

C:\Users\Jesse\Documents\Paragon Star HUB- Revised_ R21_Central_jreedshultz@finklewilliams.com.rvt
RENDERING FOR CONCEPTUAL REFERENCE ONLY; IMAGE MAY NOT REFLECT LATEST DESIGN. REFERENCE ELEVATIONS AND SCHEDULES FOR FINISHES.



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PROJECT TEAM

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FINKLE + WILLIAMS
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PROJECT ADDRESS
3151 NW PARAGON
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LOT 20 - HUB BUILDING

PROJECT NUMBER
19050.02

RELEASE DATE
04.29.22

ISSUED FOR
PERMIT

REGISTRATION



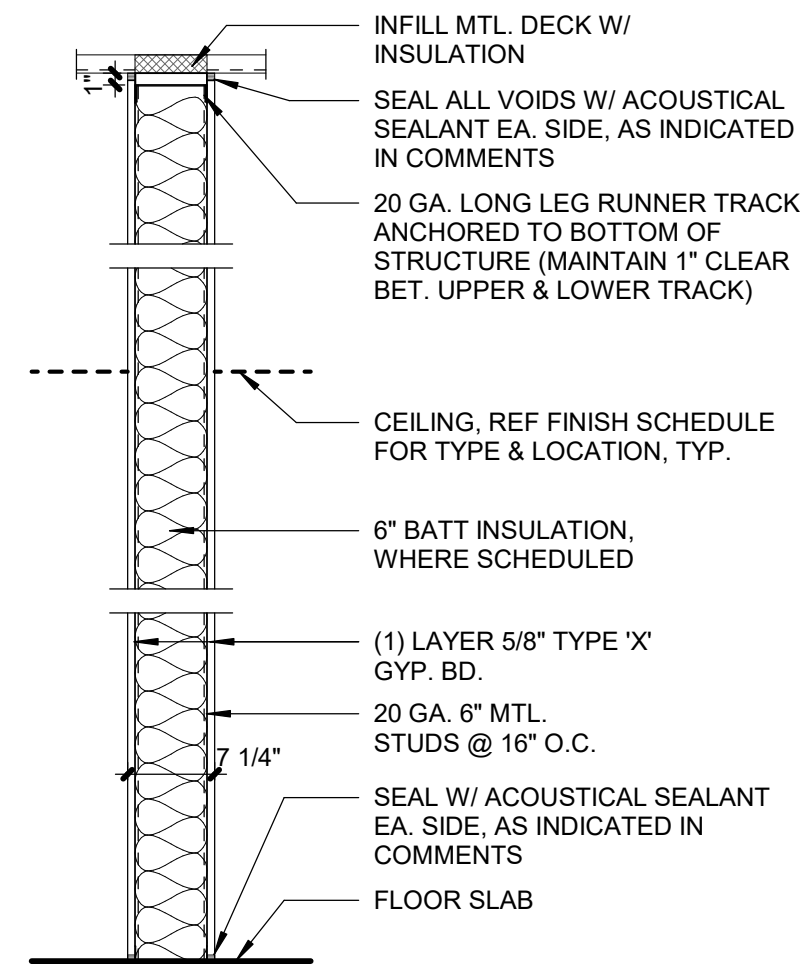
ARCHITECT	FINKLE- WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUT LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



SHEET TITLE

SHEET NUMBER

A0.02



IN FILL MTL. DECK / W/ INSULATION

SEAL ALL VOIDS W/ ACOUSTICAL SEALANT EA. SIDE, AS INDICATED IN COMMENTS

20 GA. LONG LEG RUNNER TRACK ANCHORED TO BOTTOM OF STRUCTURE (MAINTAIN 1" CLEAR BET. UPPER & LOWER TRACK)

CEILING, REF FINISH SCHEDULE FOR TYPE & LOCATION, TYP.

3 1/2" BATT INSULATION, WHERE SCHEDULED

(1) LAYER 5/8" TYPE 'X' GYP. BD

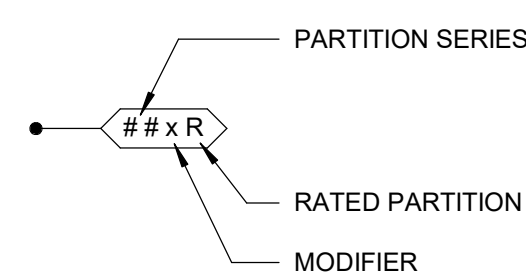
20 GA. 3 5/8" MTL. STUDS @ 16" O.C.

SEAL W/ ACOUSTICAL SEALANT EA. SIDE, AS INDICATED IN COMMENTS

FLOOR SLAB

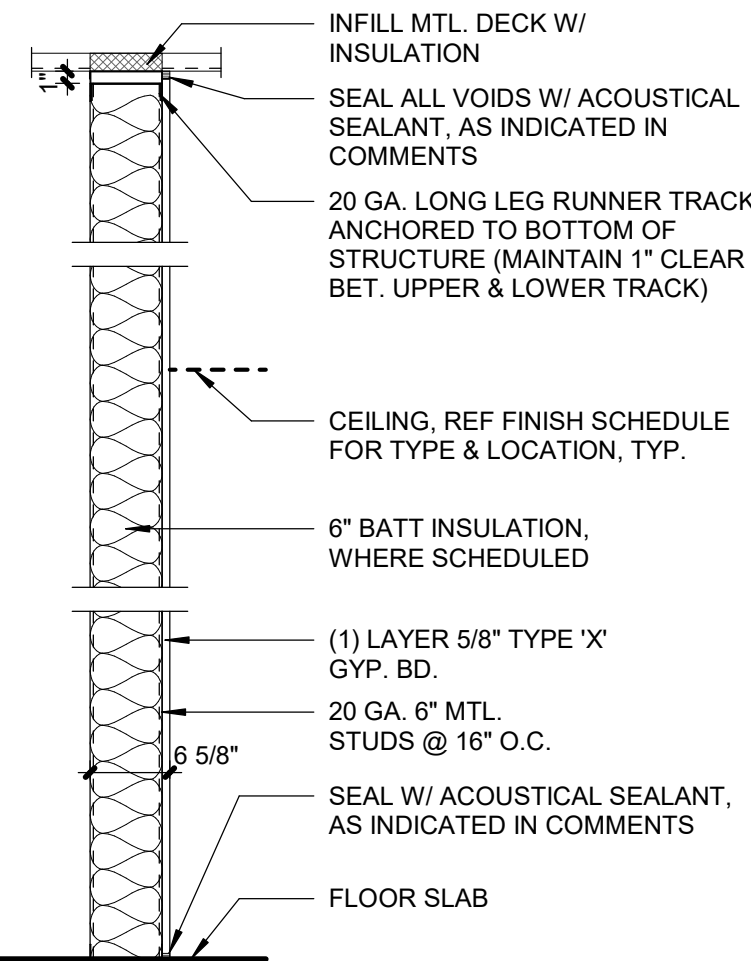
4 7/8"

PARTITION LEGEND

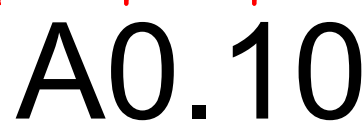


MODIFIER	
a	SOUND BATT INSULATION FULL DEPTH OF STUD
b	MOLD & WATER RESISTANT GYP. BD.
c	INSULATION AND MOLD & WATER RESISTANT GYP. BD.
d-z	VARIES. SEE PARTITION SCHEDULE COMMENTS

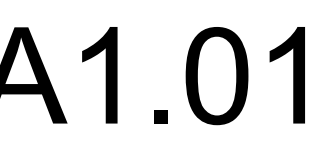
RATING	
R	FIRE RATED, SEE SCHEDULE FOR ADDITIONAL INFO.



14				
Type	Batt Insulation	Mold & Water Resist GWB	Fire Rating	Comments
14d	Yes	Yes		Impact Resistant Gypsum Board per spec



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HIGHEST OPERABLE PART

4'7" (1.4m) U.N.O.

TOWEL DISPENSER (MANUAL)

HIGHEST OPERABLE PART

4'7" (1.4m) U.N.O.

TOWEL DISPENSER (AUTOMATIC)

HIGHEST OPERABLE PART

4'7" (1.4m) U.N.O.

HAND DRYER

HIGHEST OPERABLE PART

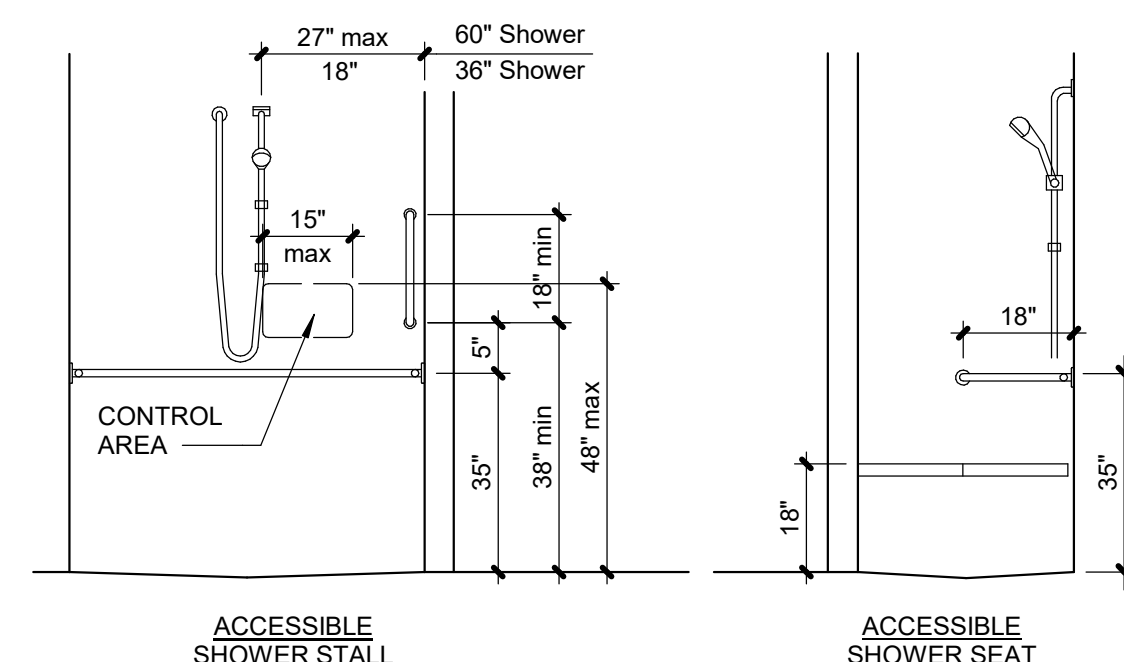
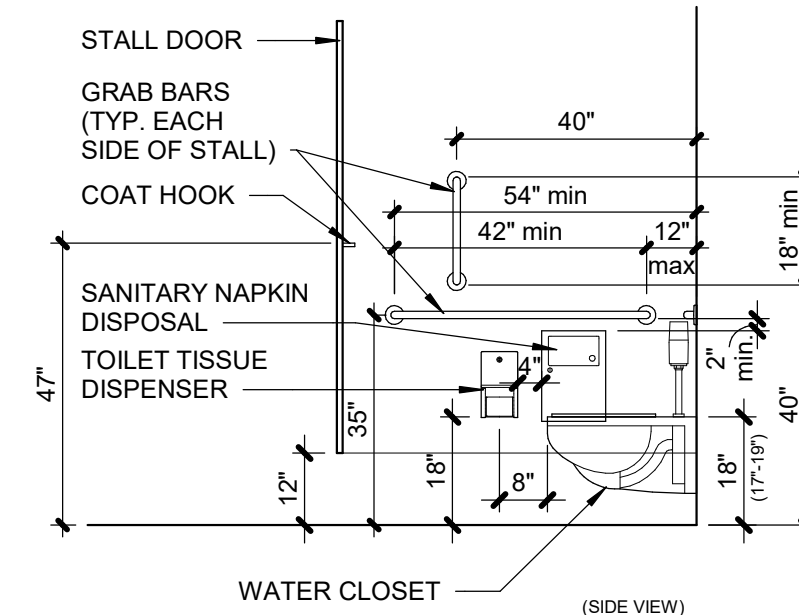
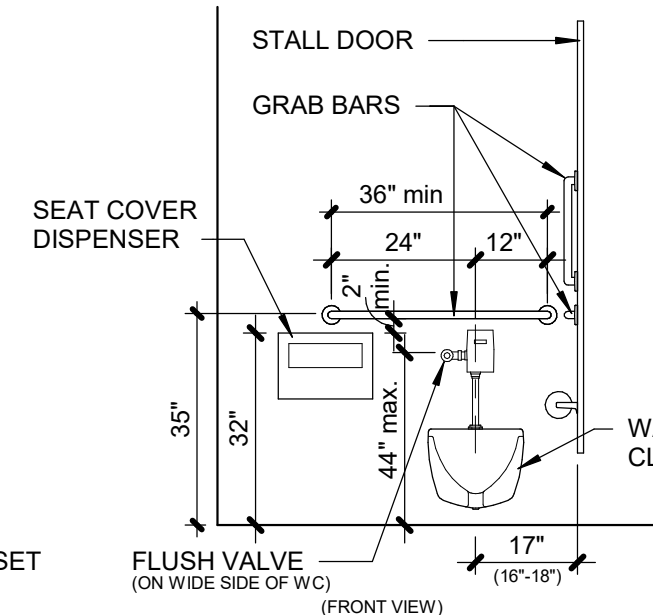
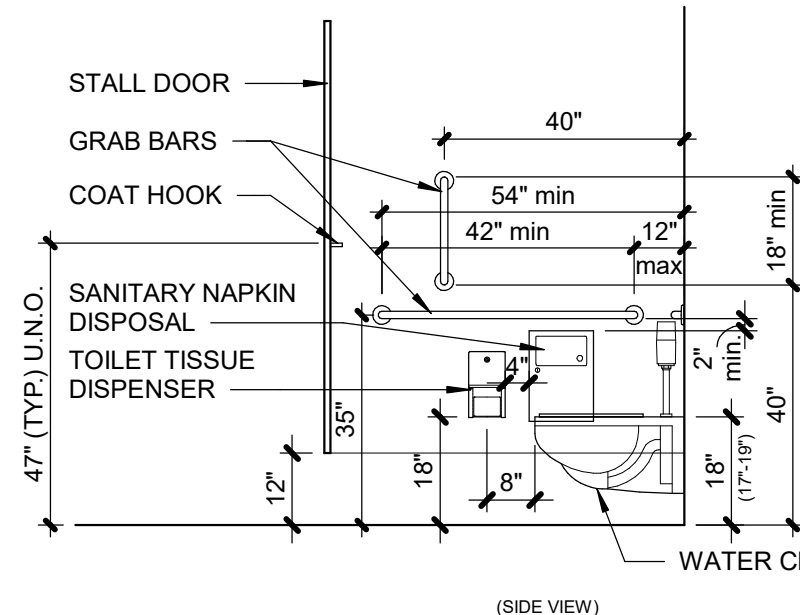
4'7" (1.4m) U.N.O.

