ROOF DRAIN & TERMINATE. SUPPORT ON POLYETHLENE 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. 1-1/2" CW AND SHUT OFF DOWN BELOW SLAB FOR IRRIGATION. RE: CIVIL FOR CONTINUATION. (2)
13. 2-1/2" G DOWN TO BELOW ROOF, STUB FOR FUTURE USE BY TENANT.
14. 4" FIRE PROTECTION LINE. RE: CIVIL FOR CONTINUATION.
15. 4" FIRE PROTECTION LINE ABOVE SLAB PROVIDE 4" DOUBLE CHECK BACK FLOW PREVENTOR. (2)

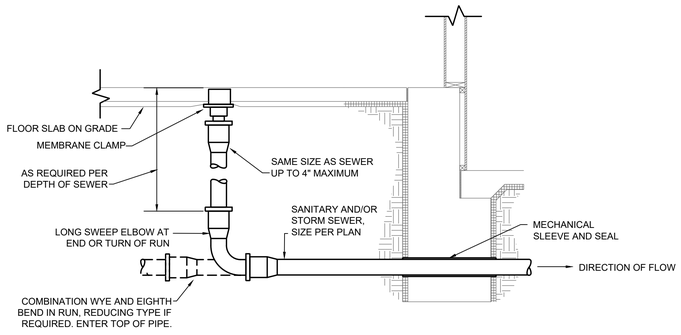
PLUMBING FIXTURE SCHEDULE

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
	CONNECT TO EXISTING WORK

HVAC

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

PLUMBING

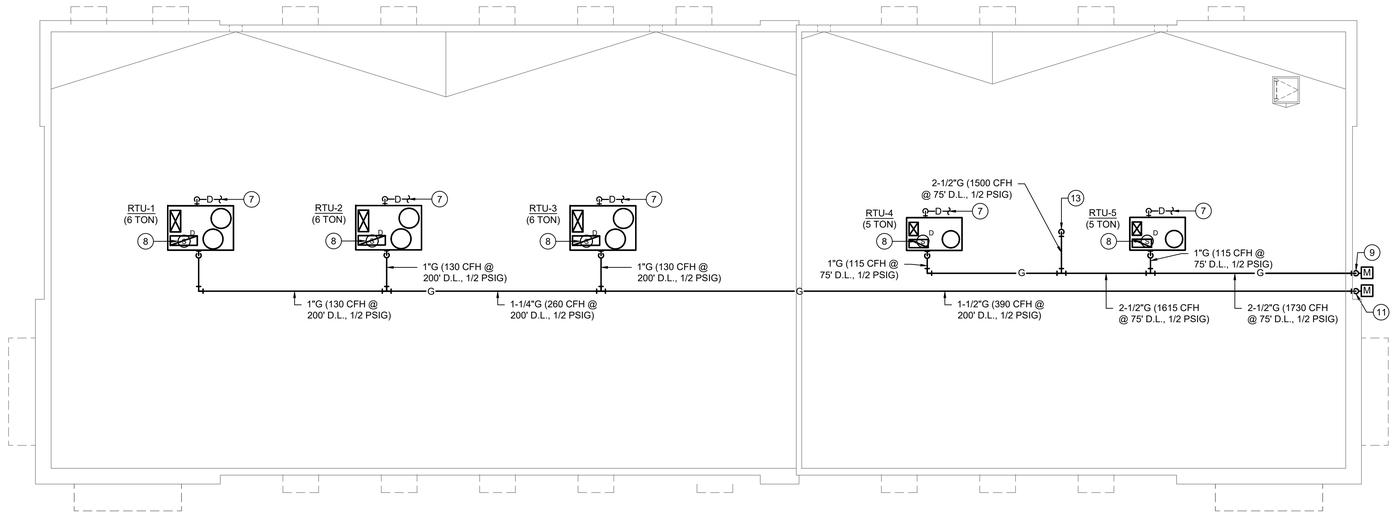
SAN	SOIL OR WASTE ABOVE GRADE OR FLOOR
SAN	SOIL OR WASTE BELOW GRADE OR FLOOR
V	PLUMBING VENT
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
G	GAS (NATURAL)
FCO	FLOOR CLEAN OUT
WCO	WALL CLEAN OUT
HB	HOSE BIBB
	FLOOR SINK, FLOOR DRAIN, AREA DRAIN
P #	PLUMBING VENT RISER CALL-OUT
	ELBOW DOWN
	ELBOW UP
	TEE UP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

3 MECHANICAL SYMBOLS

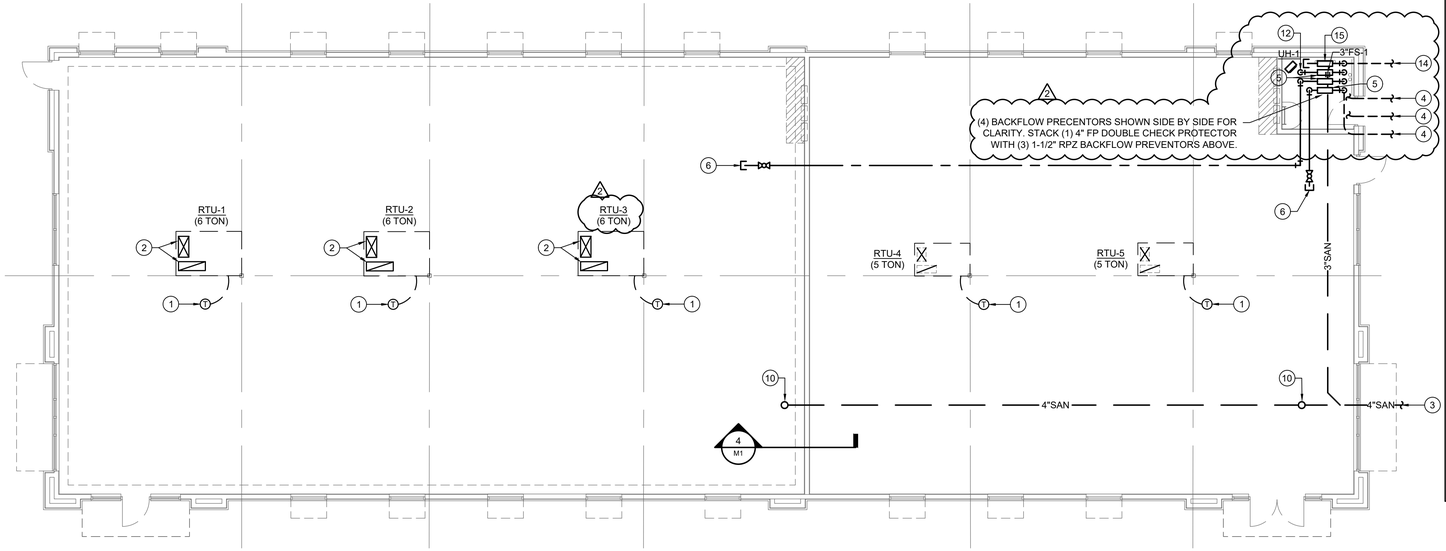
ROOF TOP UNIT SCHEDULE

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 THEMOSTAT 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 HUMIDI-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"

JOE STEWART ARCHITECT
123 Highland Park Avenue
Excelsior Springs . MO 64024
joe@sa-kc.com
816 . 830 . 2754

STATE OF MISSOURI
MICHAEL BRANDON WELCH
NUMBER PE-2009013713
PROFESSIONAL ENGINEER
5-2-22

Project Number 21.188.05

Revisions

1 **29 March 2022**
Owner Revisions

2 **2 May 2022**
City/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 for 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 to 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 All 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 lap 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 below 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

PREPARATION
Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

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.

Install 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 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 verpressure 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 Z21.10.3/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 Traps: 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 tanks. 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 tank drains. Install thermometer on outlet piping of water heaters. Install piping-type heat traps on inlet and outlet piping of water heater storage tanks without integral or fitting-type heat traps.Fill water heaters with water.

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

DUCT INSTALLATION
Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated. Install round ducts in maximum practical lengths. Install ducts with fewest possible joints. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Install ducts with a clearance of 1 inch (25 mm), plus allowance for insulation thickness. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches (38 mm).
Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers.

INSTALLATION OF EXPOSED DUCTWORK
Protect ducts exposed in finished spaces from being dented, scratched, or damaged.
Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.
Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.
Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.
Repair or replace damaged sections and finished work that does not comply with these requirements.

ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT
Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.
Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 12 feet (3.7 m) in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings. Locate access panel on top or sides of duct a minimum of 1-1/2 inches (38 mm) from bottom of duct.
Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

DUCT SEALING
Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

10. CENTRIFUGAL FANS

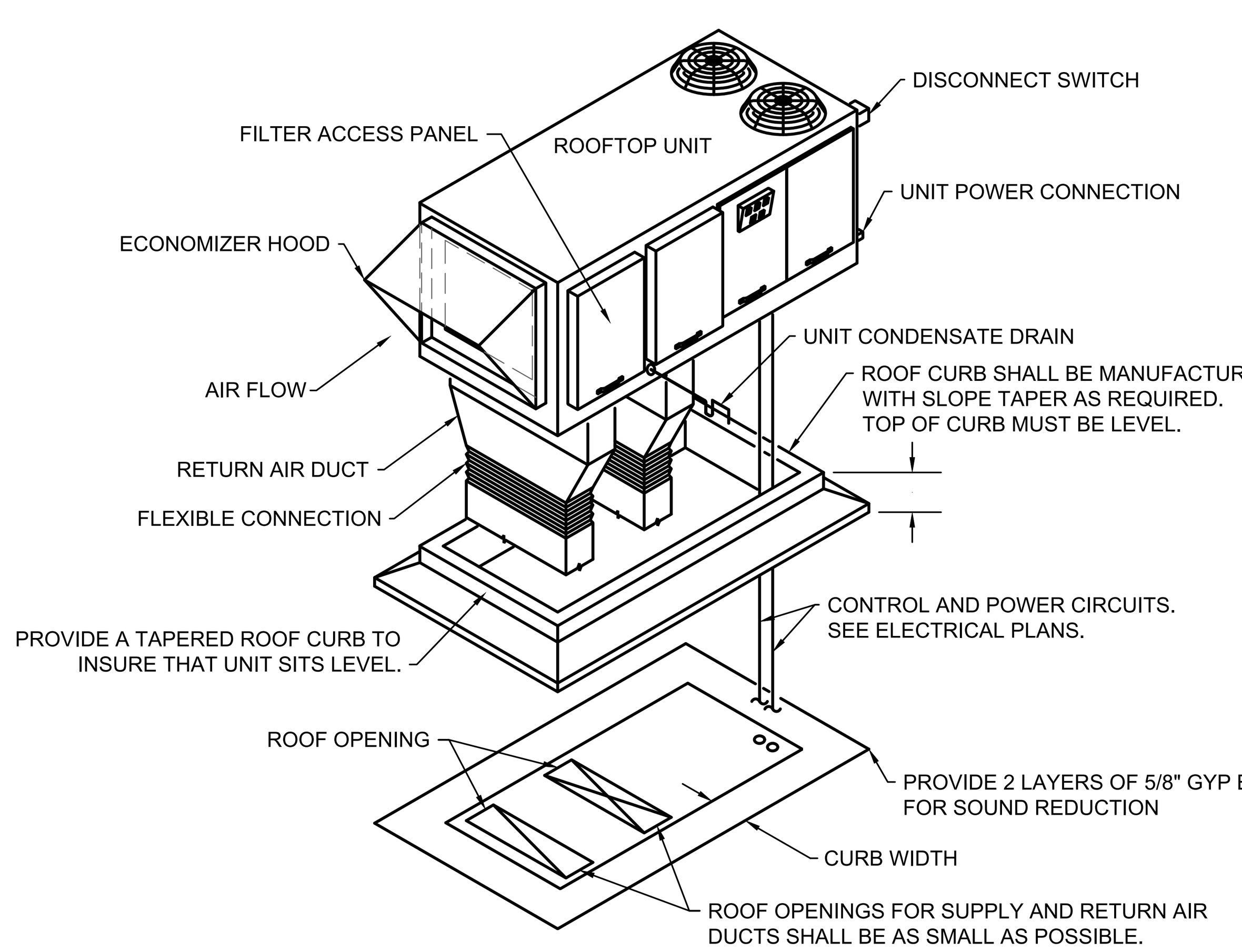
PRODUCTS

FORWARD-CURVED CENTRIFUGAL FANS
Description: Factory-fabricated, -assembled, -tested, and -finished, belt-driven centrifugal fans consisting of housing, wheel, fan shaft, bearings, motor and disconnect switch, drive assembly, and support structure.

EXECUTION

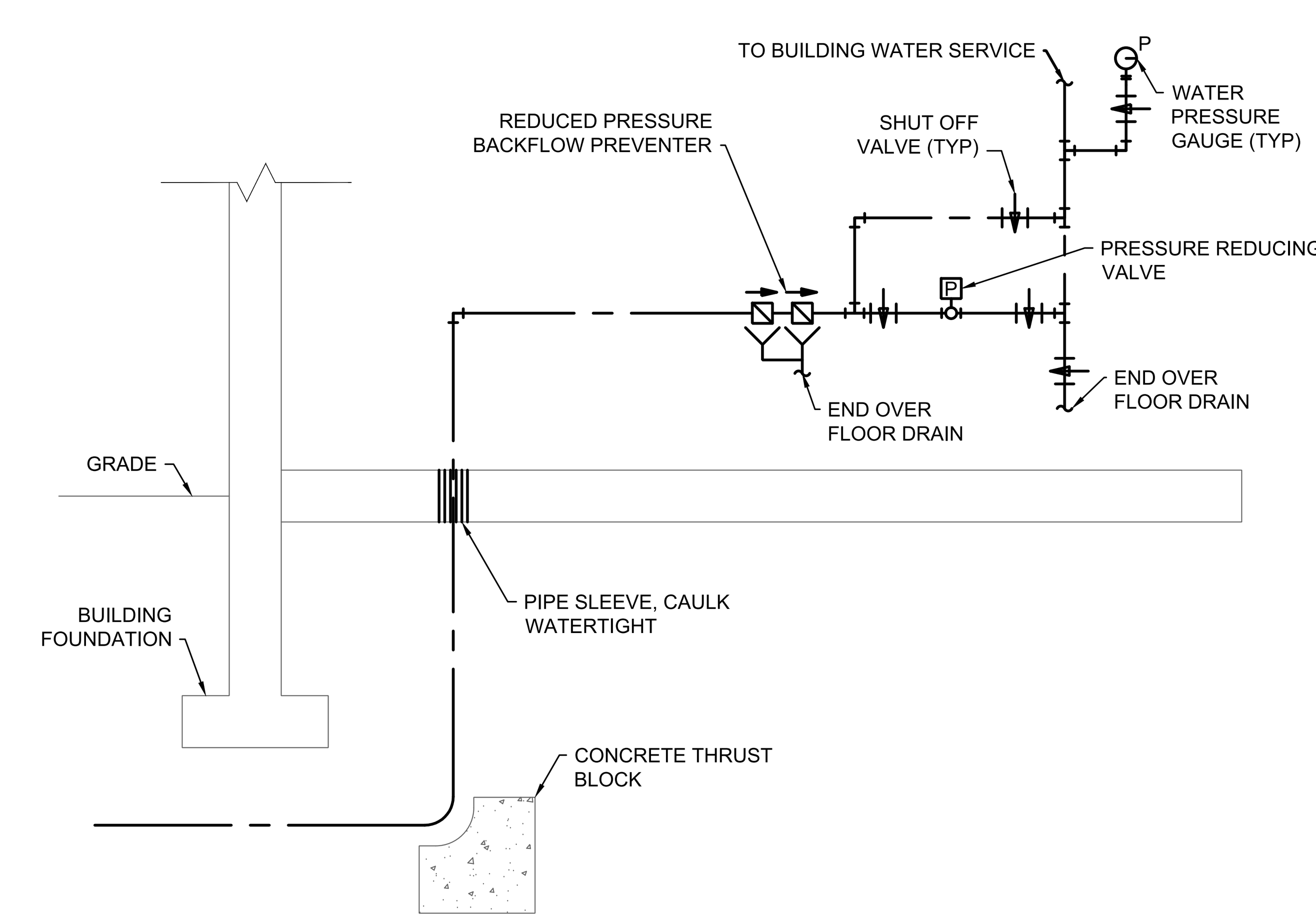
INSTALLATION
Install centrifugal fans level and plumb.
Install units with clearances for service and maintenance.

(1) MECHANICAL SPECIFICATIONS



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



(3) DOMESTIC WATER SERVICE DETAIL
NO SCALE

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STATE OF MISSOURI
MICHAEL BRANDON WELCH
PROFESSIONAL ENGINEER
5-2-22