TOWEL DISPENSER/ WASTE RECEPTACLE

HIGHEST OPERABLE PART

4'7" (1.4m) U.N.O.

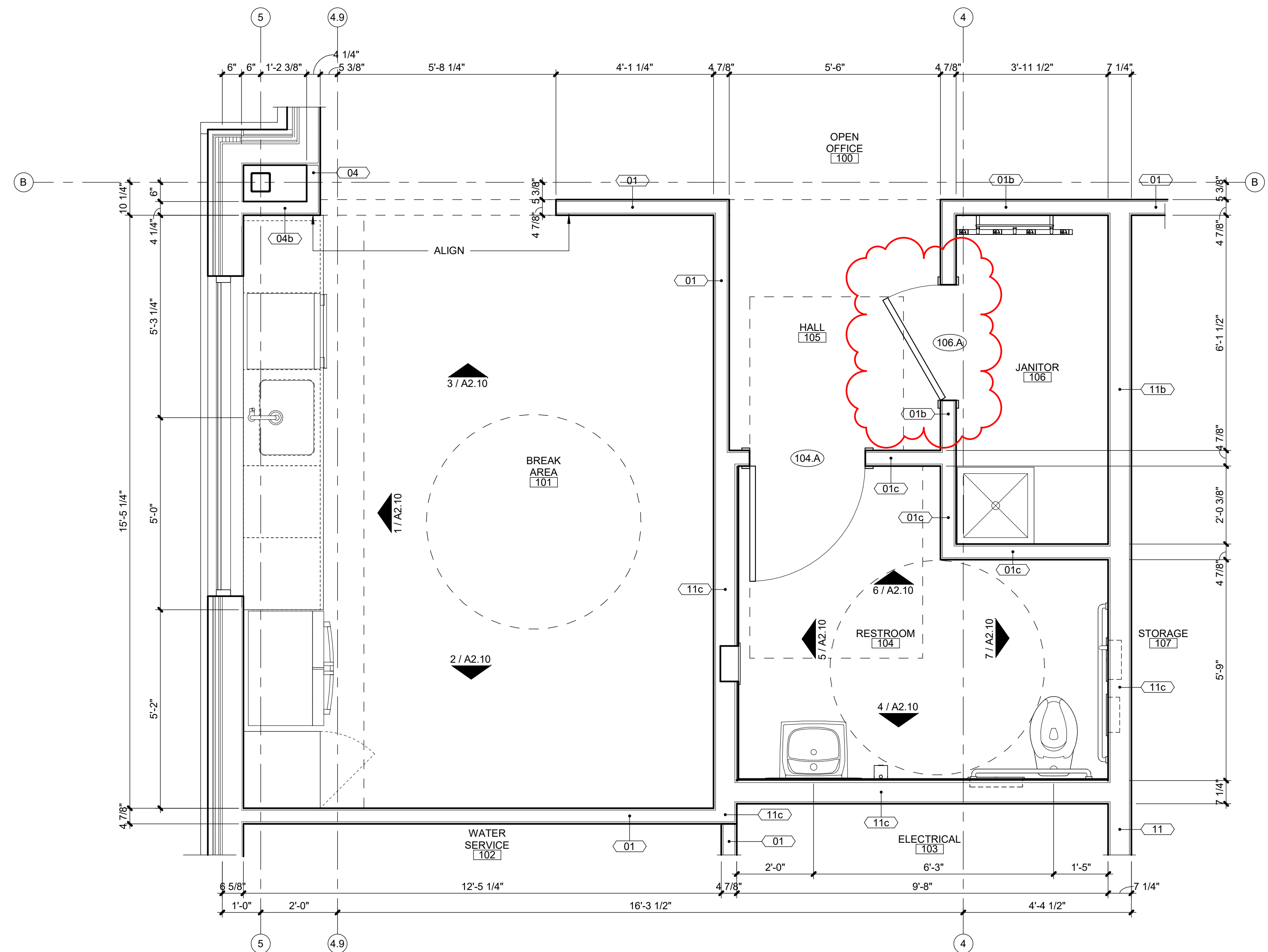
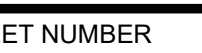
SANITARY NAPKIN DISPENSER







(A) REFRIGERATOR - PER OWNER

(B) ADA DISHWASHER - PER OWNER

- ALL ACCESSORIES SHALL BE STAINLESS STEEL UNLESS NOTED OTHERWISE.
ALL ACCESSORIES SHALL BE DESIGNED TO MEET ADA STANDARDS.
- ① COMBINATION PAPER TOWEL DISPENSER/WASTE RECEPTACLE, RECESSED (BOBRICK TRIMLINE SERIES-B3803)
- ② AUTOMATIC WALL MOUNTED SOAP DISPENSER (BOBRICK B-2012)
- ③ FRAMED MIRROR (BOBRICK B-165) 30"W X 48"H
- ④ RECESSED MULTI-ROLL TOILET TISSUE DISPENSER (BOBRICK TRIMLINE SERIES B-35883)
- ⑤ GRAB BARS AS SHOWN ON PLANS AND ELEVATIONS (BOBRICK B-6806 SERIES)
- ⑤A GRAB BAR (BOBRICK B6806 X 42)
LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
- ⑤B GRAB BAR (BOBRICK B6806 X 36)
LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
- ⑤C GRAB BAR (BOBRICK B6806 X 18)
LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
- ⑥ SANITARY NAPKIN DISPOSAL, RECESSED WALL MOUNT (BOBRICK TRIMLINE SERIES B-35303)
- ⑦ U-LINE WALL-MOUNT UTILITY HOOKS
- ⑧ COAT AND HAT HOOK (BOBRICK B-6827)
- ⑨ A.D.A. RESTROOM SIGNAGE, SEE SHEET A0.01
- ⑩ RECESSED TOILET SEAT-COVER DISPENSER (BOBRICK TRIMLINE SERIES B-3013)

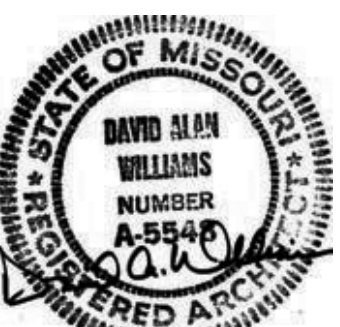


<p>PLAN</p> 	<p>TRUE</p> 
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PLAN	TRUE
	

[illegible]

REGISTRATION



04.29.22

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT / LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE

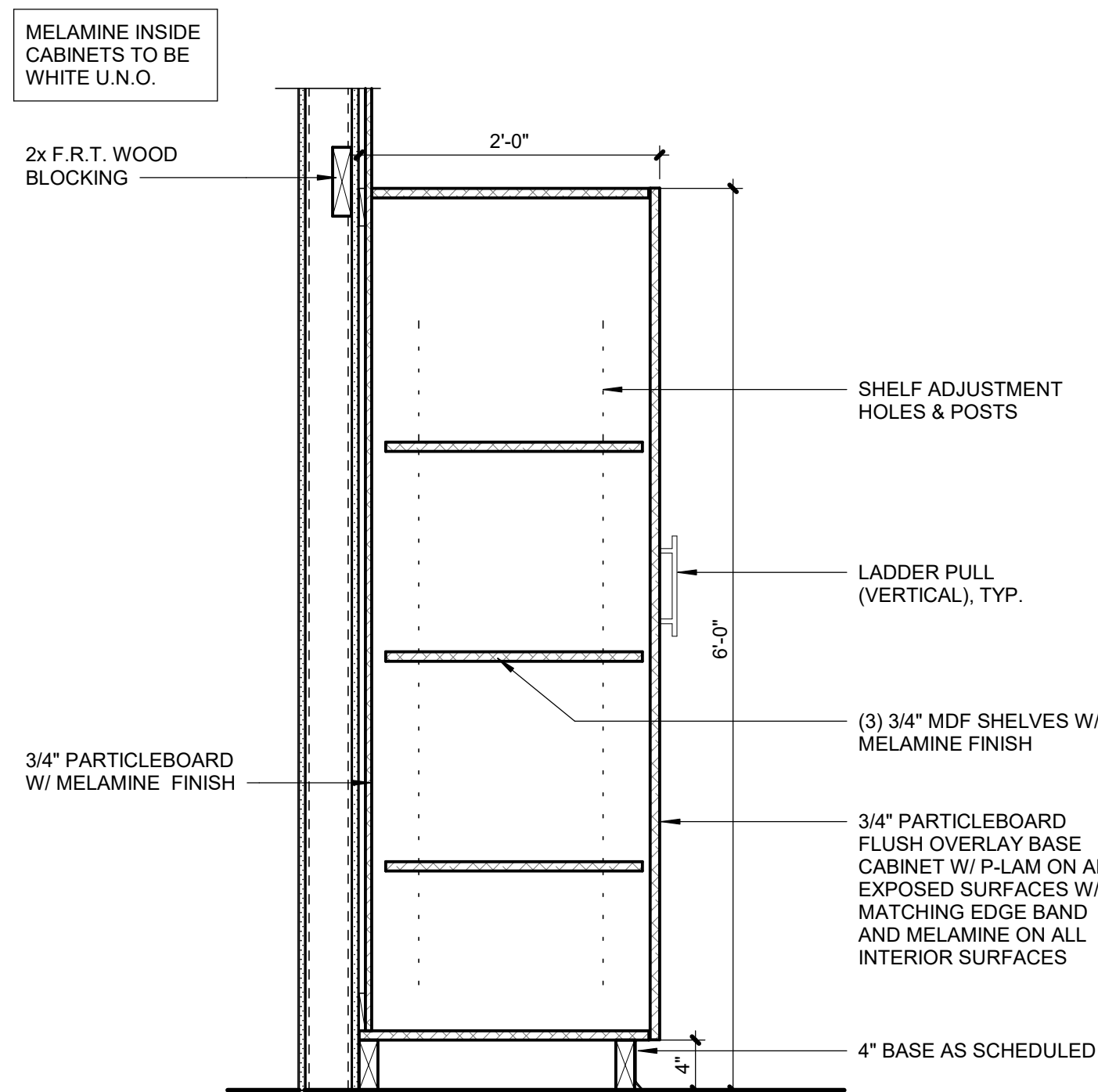
8787 RENNER BLVD., SUITE 100
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SHEET TITLE

INTERIOR ELEVATIONS

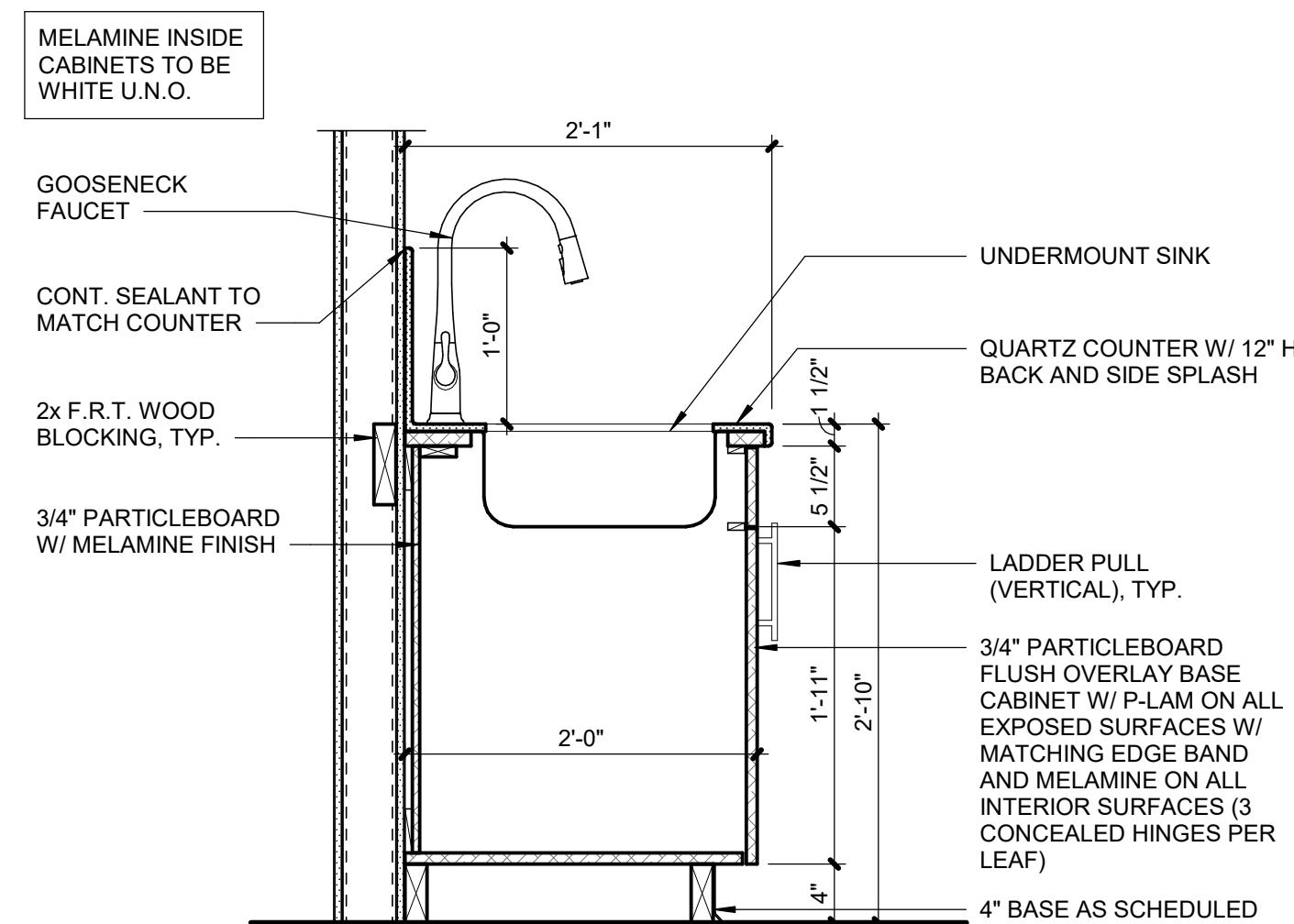
SHEET NUMBER

A2.10



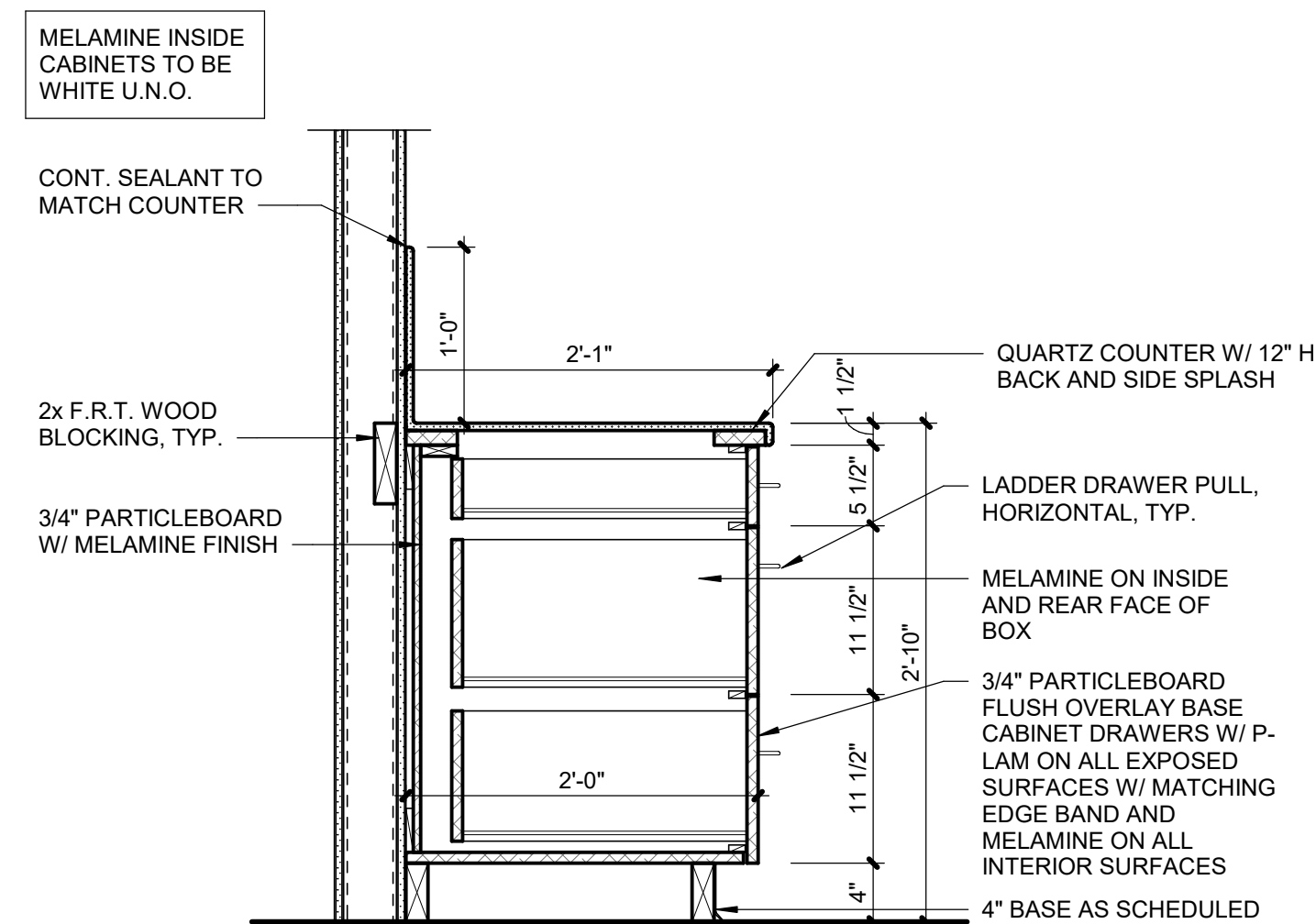
10 | CASEWORK DETAIL

A2.10	SCALE : 1" = 1'-0"
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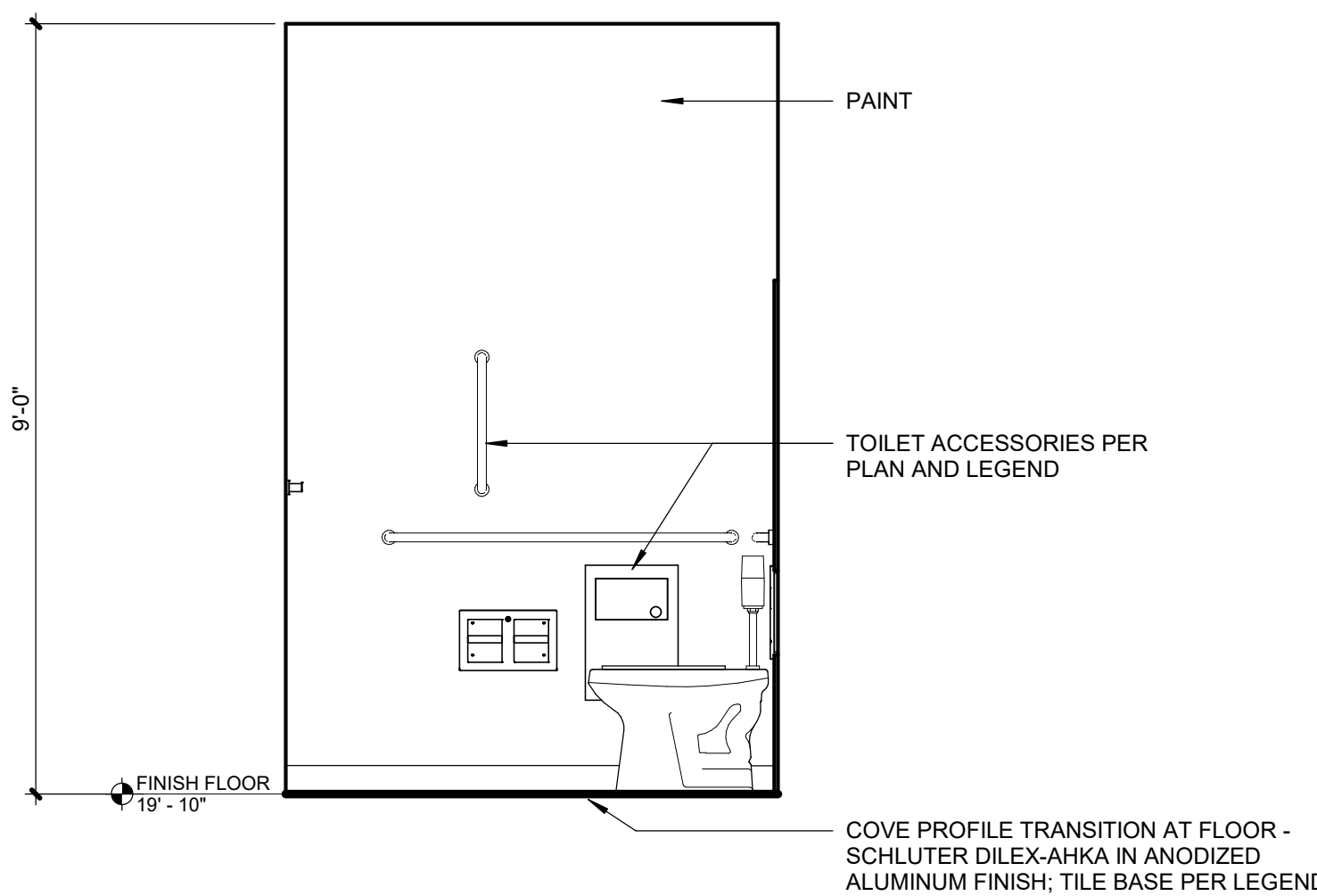
9	CASEWORK DETAIL
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A2.10	SCALE : 1" = 1'-0"
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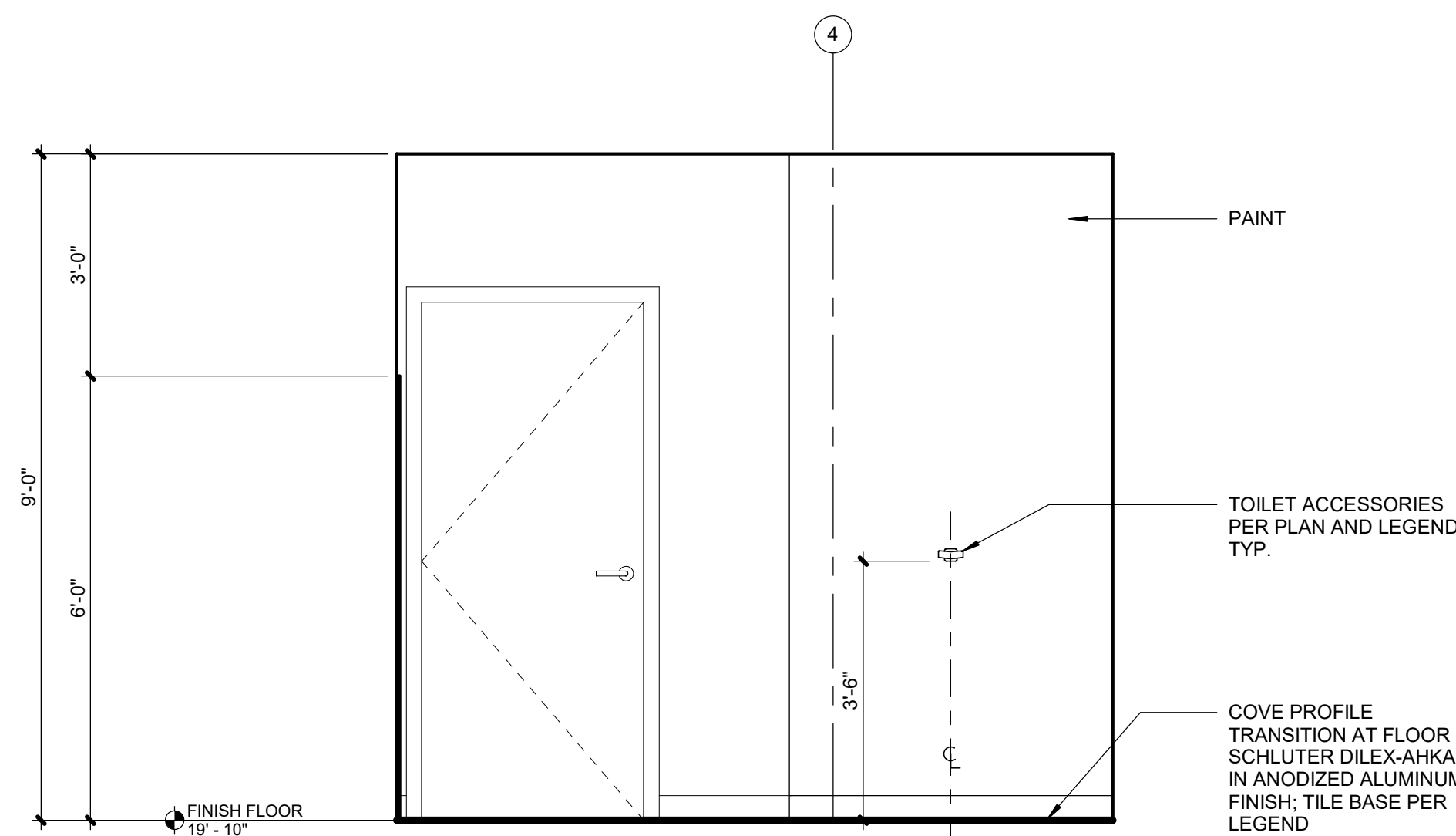
8	CASEWORK DETAIL
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A2.10	SCALE : 1" = 1'-0"
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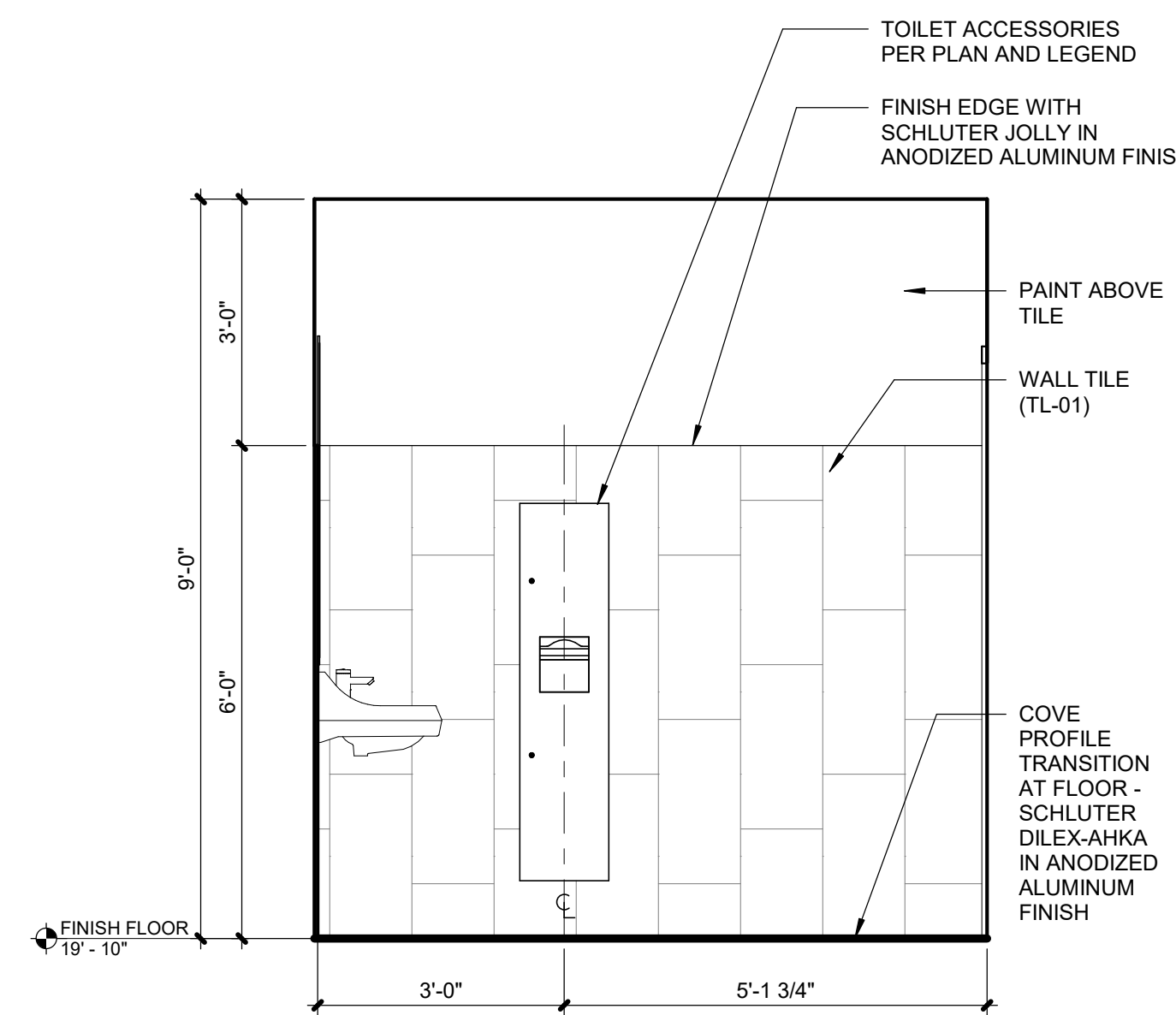
7	INTERIOR ELEV. - RESTROOM
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A2.10	SCALE : 1/2" = 1'-0"
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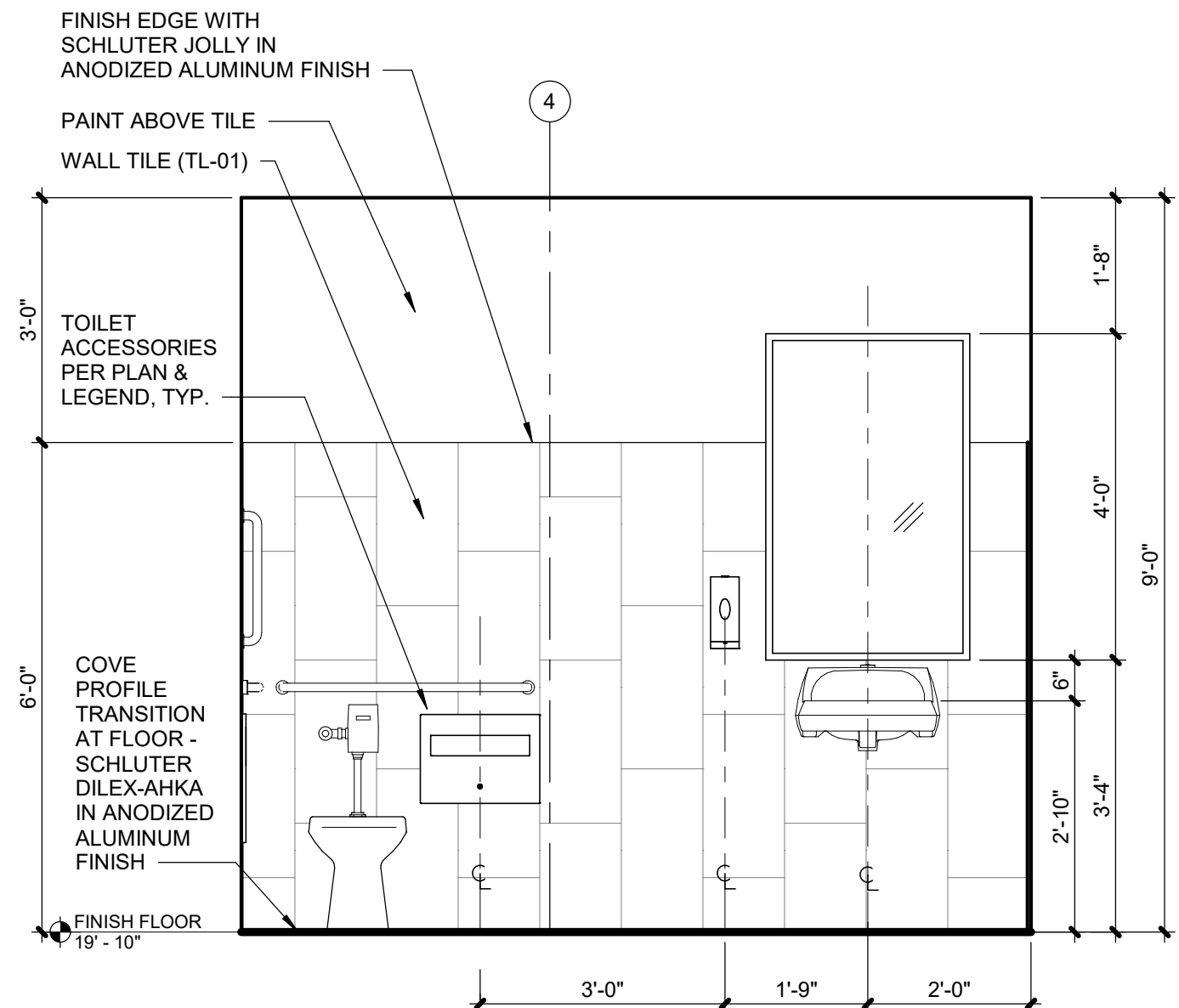
6	INTERIOR ELEV. - RESTROOM
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A2.10	SCALE : 1/2" = 1'-0"
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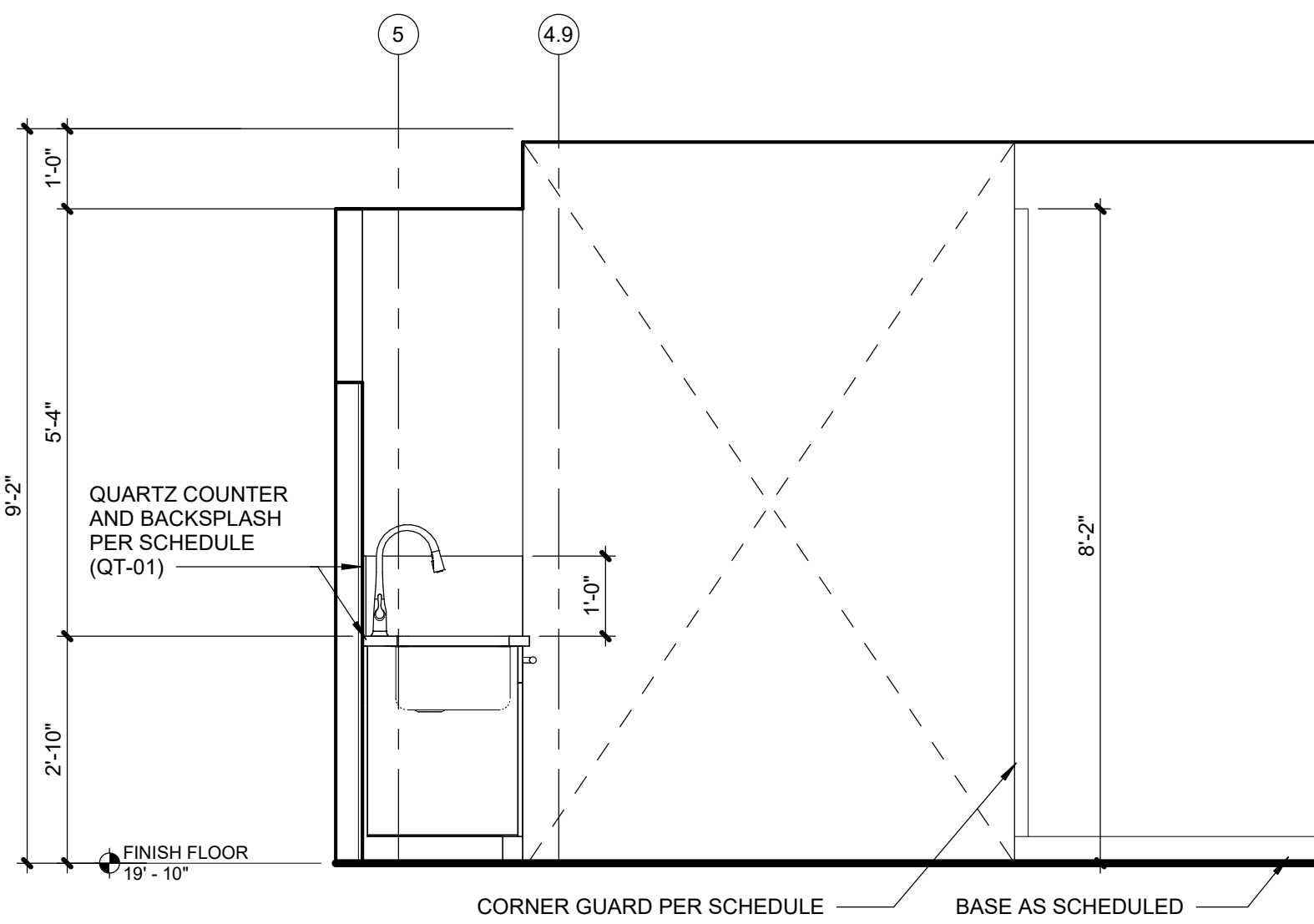
5	INTERIOR ELEV. - RESTROOM
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A2.10	SCALE : 1/2" = 1'-0"