Project Number 21.188.05

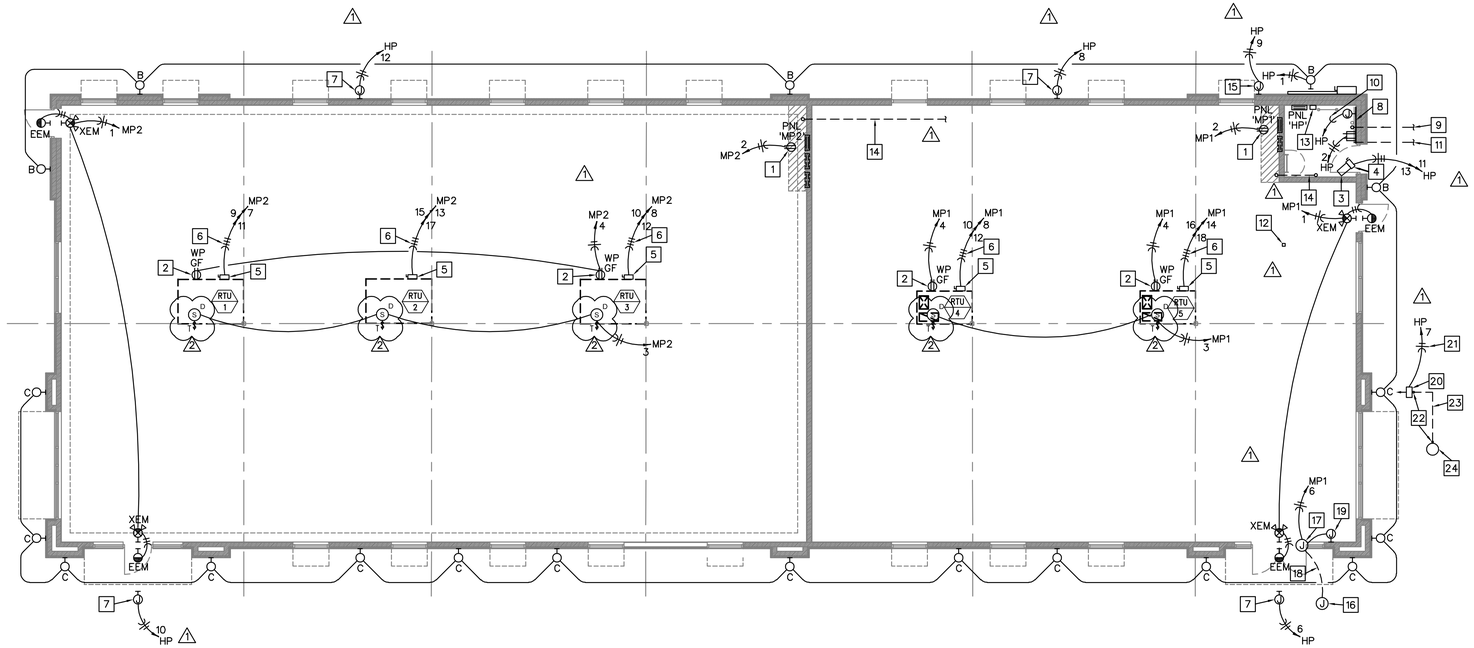
Revisions

1. **29 March 2022**
Owner Revisions
2. **2 May 2022**
City/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.

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GREGORY P. GLADFELTER NUMBER E-2000150421 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI

signed 29 March 2022

Project Number 21.188.05

Revisions

1 **29 March 2022** Owner Revisions

2 **03 May 2022** City/Owner Revisions

Market Street Center

new shell building

M291 and SW Market Street
Lee's Summit . Missouri

sheet

E1

ELECTRICAL FLOOR PLAN

Permit
04 March 2022

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. BRKR. AMPS	CIRC. BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA
1	BUILDING LIGHTS	20	1	903	A	2	4-PLEX - TTB	20	1	500
3	PARKING LOT LTS	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	SPARE	30	2	-	B	22	SPARE	20	1	-
23				-	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
■ SURFACE MOUNTED
☐ FLUSH MOUNTED

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

PANEL MP1 | 120/208 VOLTS | ■ 400 A. BUS | ☐ SERVICE ENTRANCE
3 PHASE | ■ 400 A. MAIN BREAKER | ☐ FEED THRU LUGS
SECTION 1 OF 1 | 4 WIRE | ■ MAIN LUGS ONLY | ☐ SUBFEED LUGS

CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA
1	EXIT LTS [1]	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				3840
9	SPACE	-	-	-	B	10	RTU-4	45	3	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				-
39	SPACE	-	-	-	B	40	SPARE	150	3	-
41	SPACE	-	-	-	C	42				-

TOTAL CONNECTED LOAD 24250 VA
☐ SURFACE MOUNTED
■ FLUSH MOUNTED

DEMAND FACTORS:
LIGHTS @ 125 % = 125 VA
RECEPTS @ 100 % = 360 VA
RECEPTS @ 50 % = - VA
OTHER @ 100 % = 23790 VA
TOTAL DEMAND LOAD = 24275 VA

NEUTRAL BUS 100 %
POWER FACTOR 100 %
DEMAND CURRENT 67.4 AMPS

PANEL SCHEDULE NOTES [#]

1. INSTALL LOCK-ON CLIP ON CIRCUIT BREAKER.

PANEL MP2 | 120/208 VOLTS | ■ 600 A. BUS | ☐ SERVICE ENTRANCE
3 PHASE | ■ 600 A. MAIN BREAKER | ☐ FEED THRU LUGS
SECTION 1 OF 1 | 4 WIRE | ■ MAIN LUGS ONLY | ☐ SUBFEED LUGS

CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA	Ø	CIRC. NO.	CIRCUIT DESCRIPTION	CIRC. BRKR. AMPS	CIRC. BRKR. POLES	VA
1	EXIT LTS [1]	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
☐ SURFACE MOUNTED
■ FLUSH MOUNTED

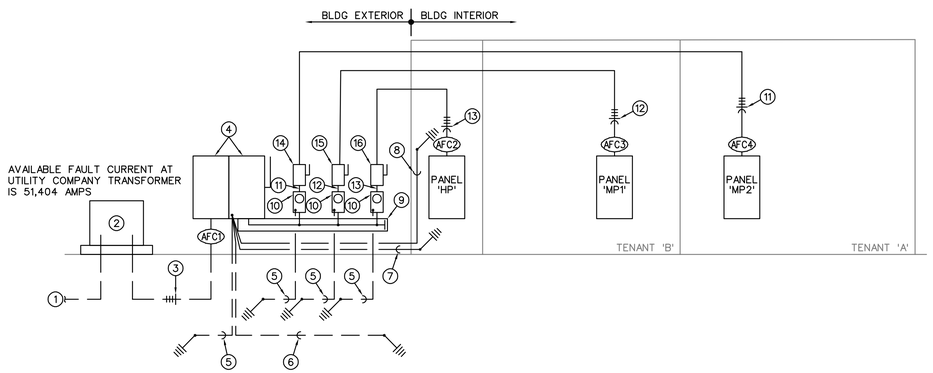
DEMAND FACTORS:
LIGHTS @ 125 % = 125 VA
RECEPTS @ 100 % = 540 VA
RECEPTS @ 50 % = - VA
OTHER @ 100 % = 34230 VA
TOTAL DEMAND LOAD = 34895 VA

NEUTRAL BUS 100 %
POWER FACTOR 100 %
DEMAND CURRENT 96.9 AMPS

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER	LAMP	VOLTS / WATTS
A	LITHONIA LTG #DSX1_LED_P8_50K_T5M_MVOLT_HS	LED	120 / 207
B	LITHONIA LTG #TWP_LED_ALO_30K_T3M	LED	120 / 49
C	TERON LTG #Guardian LED 24 L36_5 30K	LED	120 / 47
EM	EXITRONIX #LED90	(2) LED HEADS WITH UNIT	120 / 10
EEM	EXITRONIX #MLED	WEATHERPROOF LED REMOTE	6 / 8
X	EXITRONIX #VEX-U-BP-WB-WH-120-R	RED LED WITH UNIT	120 / 10
XEM	EXITRONIX #VLED-1-WH-EL90-R	RED LED AND (2) LED HEADS WITH UNIT	120 / 15

NOTES:
1. TYPE 'X' AND/OR 'XEM' FIXTURES SHALL HAVE 12 WATTS OF REMOTE CAPACITY AND POWER TYPE 'EEM'.



ELECTRICAL RISER DIAGRAM

NO SCALE

AVAILABLE FAULT CURRENT	
AFC1	AVAILABLE FAULT CURRENT AT THIS LOCATION IS 35,561 AMPS
AFC2	AVAILABLE FAULT CURRENT AT THIS LOCATION IS 28,900 AMPS
AFC3	AVAILABLE FAULT CURRENT AT THIS LOCATION IS 28,900 AMPS
AFC4	AVAILABLE FAULT CURRENT AT THIS LOCATION IS 23,303 AMPS

RISER DIAGRAM NOTES [#]

1. (3) 4" PVC CONDUITS FOR PRIMARY SERVICE CABLES. TERMINATE AT PROPERTY LINE. INSTALL CONDUITS WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
2. UTILITY COMPANY PAD MOUNT TRANSFORMER WITH 208Y/120V DELTA PRIMARY. INSTALL CONCRETE PAD PER UTILITY COMPANY STANDARDS.
3. (4) SETS OF 3" PVC CONDUIT WITH 4-#350KCMIL (AL) IN EACH. INSTALL CONDUITS WITH TOP MINIMUM OF 3'-6" BELOW FINISHED GRADE.
4. COMBINATION CT CABINET AND 1200A SERVICE DISCONNECT SWITCH WITH (3) 1000A FUSES.
5. 3/4" CONDUIT WITH 1-#6 (CU) GROUND WIRE. CONNECT TO 3/4" ROUND x 12'-0" LONG COPPER CLAD STEEL DRIVEN GROUND ROD.
6. 3/4" CONDUIT WITH 1-#4 (CU) GROUND WIRE. CONNECT TO 20'-0" LONG COPPER CLAD STEEL CONDUCTOR IN CONCRETE BUILDING FOOTING.
7. 3/4" CONDUIT WITH 1-#3/0 (CU) GROUND WIRE. CONNECT TO COLD WATER SERVICE PIPE, AHEAD OF MAIN SHUT-OFF VALVE.
8. 3/4" CONDUIT WITH 1-#3/0 (CU) GROUND WIRE. CONNECT TO BUILDING STEEL.
9. NEMA 3R WIREWAY.
10. UTILITY COMPANY METER CAN/SOCKET PER UTILITY COMPANY STANDARDS.
11. (2) SETS OF 3" CONDUIT WITH 4-#350KCMIL (CU) AND 1-#1 (CU) GROUND WIRE IN EACH.
12. (2) SETS OF 2" CONDUIT WITH 4-#3/0 (CU) AND 1-#3 (CU) GROUND WIRE IN EACH.
13. 2" CONDUIT WITH 4-#3/0 (CU) AND 1-#6 (CU) GROUND WIRE IN EACH.
14. 600A/3P, FUSED, NEMA 3R DISCONNECT SWITCH WITH (3) 600A FUSES.
15. 400A/3P, FUSED, NEMA 3R DISCONNECT SWITCH WITH (3) 400A FUSES.
16. 200A/3P, FUSED, NEMA 3R DISCONNECT SWITCH WITH (3) 200A FUSES.