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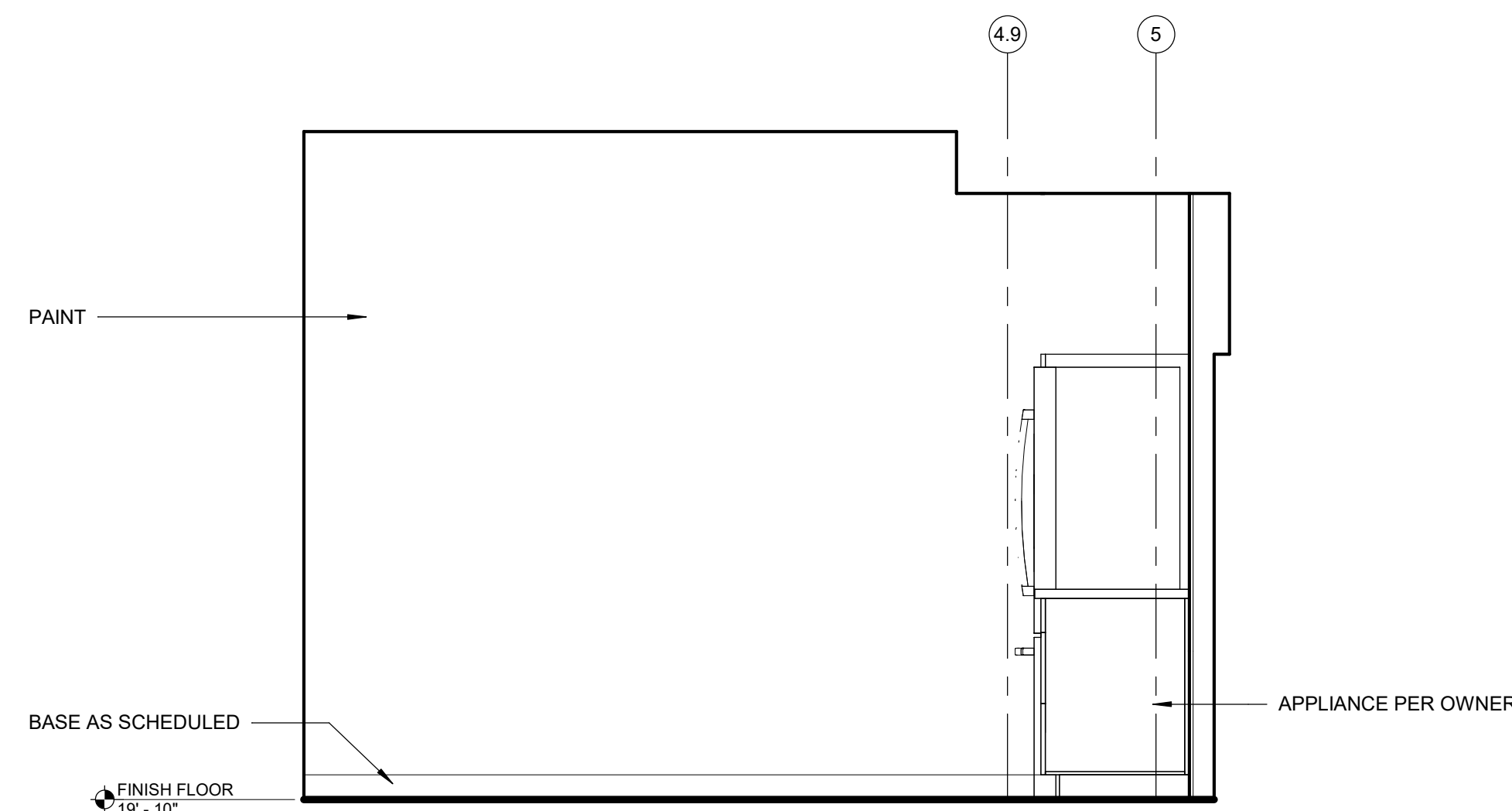
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A2.10	SCALE : 1/2" = 1'-0"
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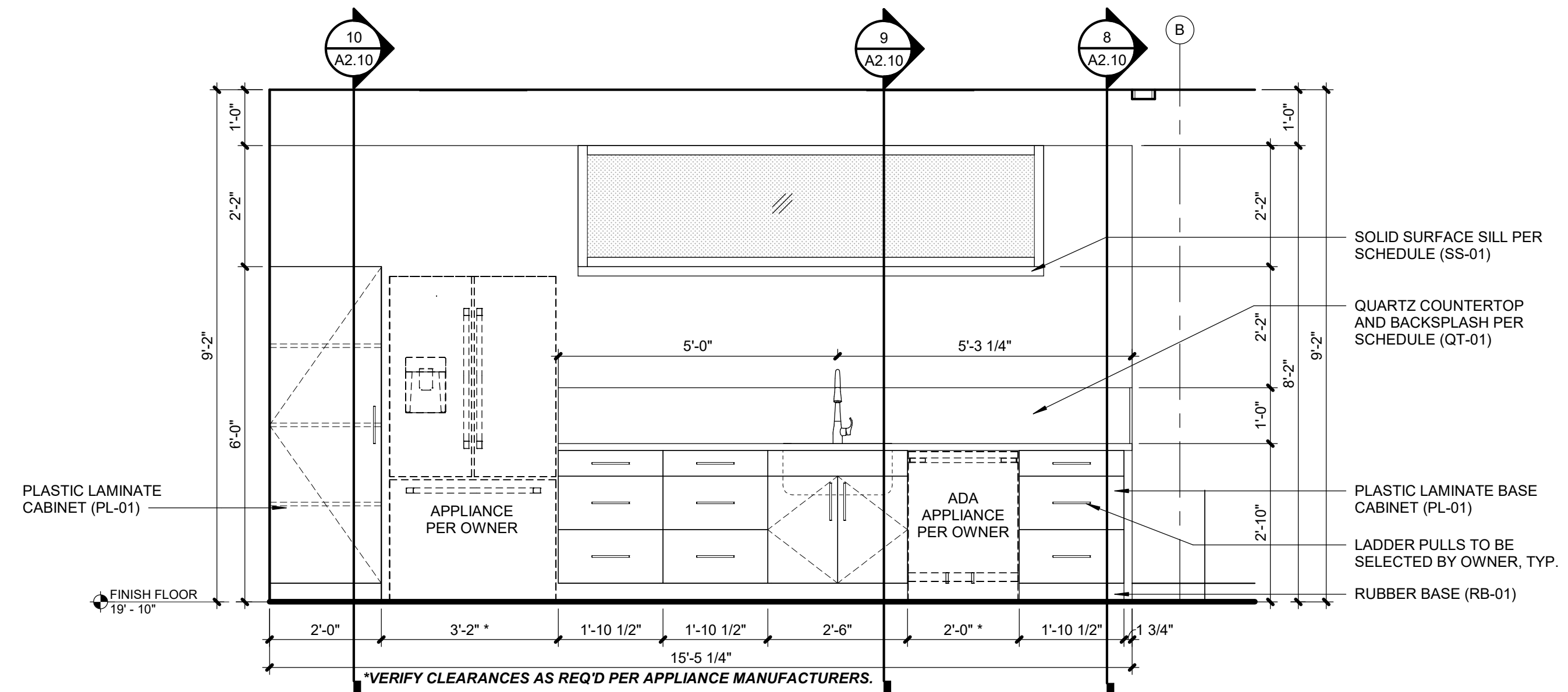
3	INTERIOR ELEV. - BREAKROOM
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A2.10	SCALE : 1/2" = 1'-0"
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2	INTERIOR ELEV. - BREAKROOM
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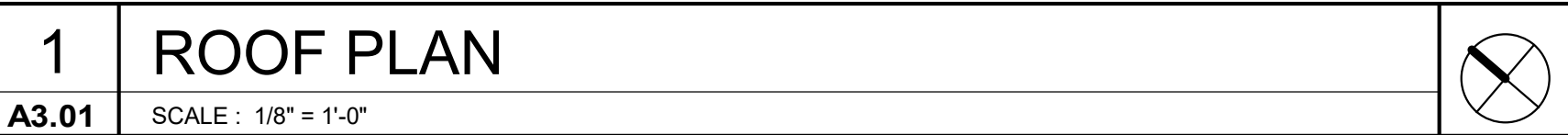
A2.10	SCALE : 1/2" = 1'-0"
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1	INTERIOR ELEV. - BREAKROOM
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A2.10	SCALE : 1/2" = 1'-0"
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1. THE SINGLE PLY ROOF SHALL BE TPO, 60 MIL, WHITE MEMBRANE, FULLY ADHERED, W/A 20 YEAR NO DOLLAR LIMIT MANUFACTURER'S WARRANTY.
2. ROOF DRAINS ARE TO BE COLLECTED UNDERGROUND AND CONTINUED PER CIVIL ENGINEERING PLANS.
3. SEE SHEET A7.01 FOR ROOF PARAPET DETAILS
4. SEE PLUMBING AND MECHANICAL PLANS FOR ROOF TOP EQUIPMENT AND PENETRATION LOCATIONS.



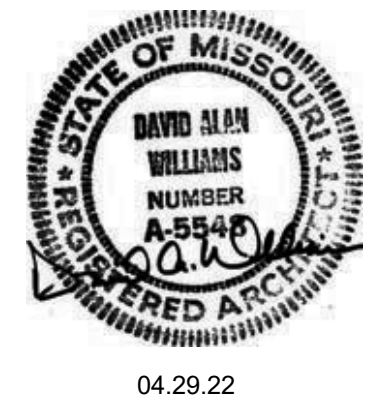


151 NW PARAGON PKWY
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Project No.:	19050.02
Date:	04.29.22
Issued For:	PERMIT

[illegible]

REGISTRATION



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GBA

HOERR SCHAUDT
LAND3

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ENGINEERS

STRUCTURAL BSE STRUCTURAL
ENGINEERS

HENDERSON
ENGINEERS

HENDERSON
ENGINEERS

ENGINEERS

ENGINEERS

ANKLE + WILLIAM
ARCHITECTS

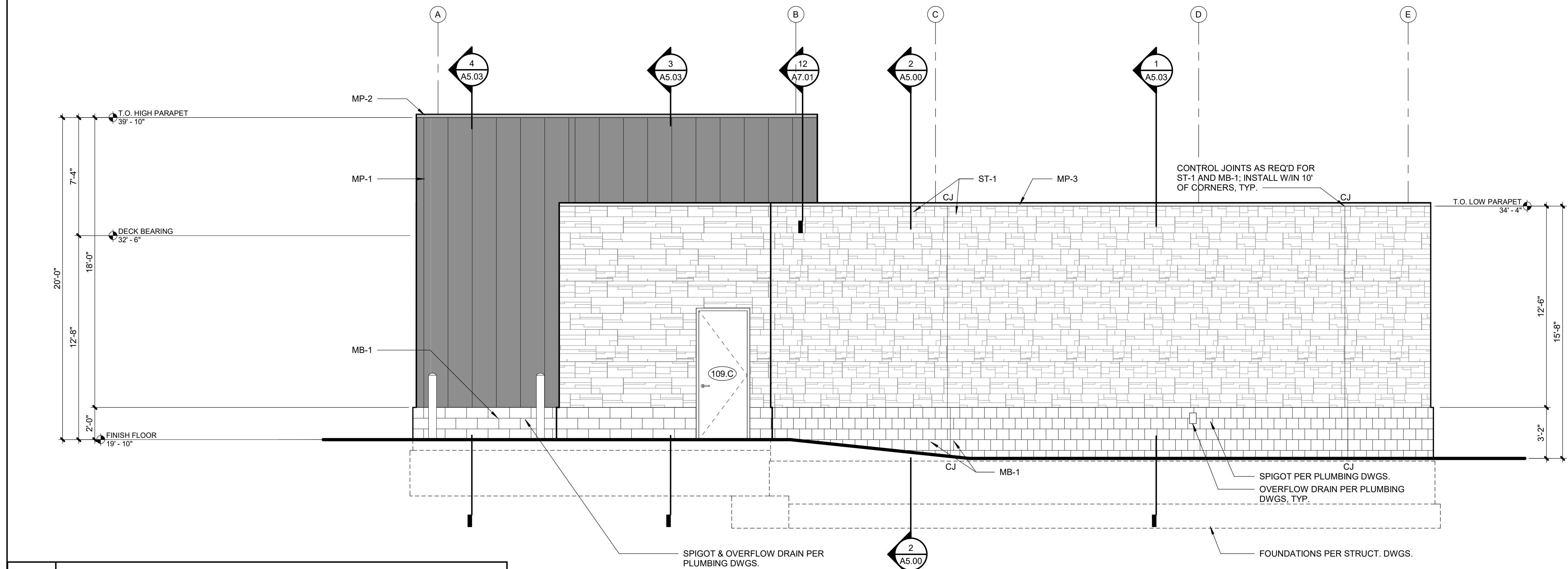
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SHEET TITLE

EXTERIOR ELEVATIONS

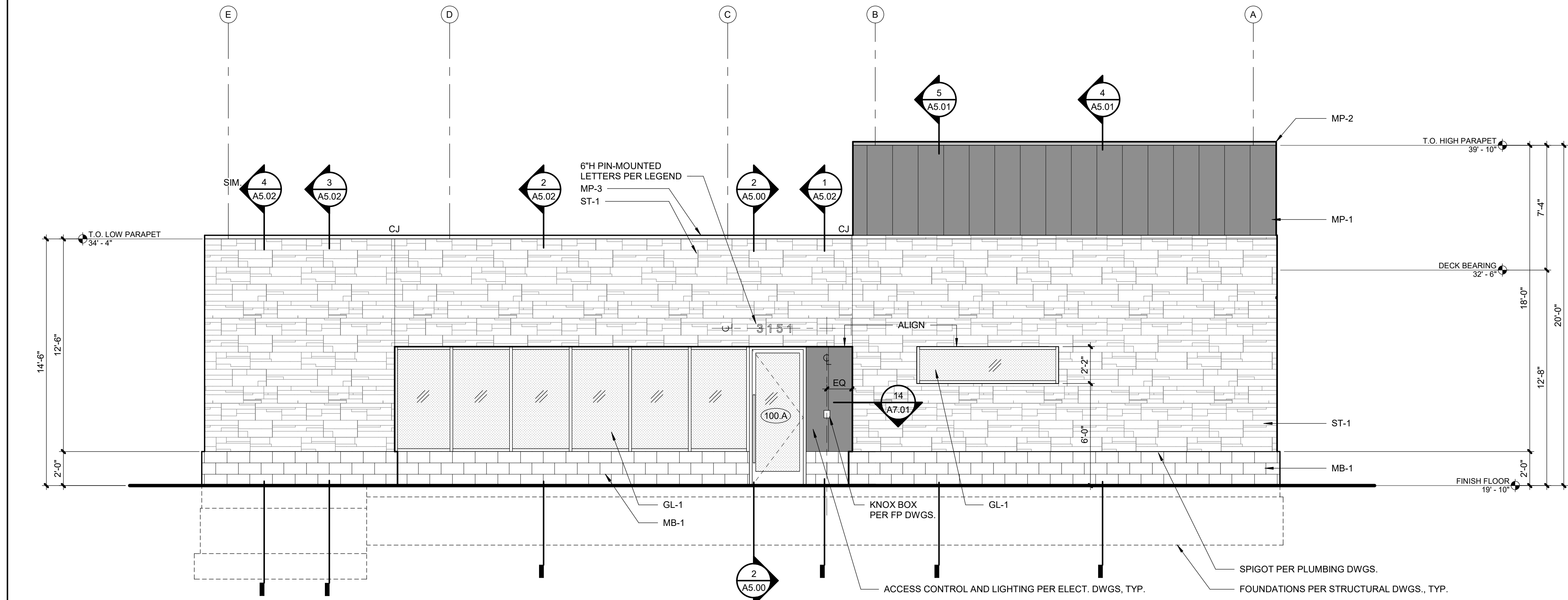
SHEET NUMBER

A4.01



2	EAST ELEVATION
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A4.01	SCALE : 1/4" = 1'-0"
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1	WEST ELEVATION
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A4.01	SCALE : 1/4" = 1'-0"
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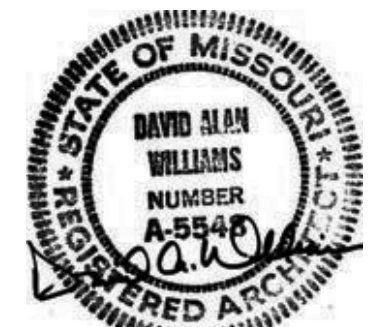