ELECTRICAL SYMBOLS

- BRANCH CIRCUIT CONCEALED IN CEILING OR WALL. ARROWS INDICATE HOMERUNS TO PANEL. ALL CONDUCTORS ARE #12 EXCEPT AS NOTED.
- CONDUIT RUN UNDERGROUND OR BENEATH FLOOR SLAB.
- GROUNDING CONDUCTOR #12 EXCEPT AS NOTED.
- WALL MOUNTED JUNCTION BOX.
- CEILING MOUNTED JUNCTION BOX.
- PANELBOARD (SURFACE MOUNTED). INSTALL W/TOP 6'-0" AFF.
- PANELBOARD (FLUSH MOUNTED). INSTALL W/TOP 6'-0" AFF.
- DISCONNECT SWITCH. SIZED AS NOTED.
- DISCONNECT SWITCH FURNISHED WITH EQUIPMENT.
- COMBINATION EXIT/EMERGENCY LIGHT FIXTURE WITH (2) HEADS
- WALL MOUNTED LIGHT FIXTURE.
- REMOTE WEATHERPROOF EMERGENCY LIGHT FIXTURE.
- SINGLE POLE SWITCH. +3'-10" AFF.
- T — TEST/RESET SWITCH FOR DUCT DETECTOR. +3'-10" AFF.
- DUPLEX RECEPTACLE. +1'-6" AFF OR AS NOTED.
- DUPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP.
- WP — DUPLEX RECEPTACLE WITH WEATHERPROOF PLATE. HEIGHT AS NOTED.
- GF — DUPLEX RECEPTACLE W/GROUND FAULT PROTECTION. +1'-6" AFF OR AS NOTED.
- FOURLEX RECEPTACLE. +1'-6" AFF OR AS NOTED.
- FOURPLEX RECEPTACLE INSTALLED ABOVE COUNTERTOP.
- COMBINATION VOICE/DATA OUTLET WITH 3/4" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING. +1'-6" AFF OR AS NOTED.
- COMBINATION VOICE/DATA OUTLET WITH 3/4" CONDUIT STUBBED UP OUT OF BOX TO ABOVE ACCESSIBLE CEILING. INSTALLED ABOVE COUNTERTOP.

+3'-10"	HEIGHT TO CENTERLINE OF OUTLET BOX ABOVE FINISHED FLOOR.
RTU-1	ROOF TOP UNIT AND NUMBER.
WH-1	ELECTRIC WATER HEATER AND NUMBER.
AFF	ABOVE FINISH FLOOR.
EC	ELECTRICAL CONTRACTOR.
TTB	TELEPHONE TERMINAL BOARD

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GREGORY P. GLADFELTER NUMBER E-2000150421 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI
signed 29 March 2022
Project Number 21.188.05

Revisions
1 **29 March 2022** Owner Revisions
2 **03 May 2022** City/Owner Revisions

Call BEFORE you DIG
TOLL FREE
1-800-DIG-RITE
(344-7483)
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UTILITIES ONE-CALL SYSTEM, INC.

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.

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

sheet
E2
ELECTRICAL SCHEDULES
Permit
04 March 2022

ELECTRICAL SPECIFICATIONS

1.COMMON WORK RESULTS FOR ELECTRICAL

COORDINATION
COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT:
TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS THAT REDUCE HEADROOM ARE INDICATED.
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.

PRODUCTS

SLEEVE SEALS
DESCRIPTION: MODULAR SEALING DEVICE, DESIGNED FOR FIELD ASSEMBLY, TO FILL ANNULAR SPACE BETWEEN SLEEVE AND RACEWAY OR CABLE.
MANUFACTURERS:
ADVANCE PRODUCTS & SYSTEMS, INC.
CALPICO, INC.
METRAFLEX CO.
PIPELINE SEAL AND INSULATOR, INC.
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 PLATES: 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.

EXECUTION

COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION
COMPLY WITH NECA 1.
SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS
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.
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.
USE PIPE SLEEVES UNLESS PENETRATION ARRANGEMENT REQUIRES RECTANGULAR SLEEVED OPENING.
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.
CUT SLEEVES TO LENGTH FOR MOUNTING FLUSH WITH BOTH SURFACES OF WALLS.
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.
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.
ROOF-PENETRATION SLEEVES: SEAL PENETRATION OF INDIVIDUAL RACEWAYS AND CABLES WITH FLEXIBLE BOOT-TYPE FLASHING UNITS APPLIED IN COORDINATION WITH ROOFING WORK.
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.
UNDERGROUND, EXTERIOR-WALL PENETRATIONS: INSTALL CAST-IRON 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.
SLEEVE-SEAL INSTALLATION
INSTALL TO SEAL EXTERIOR WALL PENETRATIONS.
FIRESTOPPING
APPLY FIRESTOPPING TO PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES FOR ELECTRICAL INSTALLATIONS TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF ASSEMBLY.

2.GROUNDING AND BONDING

QUALITY ASSURANCE
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.
COMPLY WITH UL 467 FOR GROUNDING AND BONDING MATERIALS AND EQUIPMENT.

PRODUCTS

CONDUCTORS
INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.
BARE COPPER CONDUCTORS:
SOLID CONDUCTORS: ASTM B 3.
STRANDED CONDUCTORS: ASTM B 8.
GROUNDING ELECTRODES
GROUND RODS: COPPER-CLAD; 3/4 INCH BY10 FEET (19 MM BY 3 M) IN DIAMETER.

EXECUTION

APPLICATIONS
CONDUCTORS: INSTALL SOLID CONDUCTOR FOR NO. 8 AWG AND SMALLER, AND STRANDED CONDUCTORS FOR NO. 6 AWG AND LARGER, UNLESS OTHERWISE INDICATED.
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.
EQUIPMENT GROUNDING
INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.
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.
INSTALLATION
BONDING STRAPS AND JUMPERS: INSTALL IN LOCATIONS ACCESSIBLE FOR INSPECTION AND MAINTENANCE, EXCEPT WHERE ROUTED THROUGH SHORT LENGTHS OF CONDUIT.
BONDING TO STRUCTURE: BOND STRAPS DIRECTLY TO BASIC STRUCTURE, TAKING CARE NOT TO PENETRATE ANY ADJACENT PARTS.
BONDING TO EQUIPMENT MOUNTED ON VIBRATION ISOLATION HANGERS AND SUPPORTS: INSTALL SO VIBRATION IS NOT TRANSMITTED TO RIGIDLY MOUNTED EQUIPMENT.
USE EXOTHERMIC-WELDED CONNECTORS FOR OUTDOOR LOCATIONS, BUT IF A DISCONNECT-TYPE CONNECTION IS REQUIRED, USE A BOLTED CLAMP.
GROUNDING AND BONDING FOR PIPING:
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 BUILDING. CONNECT GROUNDING CONDUCTORS TO MAIN METAL WATER SERVICE PIPES, USING A BOLTED CLAMP CONNECTOR OR BY BOLTING A LUG-TYPE 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 CONDUIT OR SLEEVE TO CONDUCTOR AT EACH END.
WATER METER PIPING: USE BRAIDED-TYPE BONDING JUMPERS TO ELECTRICALLY BYPASS WATER METERS. CONNECT TO PIPE WITH A BOLTED CONNECTOR.
BOND EACH ABOVEGROUND PORTION OF GAS PIPING SYSTEM DOWNSTREAM FROM EQUIPMENT SHUTOFF VALVE.
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.

3.HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

QUALITY ASSURANCE
COMPLY WITH NFPA 70.

PRODUCTS

SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS
RACEWAY AND CABLE SUPPORTS: AS DESCRIBED IN NECA 1 AND NECA 101.
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.
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.

EXECUTION

APPLICATION
COMPLY WITH NECA 1 AND NECA 101 FOR APPLICATION OF HANGERS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND SYSTEMS EXCEPT IF REQUIREMENTS IN THIS SECTION ARE STRICTER.
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.
MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZE-TYPE SUPPORTS FABRICATED WITH STEEL 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.
SUPPORT INSTALLATION
COMPLY WITH NECA 1 AND NECA 101 FOR INSTALLATION REQUIREMENTS EXCEPT AS SPECIFIED IN THIS ARTICLE.
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.
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 CABINETS, PANELBOARDS, DISCONNECT SWITCHES, CONTROL ENCLOSURES, PULL AND JUNCTION BOXES, TRANSFORMERS, AND OTHER DEVICES ON SLOTTED-CHANNEL RACKS ATTACHED TO SUBSTRATE.