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Project No.:	19050.02
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REGISTRATION



4.29.22

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UCTURAL	BSE STRUCTURA ENGINEERS	
MBING	HENDERSON ENGINEERS	
HANICAL	HENDERSON ENGINEERS	
CTRICAL	HENDERSON ENGINEERS	
PROTECTION	HENDERSON ENGINEERS	
TRACTOR	FOGEL ANDERSON	

ANKLE + WILLIAM
ARCHITECTS

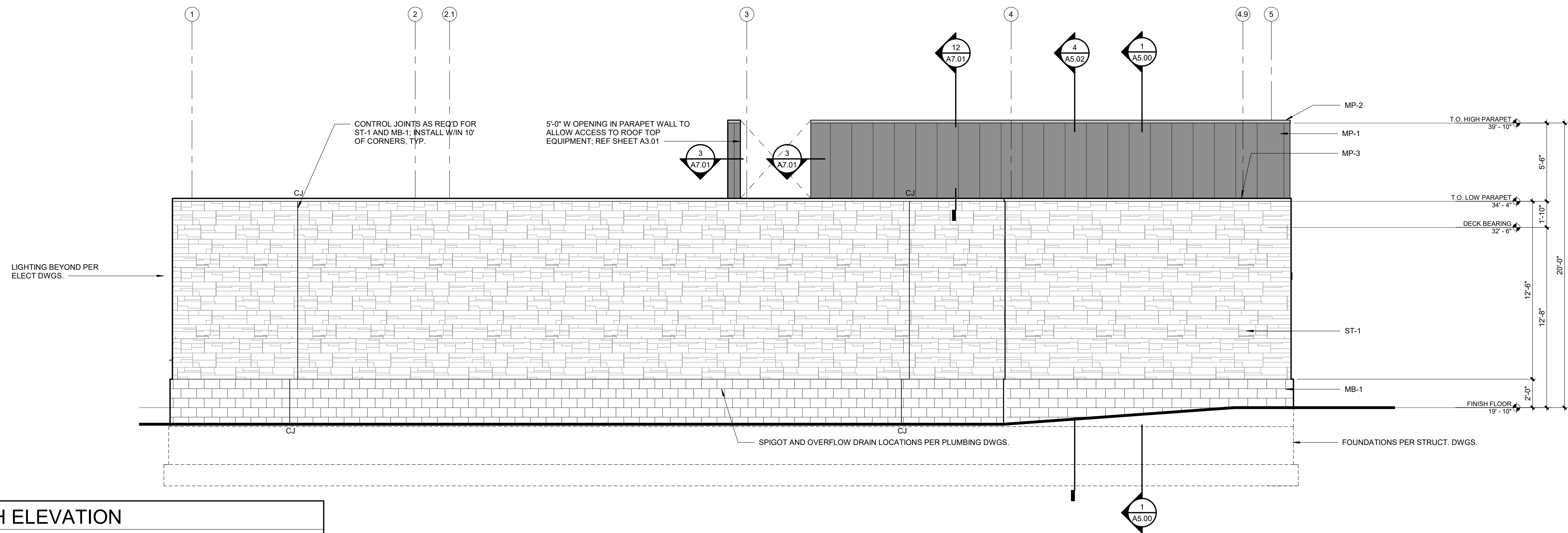
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ET TITLE

EXTERIOR ELEVATIONS

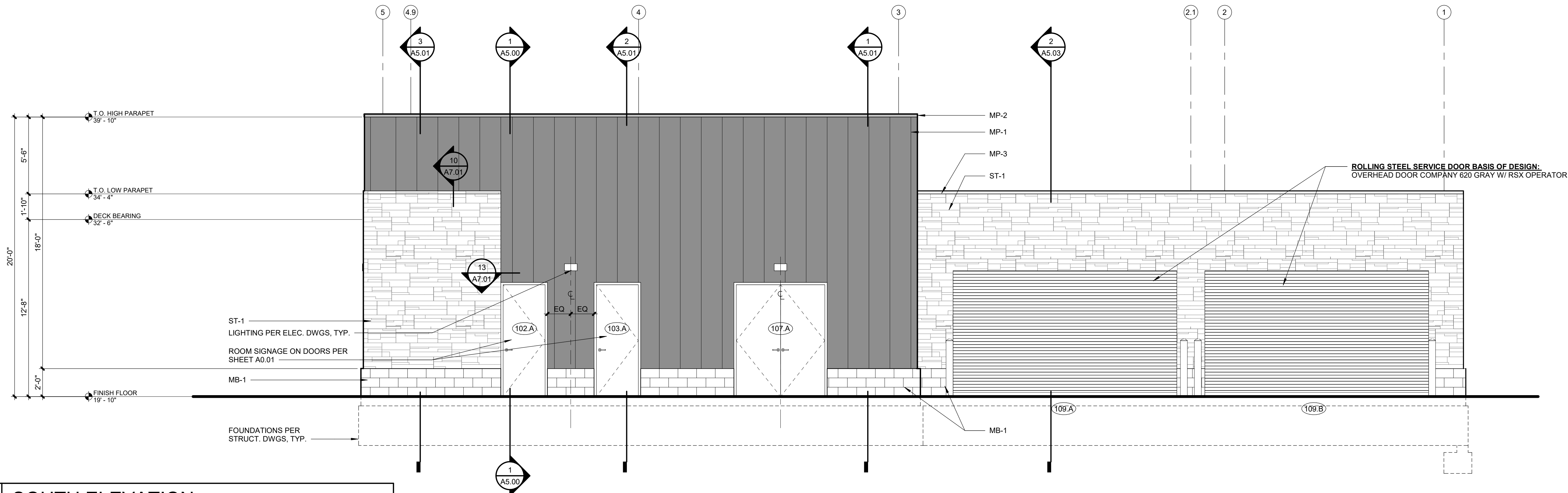
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A4.02



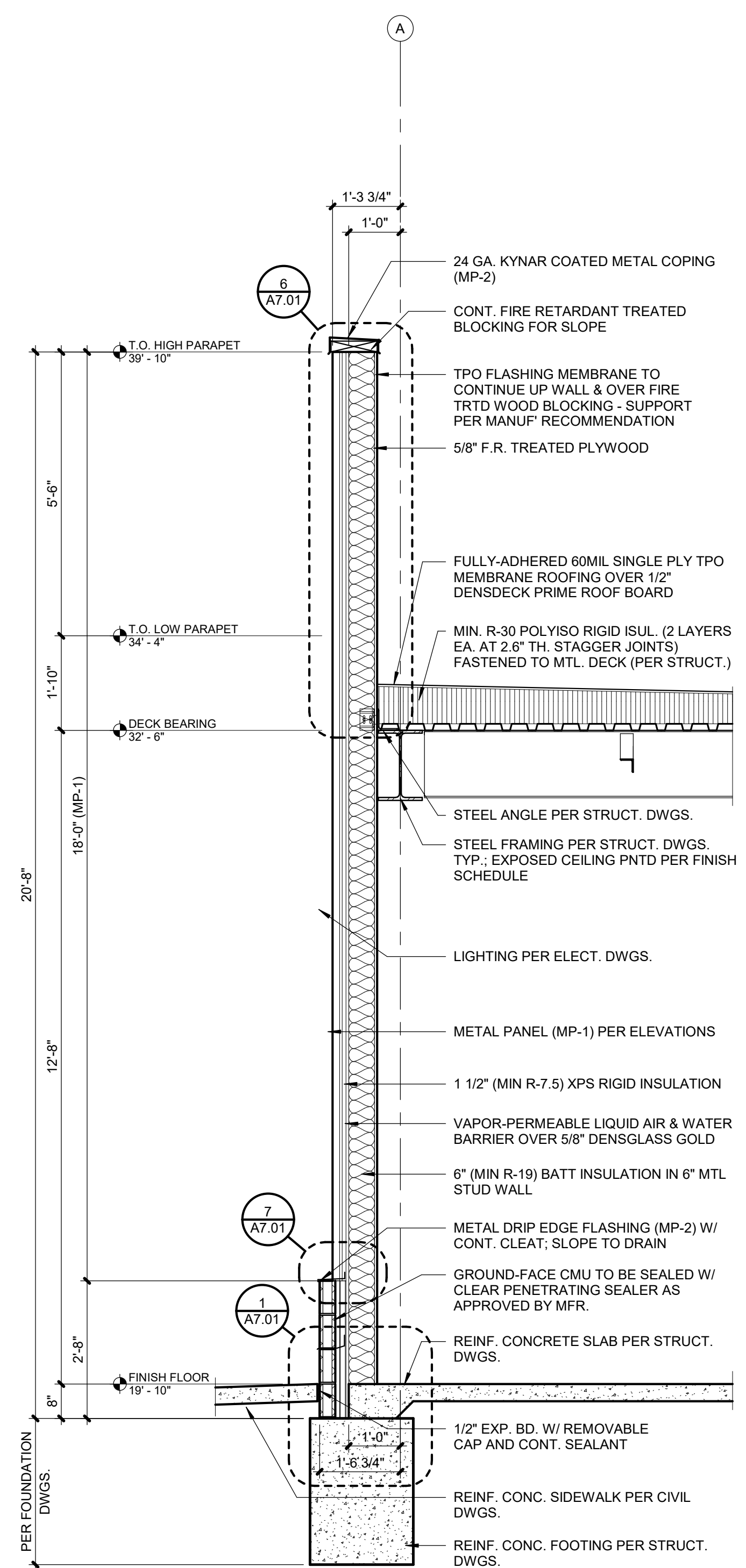
2 | NORTH ELEVATION

A4.02	SCALE : 1/4" = 1'-0"
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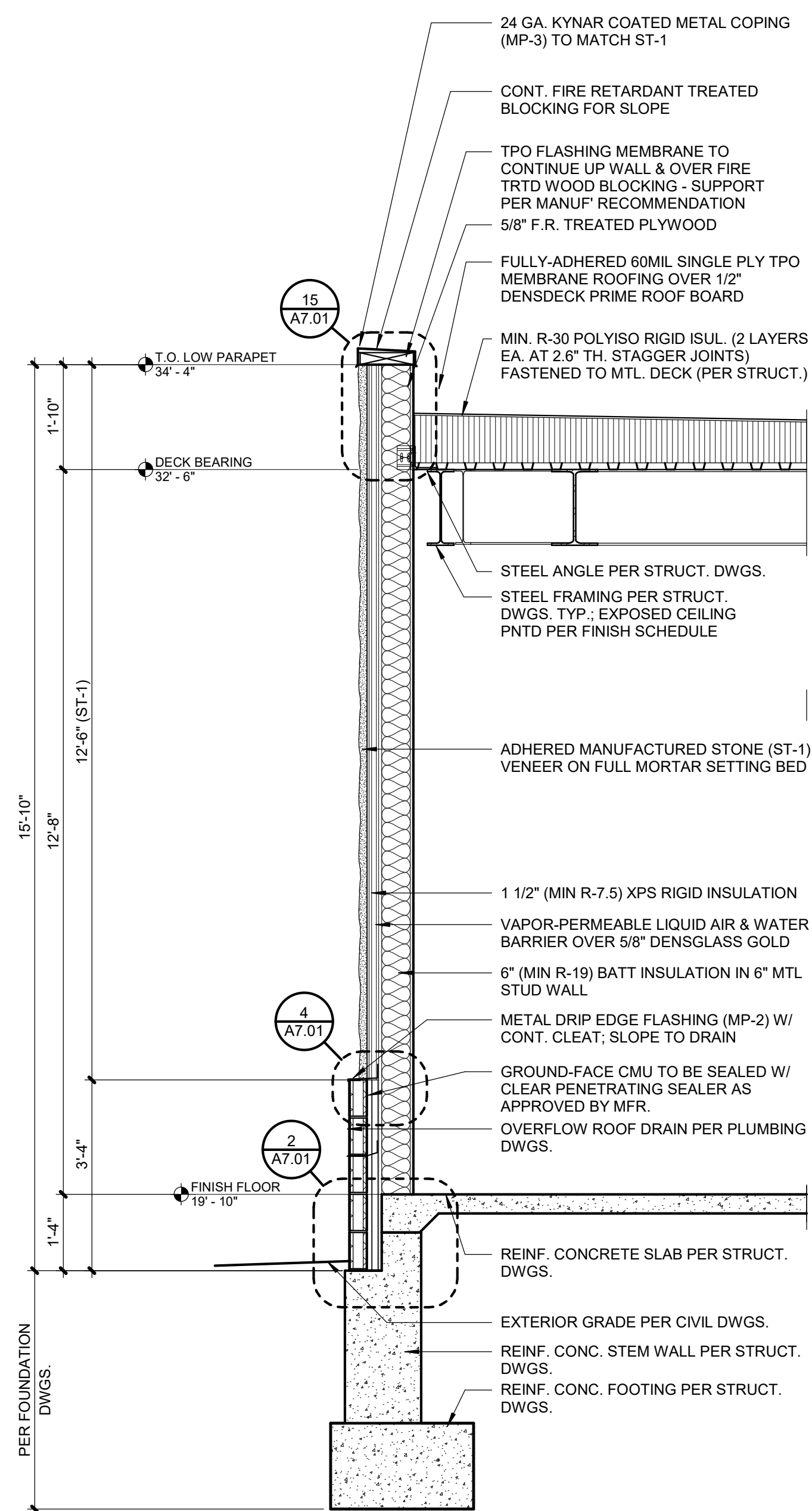
1 | SOUTH ELEVATION