4. CONDUCTORS AND CABLES

QUALITY ASSURANCE
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.
COMPLY WITH NFPA 70.

PRODUCTS

CONDUCTORS AND CABLES
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 & CABLE COMPANY.
SOUTHWIRE COMPANY.
COPPER CONDUCTORS: COMPLY WITH NEMA WC 70.
CONDUCTOR INSULATION: COMPLY WITH NEMA WC 70 FOR TYPE THHN-THWN.
MULTICONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR METAL-CLAD CABLE, TYPE MC WITH GROUND WIRE.
CONNECTORS AND SPLICES
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.
TYCO ELECTRONICS CORP.
DESCRIPTION: FACTORY-FABRICATED CONNECTORS AND SPLICES OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS FOR APPLICATION AND SERVICE INDICATED.

EXECUTION

CONDUCTOR MATERIAL APPLICATIONS
FEEDERS: COPPER. SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.
BRANCH CIRCUITS: COPPER. SOLID FOR NO. 10 AWG AND SMALLER; STRANDED FOR NO. 8 AWG AND LARGER.
CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS
SERVICE ENTRANCE, FEEDERS: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
BRANCH CIRCUITS CONCEALED IN CONCRETE, BELOW SLABS-ON-GRADE, AND UNDERGROUND: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY.
BRANCH CIRCUITS NOT CONCEALED IN CONCRETE: TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY OR METAL-CLAD CABLE, TYPE MC].
INSTALLATION OF CONDUCTORS AND CABLES
CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OF EXPOSED STRUCTURAL MEMBERS, AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.
IDENTIFY AND COLOR-CODE CONDUCTORS AND CABLES ACCORDING TO SECTION "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."

5.RACEWAYS AND BOXES

QUALITY ASSURANCE
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.
COMPLY WITH NFPA 70.

PRODUCTS

METAL CONDUIT AND TUBING
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
ALLIED TUBE & CONDUIT; A TYCO INTERNATIONAL LTD. CO.
O-Z GEDNEY; A UNIT OF GENERAL SIGNAL.
WHEATLAND TUBE COMPANY.
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.
CONDUIT FITTINGS FOR HAZARDOUS (CLASSIFIED) LOCATIONS: COMPLY WITH UL 886.
FITTINGS FOR EMT: STEEL OR DIE-CAST, SET-SCREW OR COMPRESSION TYPE FOR CONCEALED LOCATIONS. STEEL OR DIE-CAST, COMPRESSION TYPE FOR EXPOSED LOCATIONS.
NONMETALLIC CONDUIT AND TUBING
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
CANTEX INC.
CERTAINTEED CORP.; PIPE & PLASTICS GROUP.
RACO; A HUBBELL COMPANY.
THOMAS & BETTS CORPORATION.
BOXES, ENCLOSURES, AND CABINETS
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 & BETTS CORPORATION.
WALKER SYSTEMS, INC.; WIREMOLD COMPANY (THE).

EXECUTION

RACEWAY APPLICATION
OUTDOORS: APPLY RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED:
EXPOSED AND CONCEALED CONDUIT: RIGID STEEL CONDUIT.
UNDERGROUND CONDUIT: RNC, TYPE EPC-40-PVC, DIRECT BURIED.
CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): LFNC.
BOXES AND ENCLOSURES, ABOVEGROUND: NEMA 250, TYPE 3R.
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.
CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): FMC, EXCEPT USE LFMC IN DAMP OR WET LOCATIONS.
DAMP OR WET LOCATIONS: RIGID STEEL CONDUIT.
RACEWAYS FOR OPTICAL FIBER OR COMMUNICATIONS CABLE: EMT.
BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4, NONMETALLIC IN DAMP OR WET LOCATIONS.
MINIMUM RACEWAY SIZE: 1/2-INCH (16-MM) TRADE SIZE.
DO NOT INSTALL ALUMINUM CONDUITS IN CONTACT WITH CONCRETE.
INSTALLATION
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.
KEEP RACEWAYS AT LEAST 6 INCHES (150 MM) AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT-WATER PIPES. INSTALL HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.
SUPPORT RACEWAYS AS SPECIFIED IN "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."
ARRANGE STUB-UPS SO CURVED PORTIONS OF BENDS ARE NOT VISIBLE ABOVE THE FINISHED SLAB.
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.
CONCEAL CONDUIT AND EMT WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.
RACEWAYS EMBEDDED IN SLABS:
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.
ARRANGE RACEWAYS TO CROSS BUILDING EXPANSION JOINTS AT RIGHT ANGLES WITH EXPANSION FITTINGS.
CHANGE FROM ENT TO RNC, TYPE EPC-40-PVC, RIGID STEEL CONDUIT, OR IMC BEFORE RISING ABOVE THE FLOOR.
RACEWAY TERMINATIONS AT LOCATIONS SUBJECT TO MOISTURE OR VIBRATION: USE INSULATING BUSHINGS TO PROTECT CONDUCTORS, INCLUDING CONDUCTORS SMALLER THAN NO. 4 AWG.
INSTALL PULL WIRES IN EMPTY RACEWAYS. USE POLYPROPYLENE OR MONOFILAMENT PLASTIC LINE WITH NOT LESS THAN 200-LB (90-KG) TENSILE STRENGTH. LEAVE AT LEAST 12 INCHES (300 MM) OF SLACK AT EACH END OF PULL WIRE.
RACEWAYS FOR OPTICAL FIBER AND COMMUNICATIONS CABLE: INSTALL RACEWAYS, METALLIC AND NONMETALLIC, RIGID AND FLEXIBLE, WITH A MAXIMUM OF TWO 90-DEGREE BENDS OR EQUIVALENT FOR EACH LENGTH OF RACEWAY UNLESS DRAWINGS SHOW STRICTER REQUIREMENTS. SEPARATE LENGTHS WITH PULL OR JUNCTION BOXES OR TERMINATIONS AT DISTRIBUTION FRAMES OR CABINETS WHERE NECESSARY TO COMPLY WITH THESE REQUIREMENTS.
FLEXIBLE CONDUIT CONNECTIONS: USE MAXIMUM OF 72 INCHES (1830 MM) OF FLEXIBLE CONDUIT FOR RECESSED AND SEMIRECESSED LIGHTING FIXTURES, EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION, OR MOVEMENT; AND FOR TRANSFORMERS AND MOTORS.
USE LFMC IN DAMP OR WET LOCATIONS SUBJECT TO SEVERE PHYSICAL DAMAGE.
USE LFMC OR LFNC IN DAMP OR WET LOCATIONS NOT SUBJECT TO SEVERE PHYSICAL DAMAGE.
RECESSED BOXES IN MASONRY WALLS: SAW-CUT OPENING FOR BOX IN CENTER OF CELL OF MASONRY BLOCK, AND INSTALL BOX FLUSH WITH SURFACE OF WALL.

6.WIRING DEVICES

QUALITY ASSURANCE
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.
COMPLY WITH NFPA 70.
COORDINATION
RECEPTACLES FOR OWNER-FURNISHED EQUIPMENT: MATCH PLUG CONFIGURATIONS.
CORD AND PLUG SETS: MATCH EQUIPMENT REQUIREMENTS.

PRODUCTS

STRAIGHT BLADE RECEPTACLES
CONVENIENCE RECEPTACLES, 125 V, 20 A: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
COOPER; 5351 (SINGLE), 5352 (DUPLEX).
HUBBELL; HBL5351 (SINGLE), CR5352 (DUPLEX).
LEVITON; 5891 (SINGLE), 5352 (DUPLEX).
PASS & SEYMOUR; 5381 (SINGLE), 5352 (DUPLEX).
GFCI RECEPTACLES
DUPLEX GFCI CONVENIENCE RECEPTACLES, 125 V, 20 A:
PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
COOPER; GF20.
PASS & SEYMOUR; 2084.
HUBBELL EQUAL
LEVITON EQUAL.
WALL PLATES
SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES.
PLATE-SECURING SCREWS: METAL WITH HEAD COLOR TO MATCH PLATE FINISH.
MATERIAL FOR DAMP LOCATIONS: CAST ALUMINUM WITH SPRING-LOADED LIFT COVER, AND LISTED AND LABELED FOR USE IN "WET LOCATIONS."
WET-LOCATION, WEATHERPROOF COVER PLATES: NEMA 250, COMPLYING WITH TYPE 3R WEATHER-RESISTANT, DIE-CAST ALUMINUM WITH LOCKABLE COVER.

7.LIGHTING CONTROL DEVICES

QUALITY ASSURANCE
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.
COORDINATION
COORDINATE LAYOUT AND INSTALLATION OF CEILING-MOUNTED DEVICES WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS OR IS SUPPORTED BY THEM, INCLUDING LIGHT FIXTURES, HVAC EQUIPMENT, SMOKE DETECTORS, FIRE-SUPPRESSION SYSTEM, AND PARTITION ASSEMBLIES.

PRODUCTS

TIME SWITCHES
BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE THE PRODUCT INDICATED ON DRAWINGS OR A COMPARABLE PRODUCT BY ONE OF THE FOLLOWING:
INTERMATIC, INC.
SQUARE D; SCHNEIDER ELECTRIC.
TORK.
WATT STOPPER (THE).
ELECTRONIC TIME SWITCHES: ELECTRONIC, SOLID-STATE PROGRAMMABLE UNITS WITH ALPHANUMERIC DISPLAY; COMPLYING WITH UL 917.
CONTACT CONFIGURATION: SPST.
CONTACT RATING: 20-A BALLAST LOAD, 120/240-V AC.
PROGRAM: 2 ON-OFF SET POINTS ON A 24-HOUR SCHEDULE, ALLOWING DIFFERENT SET POINTS FOR EACH DAY OF THE WEEK.
CIRCUITRY: ALLOW CONNECTION OF A PHOTOELECTRIC RELAY AS SUBSTITUTE FOR ON-OFF FUNCTION OF A PROGRAM.
ASTRONOMIC TIME: ALL CHANNELS.
BATTERY BACKUP: FOR SCHEDULES AND TIME CLOCK.
OUTDOOR PHOTOELECTRIC SWITCHES
BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE A PRODUCT BY ONE OF THE FOLLOWING:
INTERMATIC, INC.
SQUARE D; SCHNEIDER ELECTRIC.
TORK.
WATT STOPPER (THE).
DESCRIPTION: SOLID STATE, WITH SPST DRY CONTACTS RATED FOR 1800 VA TO OPERATE CONNECTED LOAD, RELAY, OR CONTACTOR COILS; COMPLYING WITH UL 773.
LIGHT-LEVEL MONITORING RANGE: 1.5 TO 10 FC (16.14 TO 108 LX), WITH AN ADJUSTMENT FOR TURN-ON AND TURN-OFF LEVELS WITHIN THAT RANGE.
TIME DELAY: 30-SECOND MINIMUM, TO PREVENT FALSE OPERATION.
LIGHTNING ARRESTER: AIR-GAP TYPE.
MOUNTING: TWIST LOCK COMPLYING WITH IEEE C136.10, WITH BASE.
LIGHTING CONTACTORS
BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE A PRODUCT BY ONE OF THE FOLLOWING:
EATON ELECTRICAL INC.; CUTLER-HAMMER PRODUCTS.
GE INDUSTRIAL SYSTEMS; TOTAL LIGHTING CONTROL.
SQUARE D; SCHNEIDER ELECTRIC.
DESCRIPTION: ELECTRICALLY OPERATED AND ELECTRICALLY HELD, COMPLYING WITH NEMA ICS 2 AND UL 508.
CURRENT RATING FOR SWITCHING: LISTING OR RATING CONSISTENT WITH TYPE OF LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, INDUCTIVE, AND HIGH-INRUSH BALLAST (BALLAST WITH 15 PERCENT OR LESS TOTAL HARMONIC DISTORTION OF NORMAL LOAD CURRENT).
FAULT CURRENT WITHSTAND RATING: EQUAL TO OR EXCEEDING THE AVAILABLE FAULT CURRENT AT THE POINT OF INSTALLATION.
ENCLOSURE: COMPLY WITH NEMA 250.
PROVIDE WITH CONTROL AND PILOT DEVICES AS INDICATED ON DRAWINGS, MATCHING THE NEMA TYPE SPECIFIED FOR THE ENCLOSURE.

EXECUTION

FIELD QUALITY CONTROL
OPERATIONAL TEST: VERIFY OPERATION OF EACH LIGHTING CONTROL DEVICE, AND ADJUST TIME DELAYS.

8.ENCLOSED SWITCHES

SUBMITTALS
PRODUCT DATA: FOR EACH TYPE OF ENCLOSED SWITCH. INCLUDE DIMENSIONED ELEVATIONS, SECTIONS, WEIGHTS, AND MANUFACTURERS' TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, ACCESSORIES, AND FINISHES.
QUALITY ASSURANCE
PRODUCT SELECTION FOR RESTRICTED SPACE: DRAWINGS INDICATE MAXIMUM DIMENSIONS FOR ENCLOSED SWITCHES AND CIRCUIT BREAKERS, INCLUDING CLEARANCES BETWEEN ENCLOSURES, AND ADJACENT SURFACES AND OTHER ITEMS. COMPLY WITH INDICATED MAXIMUM DIMENSIONS.
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 NFPA 70.
COORDINATION
COORDINATE LAYOUT AND INSTALLATION OF SWITCHES AND COMPONENTS WITH EQUIPMENT SERVED AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.

PRODUCTS

FUSIBLE AND NONFUSIBLE SWITCHES
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 & INDUSTRIAL - ELECTRICAL DISTRIBUTION.
SIEMENS ENERGY & AUTOMATION, INC.
SQUARE D; A BRAND OF SCHNEIDER ELECTRIC.
TYPE GD, GENERAL DUTY, SINGLE THROW, 240-V AC, 800 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, WITH CARTRIDGE FUSE INTERIORS TO ACCOMMODATE INDICATED FUSES, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT TWO PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION.
TYPE HD, HEAVY DUTY, SINGLE THROW, [240] [600]-V AC, 1200 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, WITH CLIPS OR BOLT PADS TO ACCOMMODATE [SPECIFIED] [INDICATED] FUSES, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT THREE PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION.
ACCESSORIES:
EQUIPMENT GROUND KIT: INTERNALLY MOUNTED AND LABELED FOR COPPER AND ALUMINUM GROUND CONDUCTORS.
NEUTRAL KIT: INTERNALLY MOUNTED; INSULATED, CAPABLE OF BEING GROUNDED AND BONDED; LABELED FOR COPPER AND ALUMINUM NEUTRAL CONDUCTORS.
LUGS: MECHANICAL TYPE, SUITABLE FOR NUMBER, SIZE, AND CONDUCTOR MATERIAL.
SERVICE-RATED SWITCHES: LABELED FOR USE AS SERVICE EQUIPMENT.
ENCLOSURES
ENCLOSED SWITCHES AND CIRCUIT BREAKERS: NEMA AB 1, NEMA KS 1, NEMA 250, AND UL 50, TO COMPLY WITH ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.
INDOOR, DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1.
OUTDOOR LOCATIONS: NEMA 250, TYPE 3R.

EXECUTION

INSTALLATION
INSTALL INDIVIDUAL WALL-MOUNTED SWITCHES AND CIRCUIT BREAKERS WITH TOPS AT UNIFORM HEIGHT UNLESS OTHERWISE INDICATED.
COMPLY WITH NECA 1.
IDENTIFICATION
COMPLY WITH REQUIREMENTS IN SECTION "ELECTRICAL IDENTIFICATION."
IDENTIFY FIELD-INSTALLED CONDUCTORS, INTERCONNECTING WIRING, AND COMPONENTS; PROVIDE WARNING SIGNS.
LABEL EACH ENCLOSURE WITH ENGRAVED METAL OR LAMINATED-PLASTIC NAMEPLATE.

9.PANELBOARDS

SUBMITTALS
PRODUCT DATA: FOR EACH TYPE OF PANELBOARD, SWITCHING AND OVERCURRENT PROTECTIVE DEVICE, TRANSIENT VOLTAGE SUPPRESSION DEVICE, ACCESSORY, AND COMPONENT INDICATED. INCLUDE DIMENSIONS AND MANUFACTURERS' TECHNICAL DATA ON FEATURES, PERFORMANCE, ELECTRICAL CHARACTERISTICS, RATINGS, AND FINISHES.
OPERATION AND MAINTENANCE DATA: FOR PANELBOARDS AND COMPONENTS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS
QUALITY ASSURANCE
SOURCE LIMITATIONS: OBTAIN PANELBOARDS, OVERCURRENT PROTECTIVE DEVICES, COMPONENTS, AND ACCESSORIES FROM SINGLE SOURCE FROM SINGLE MANUFACTURER.
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.
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 PB 1.
COMPLY WITH NFPA 70.
COORDINATION
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, RACEWAYS, PIPING, ENCUMBRANCES TO WORKSPACE CLEARANCE REQUIREMENTS, AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.
WARRANTY
SPECIAL WARRANTY: 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.
EXTRA MATERIALS
KEYS: TWO SPARES FOR EACH TYPE OF PANELBOARD CABINET LOCK.

PRODUCTS

GENERAL REQUIREMENTS FOR PANELBOARDS
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 & INDUSTRIAL - ELECTRICAL DISTRIBUTION.
SIEMENS ENERGY & AUTOMATION, INC.
SQUARE D; A BRAND OF SCHNEIDER ELECTRIC.
ENCLOSURES: FLUSH- AND SURFACE-MOUNTED CABINETS AS SCHEDULED.
RATED FOR ENVIRONMENTAL CONDITIONS AT INSTALLED LOCATION.
INDOOR DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1.
OUTDOOR LOCATIONS: NEMA 250, TYPE 3R.
OTHER WET OR DAMP INDOOR LOCATIONS: NEMA 250, TYPE 4.
FINISHES:
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.
BACK BOXES: GALVANIZED STEEL.
PHASE, NEUTRAL, AND GROUND BUSES:
MATERIAL: HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.
EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH-CIRCUIT EQUIPMENT GROUNDING CONDUCTORS; BONDED TO BOX.
CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MATERIAL AND SIZES.
MATERIAL: HARD-DRAWN COPPER, 98 PERCENT CONDUCTIVITY.
MAIN AND NEUTRAL LUGS: MECHANICAL TYPE.
GROUND LUGS AND BUS-CONFIGURED TERMINATORS: MECHANICAL TYPE.
FEED-THROUGH LUGS: MECHANICAL TYPE, SUITABLE FOR USE WITH CONDUCTOR MATERIAL. LOCATE AT OPPOSITE END OF BUS FROM INCOMING LUGS OR MAIN DEVICE.
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.
PANELBOARD SHORT-CIRCUIT CURRENT RATING: RATED FOR SERIES-CONNECTED SYSTEM WITH INTEGRAL OR REMOTE UPSTREAM OVERCURRENT PROTECTIVE DEVICES AND LABELED BY AN NRTL. INCLUDE SIZE AND TYPE OF ALLOWABLE UPSTREAM AND BRANCH DEVICES, LISTED AND LABELED FOR SERIES-CONNECTED SHORT-CIRCUIT RATING BY AN NRTL.
LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
MAINS: CIRCUIT BREAKER OR LUGS ONLY AS SCHEDULED.
BRANCH OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.