A4.02	SCALE : 1/4" = 1'-0"
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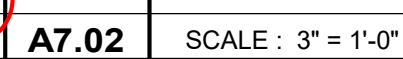
1	WALL SECTION
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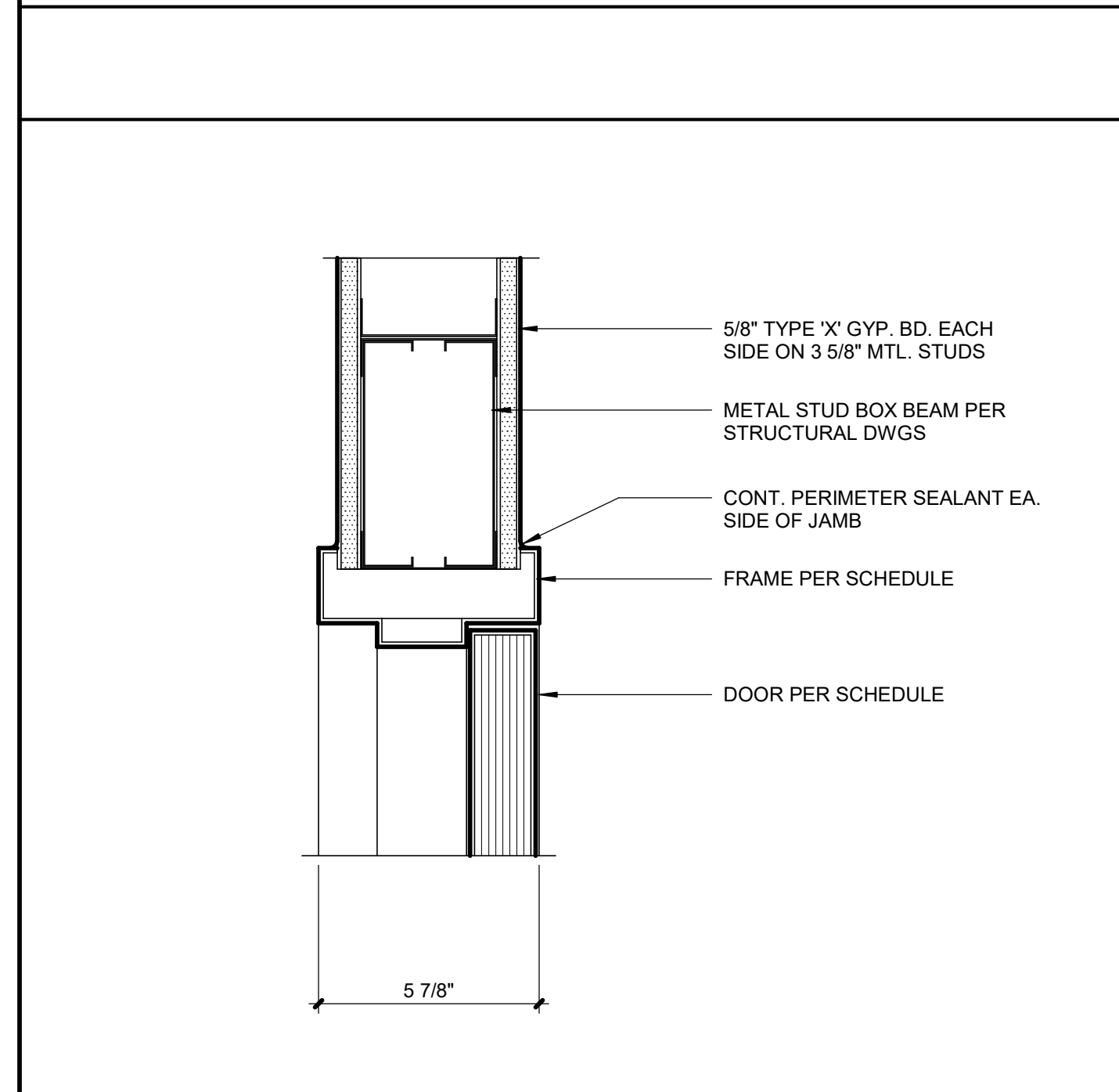
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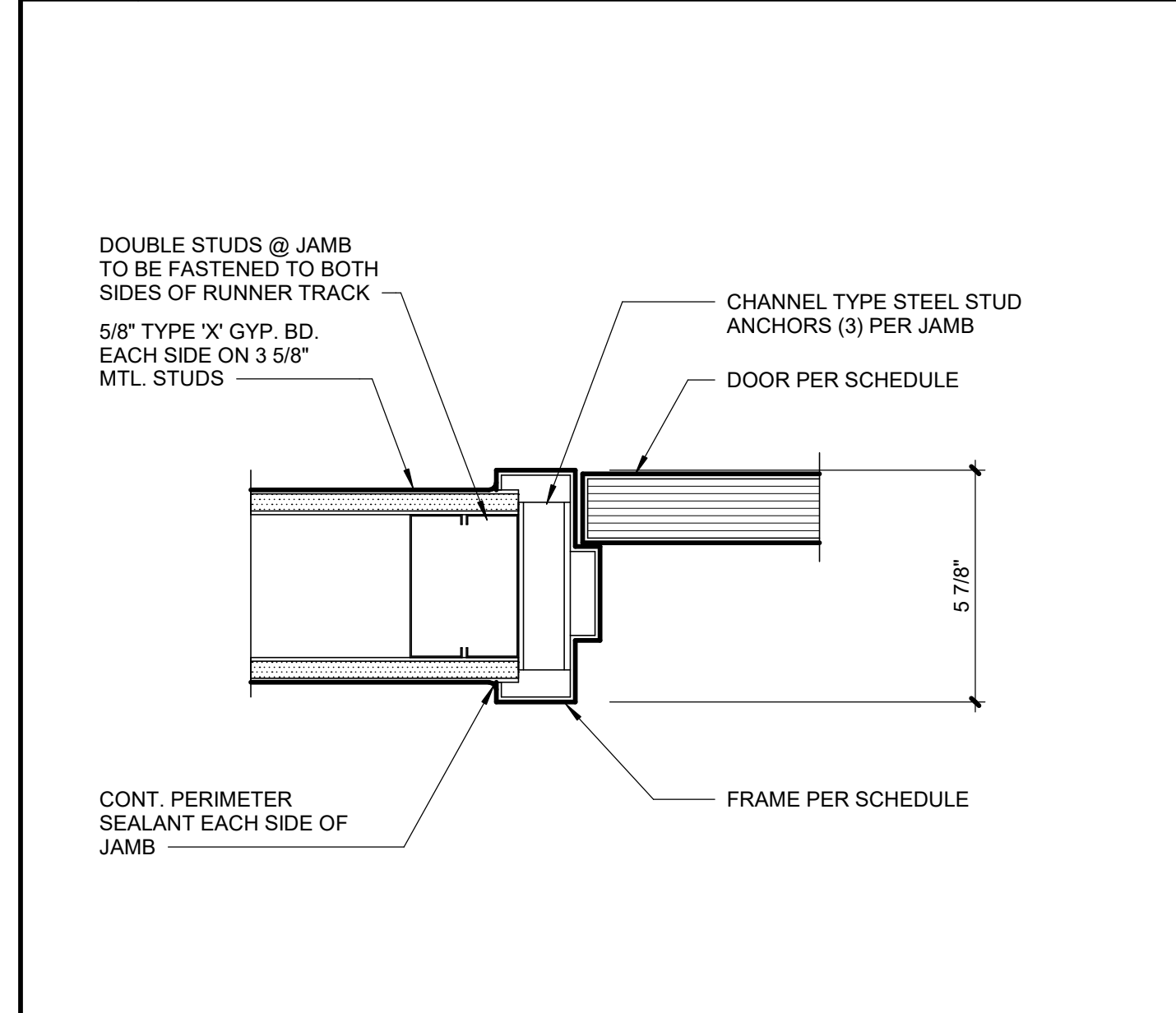
1	WALL SECTION
A5.03	SCALE : 1/2" = 1'-0"



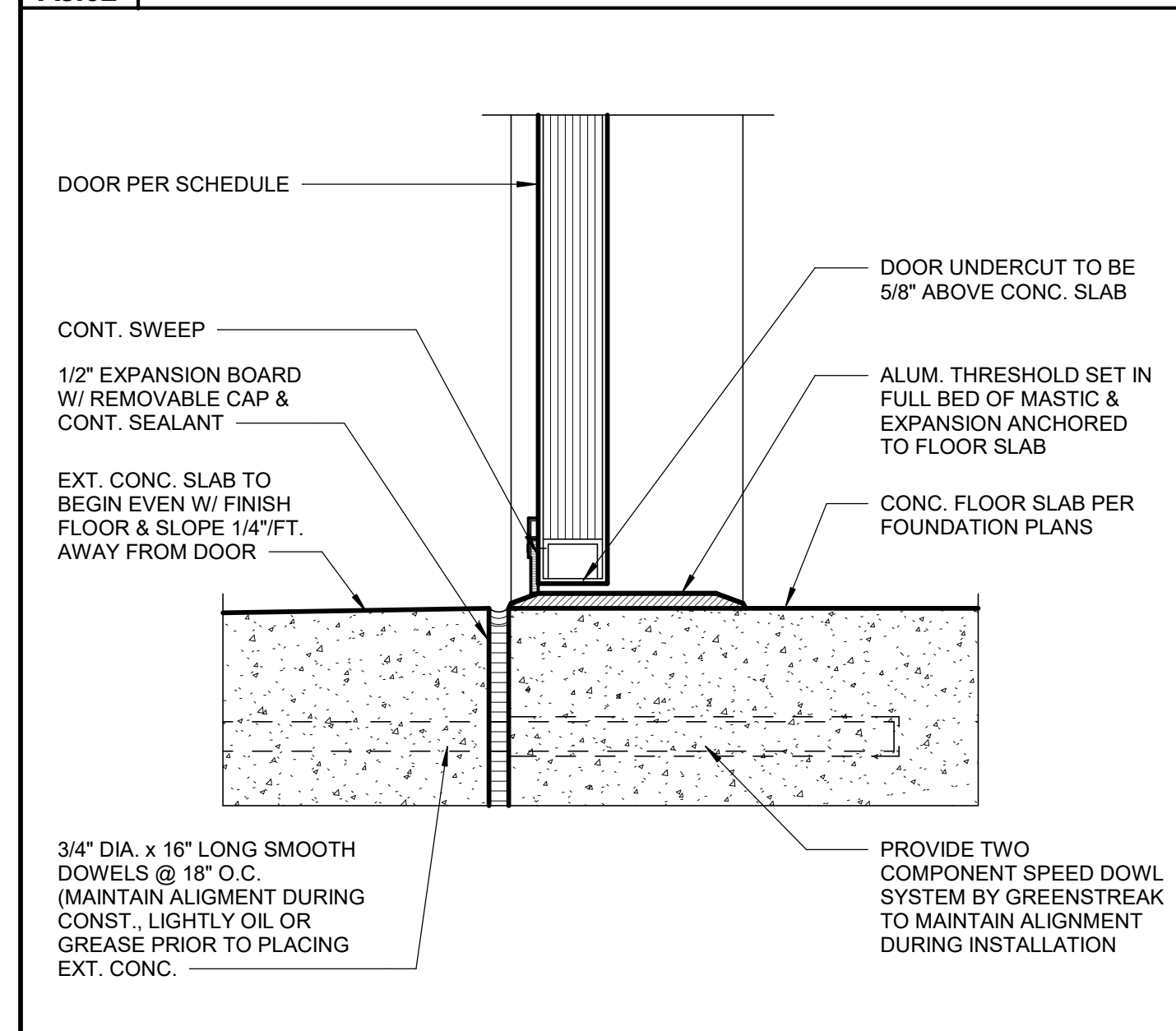




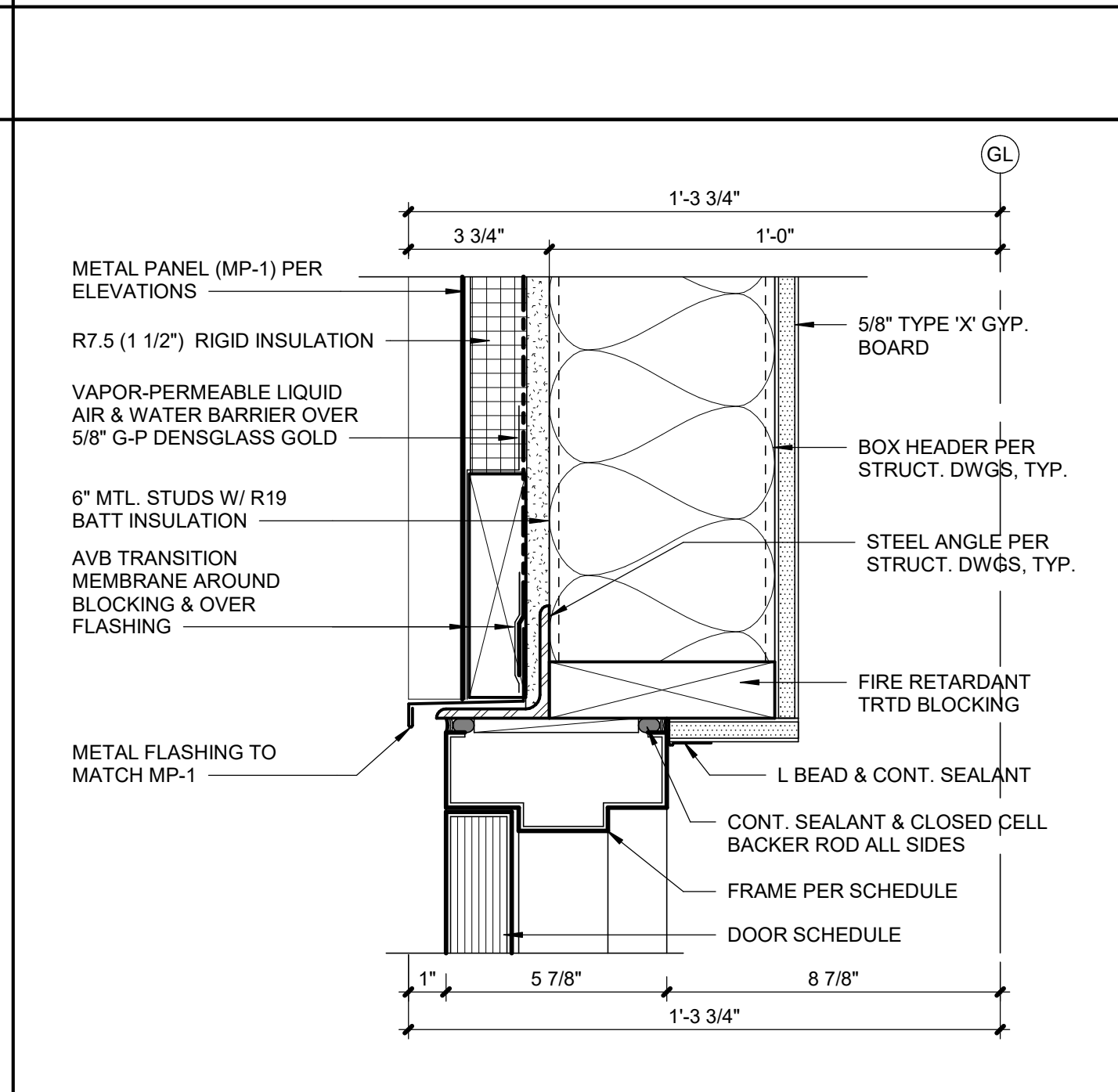
19	DOOR HEAD DETAIL
A8.02	SCALE : 3" = 1'-0"