EXECUTION

INSTALLATION
INSTALL PANELBOARDS AND ACCESSORIES ACCORDING TO NEMA PB 1.1.
MOUNT TOP OF TRIM 90 INCHES (2286 MM) ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.
MOUNT PANELBOARD CABINET PLUMB AND RIGID WITHOUT DISTORTION OF BOX. MOUNT RECESSED PANELBOARDS WITH FRONTS UNIFORMLY FLUSH WITH WALL FINISH AND MATING WITH BACK BOX.
INSTALL FILLER PLATES IN UNUSED SPACES.
COMPLY WITH NECA 1.
IDENTIFICATION
PANELBOARD NAMEPLATES: LABEL EACH PANELBOARD WITH A NAMEPLATE COMPLYING WITH REQUIREMENTS FOR IDENTIFICATION SPECIFIED IN SECTION "ELECTRICAL IDENTIFICATION."

10. FUSES

SUBMITTALS
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.

PRODUCTS

MANUFACTURERS
MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
COOPER BUSSMANN, INC.
EDISON FUSE, INC.
FERRAZ SHAWMUT, INC.
LITTELFUSE, INC.
CARTRIDGE FUSES
CHARACTERISTICS: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSES WITH VOLTAGE RATINGS CONSISTENT WITH CIRCUIT VOLTAGES.

EXECUTION

FUSE APPLICATIONS
CARTRIDGE FUSES:
SERVICE ENTRANCE: CLASS RK1, FAST ACTING (0-600A); CLASS L, FAST ACTING (600A AND GREATER).

11. LIGHTING

SUBMITTALS
PRODUCT DATA: FOR EACH TYPE OF LIGHTING FIXTURE, ARRANGED IN ORDER OF FIXTURE DESIGNATION. 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 AS APPLIED IN THIS PROJECT.
OPERATION AND MAINTENANCE DATA: FOR LIGHTING EQUIPMENT AND FIXTURES TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.
WARRANTIES: SPECIAL WARRANTIES SPECIFIED IN THIS SECTION.
QUALITY ASSURANCE
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.
COMPLY WITH NFPA 70.
COORDINATION
COORDINATE 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.

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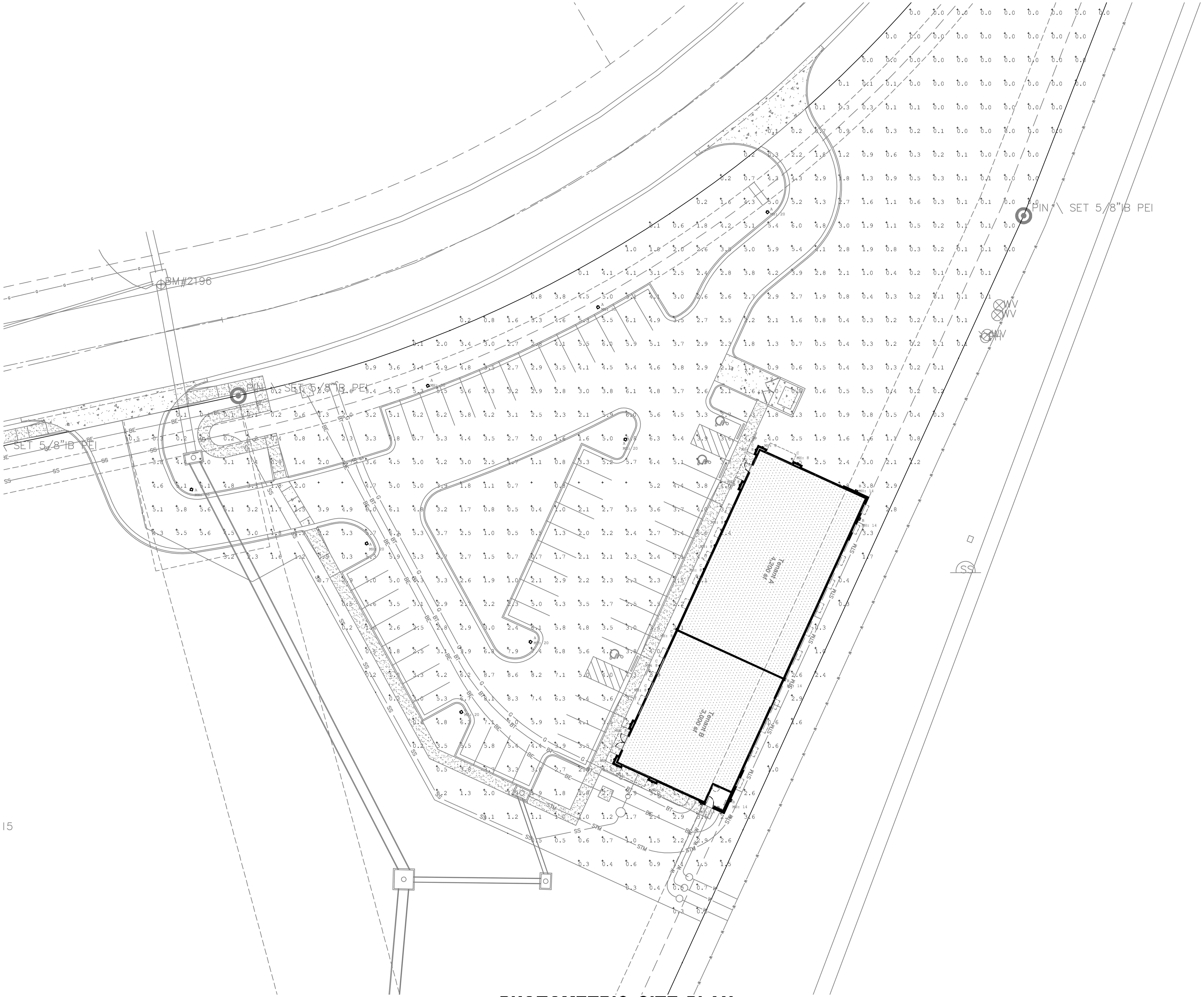
GREGORY P. GLADFELTER
NUMBER
E-2000150421
signed 29 March 2022
Project Number 21.188.05

Revisions
1 **29 March 2022**
Owner Revisions
2 **03 May 2022**
City/Owner Revisions

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

sheet
E3
ELECTRICAL SPECIFICATION

Permit
04 March 2022



PHOTOMETRIC SITE PLAN

1" = 20'-0"

NORTH

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	Mounting Height
	8	DSX1_LED_P8_50K_T5M_MVOLT_HS	Single	DSX1 LED P8 50K T5M MVOLT HS	A	1.000	18389	207	1656	20
	5	TWP_LED_ALO_30K_T3M	Single	TWP LED ALO 30K T3M	B	1.000	4203	49	245	14
	14	Guardian LED 24 L36_5 30K	Single	GRDW-24-L36_5-WAL-TB-30K	C	1.000	2439	47	658	8

LITHONIA LIGHTING

Submittal Spec Sheet

D-Series Pole Mount (DSX1)

OVERVIEW

The modern styling of the D-Series LED Area, Size 1 luminaire is striking yet unobtrusive - making a bold, progressive statement blending seamlessly with its environment. Its outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. Coupled with nLight® AIR wireless controls, the D-Series family provides enhanced end-user experiences and unmatched energy savings.

The sleek design reflecting the embedded high-performance LED outdoor lighting technology makes the D-Series, Size 1 the ideal choice for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

Product Webpage: https://www.acuitybrands.com/products/detail/209326
Warranty: www.acuitybrands.com/support/customer-support/terms-and-conditions

The product images shown are for illustration purposes only and may not be an exact representation of the product.

ORDERING INFORMATION **DSX1 LED P8 50K T5M MVOLT HS SPA (Incomplete)**

Series*		Lamp Type*		LED Configuration*			
DSX1	D-Series Size 1 LED Area Luminaire	LED	LED	P1	Package 1	P6	Package 6
				P10	Package 10	P7	Package 7
				P11	Package 11	P8	Package 8
				P12	Package 12	P9	Package 9
				P13	Package 13		
				P2	Package 2		
				P3	Package 3		
				P4	Package 4		
				P5	Package 5		

Correlated Color Temperature*		Distribution*				Voltage*	
30K	3000K	BLC	Backlight control	T5M	Type V Medium	120	120V
40K	4000K	LCCO	Left Corner Cutoff Optic	T5S	Type V Short	208	208V
50K	5000K	RCCO	Right Corner Cutoff Optic	T5VS	Type V Very short	240	240V
AMBPC	Amber, Phosphor Converted	T1S	Type I Short	T5W	Type V Wide	24VDC	24V DC
		T2M	Type II Medium	TFTM	Forward throw medium	277	277V
		T2S	Type II Short	VLS	Visual comfort symmetric	347	347V
		T3M	Type III Medium			480	480V
		T3S	Type III Short			MVOLT	120-277V
		T4M	Type IV Medium			SOLAR	SOLAR

Voltage* (Cont...)		Ambient Starting Temp		Bird Deterrent		Shielding	
XVOLT	XVOLT	HA	High Ambient	BS	Bird spikes	EGS	External Glare Shield
						HS	House-side shield

Wiring Device		Mounting*		Driver Configuration		Dimming Wires	
WTB	Utility Terminal Block	MA	Mast arm adaptor, integral	DS	Dual switching; Provides 50/50 luminaire operation via two independent drivers on two separate circuits	DMG	0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)
		RPA	Round pole mounting				
		RPUMBA	Round pole universal mounting bracket adaptor				
		SPA	Square pole mounting				
		SPUMBA	Square pole universal mounting bracket adaptor				
		WBA	Wall mount bracket				

Dimmable/Controllable		Receptacle Type		Internal Control			
NLTAIR2	Nlight air gen 2 controller	PER	NEMA twist-lock receptacle only	PIR	Motion/ambient sensor <15FT; dims to 3V	PIRH4V	Motion/ambient sensor 15-30FT; dims to 4V
		PER5	Five-wire receptacle only (no controls)	PIR1FC3V	Motion/ambient sensor <15FT; photocontrol set at 1 FC; dims to 3V	PIRHN	Motion/ambient sensor 15-30FT-Networked
		PER7	Seven-wire receptacle only (no controls)	PIR4V	Motion/ambient sensor <15FT; dims to 4V		
				PIRH	Motion/ambient sensor 15-30FT; dims to 3V		
				PIRH1FC3V	Motion/ambient sensor 15-30FT; photocontrol set at 1 FC; dims to 3V		

Part-Night Dimming		Bi-Level Dimming		Field Adjustable		Fusing	
PNMT5D3	Midpoint, 5 hours past mid-point, 3V	BL30	Bi-level dimming, 30%	FAO	Field adjustable output	DF	Double Fuse
PNMT6D3	Midpoint, 6 hours past mid-point, 3V	BL50	Bi-level dimming, 50%			SF	Single Fuse
PNMT7D3	Midpoint, 7 hours past mid-point, 3V						
PNMTDD3	Midpoint, until dawn, 3V						

Aiming		Finish*					
L90	Left rotated optics	DBLBXD	Textured black, super durable	DMBXD	Medium bronze, super durable	DWHXD	White, super durable
R90	Right rotated optics	DBLXD	Black finish, super durable	DNATXD	Textured natural aluminum, super durable	DWJPXD	White aluminium, RAL9006, super durable
		DDBTXD	Textured dark bronze, super durable	DNAXD	Natural aluminum finish, super durable		
		DDBXD	Dark bronze finish, super durable	DSPDXD	Textured dark grey, super durable		
		DGCXD	Charcoal grey, super durable	DSPJXD	Light grey, super durable		
		DGRHXD	Dark green, RAL6012, super durable	DSSTXD	Textured sandstone, super durable		
		DGYGXD	Grey, RAL7040, super durable	DSSXD	Sandstone, super durable		
		DGYWXD	Dark grey, RAL7012, super durable	DTGXD	Tennis green, super durable		
		DHBUXD	Custom Color Holophane Munsell Gray	DWHGXD	Textured white, super durable		

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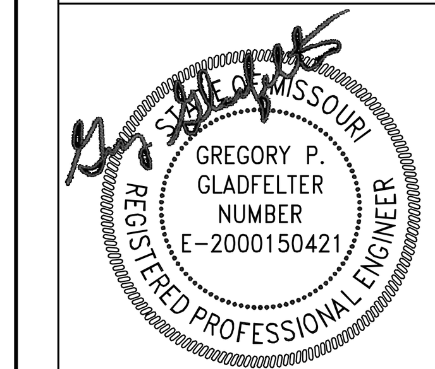


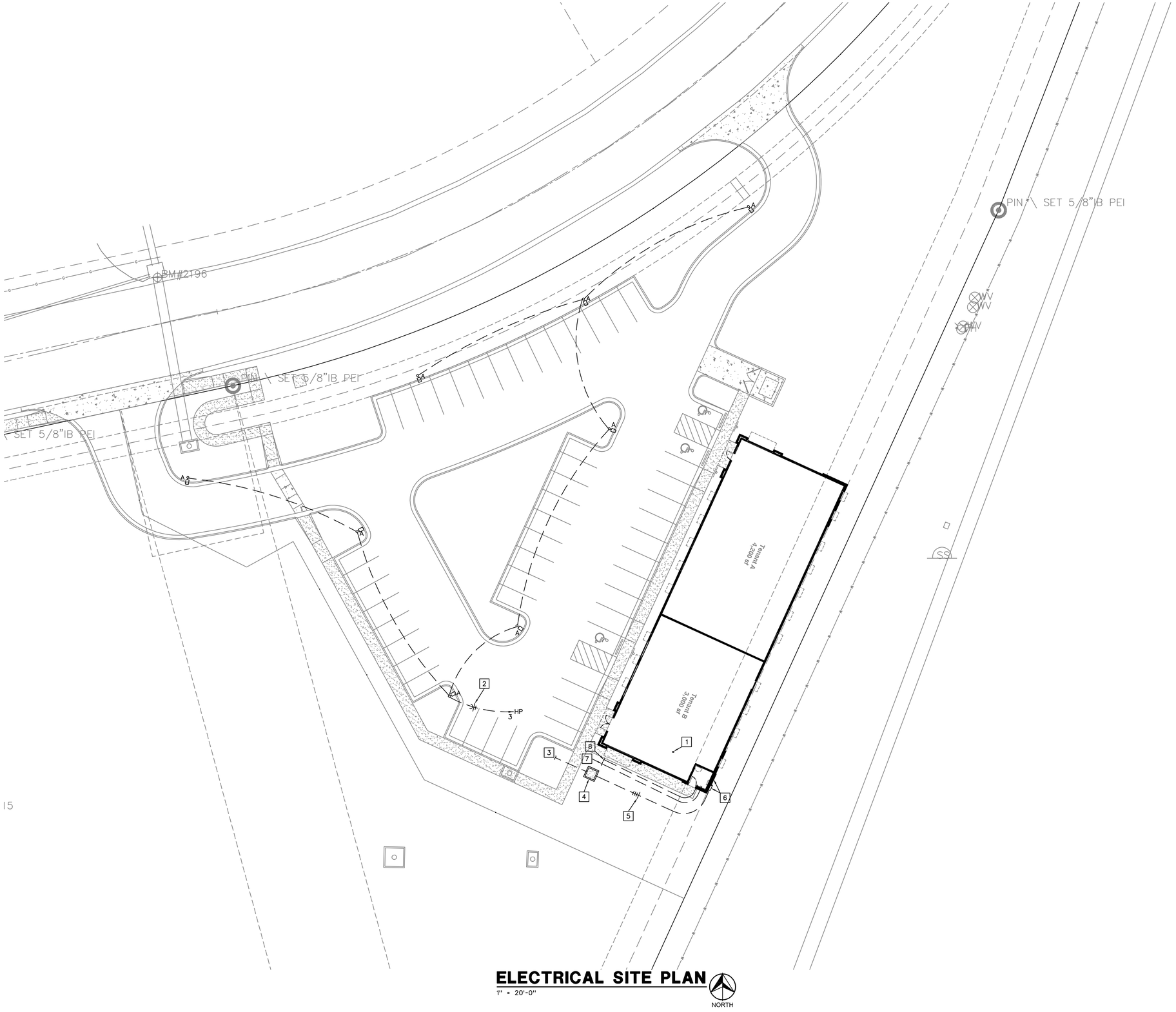
signed 18 March 2022
Project Number 21.188.05

Revisions

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

sheet
SP1
PHOTOMETRIC SITE PLAN

Permit
04 March 2022



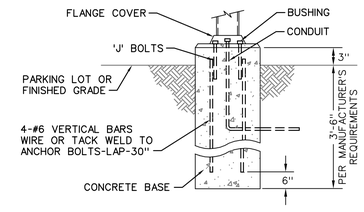
ELECTRICAL SITE PLAN

1" = 20'-0"

NORTH

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

Call BEFORE you DIG
TOLL FREE
1-800-DIG-RITE
(344-7483)
OR CALL 811
UTILITIES ONE-CALL SYSTEM, INC.

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.

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STATE OF MISSOURI
GREGORY P. GLADFELTER
NUMBER E-2000150421
REGISTERED PROFESSIONAL ENGINEER

signed 29 March 2022
Project Number 21.188.05

Revisions

⚠ **29 March 2022**
Owner Revisions

new shell building

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SP2
ELECTRICAL SITE PLAN

Permit
04 March 2022