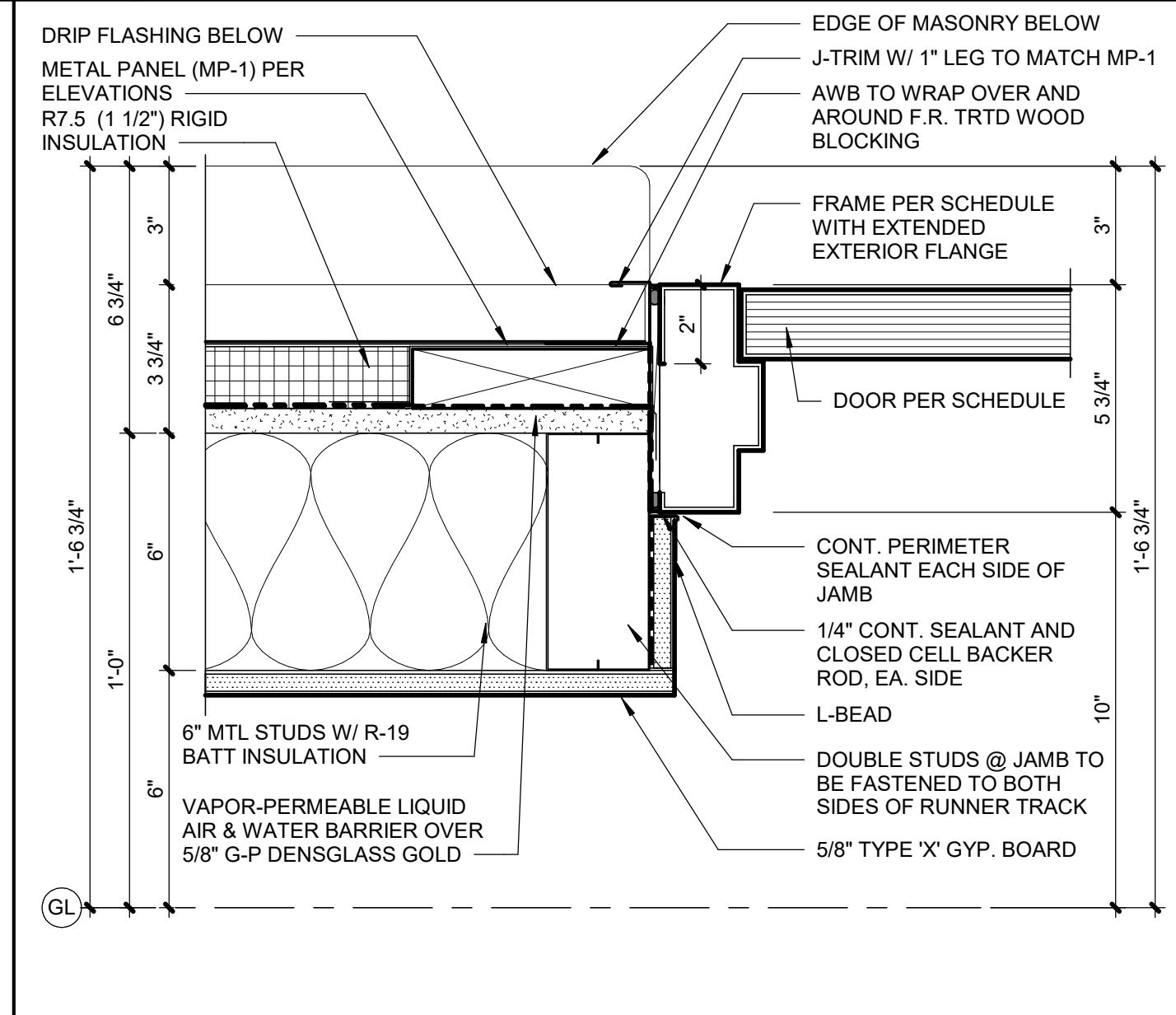
18	DOOR JAMB DETAIL
A8.02	SCALE : 3" = 1'-0"



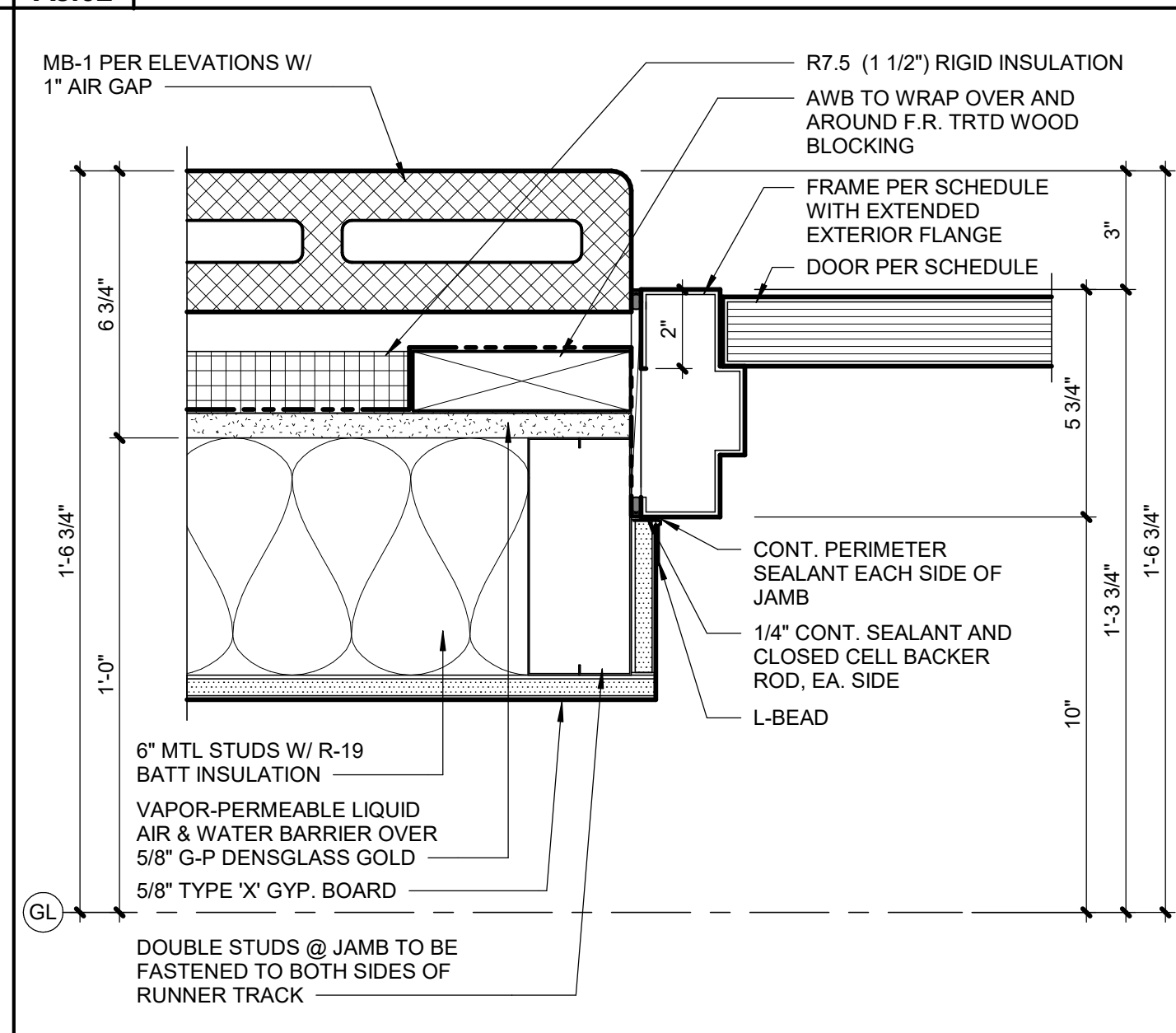
17	SILL DETAIL
A8.02	SCALE : 3" = 1'-0"



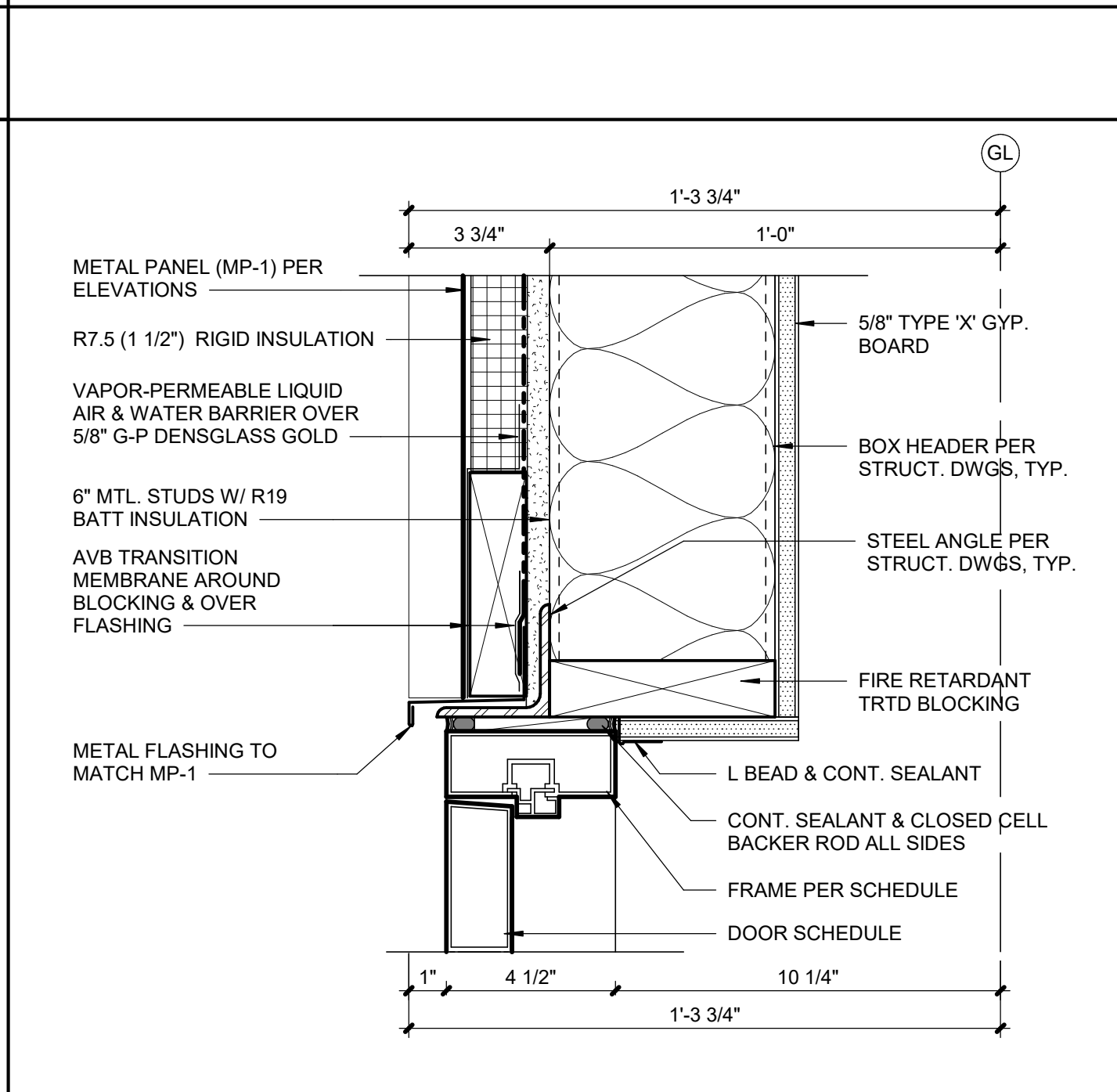
15	DOOR HEAD DETAIL
A8.02	SCALE : 3" = 1'-0"



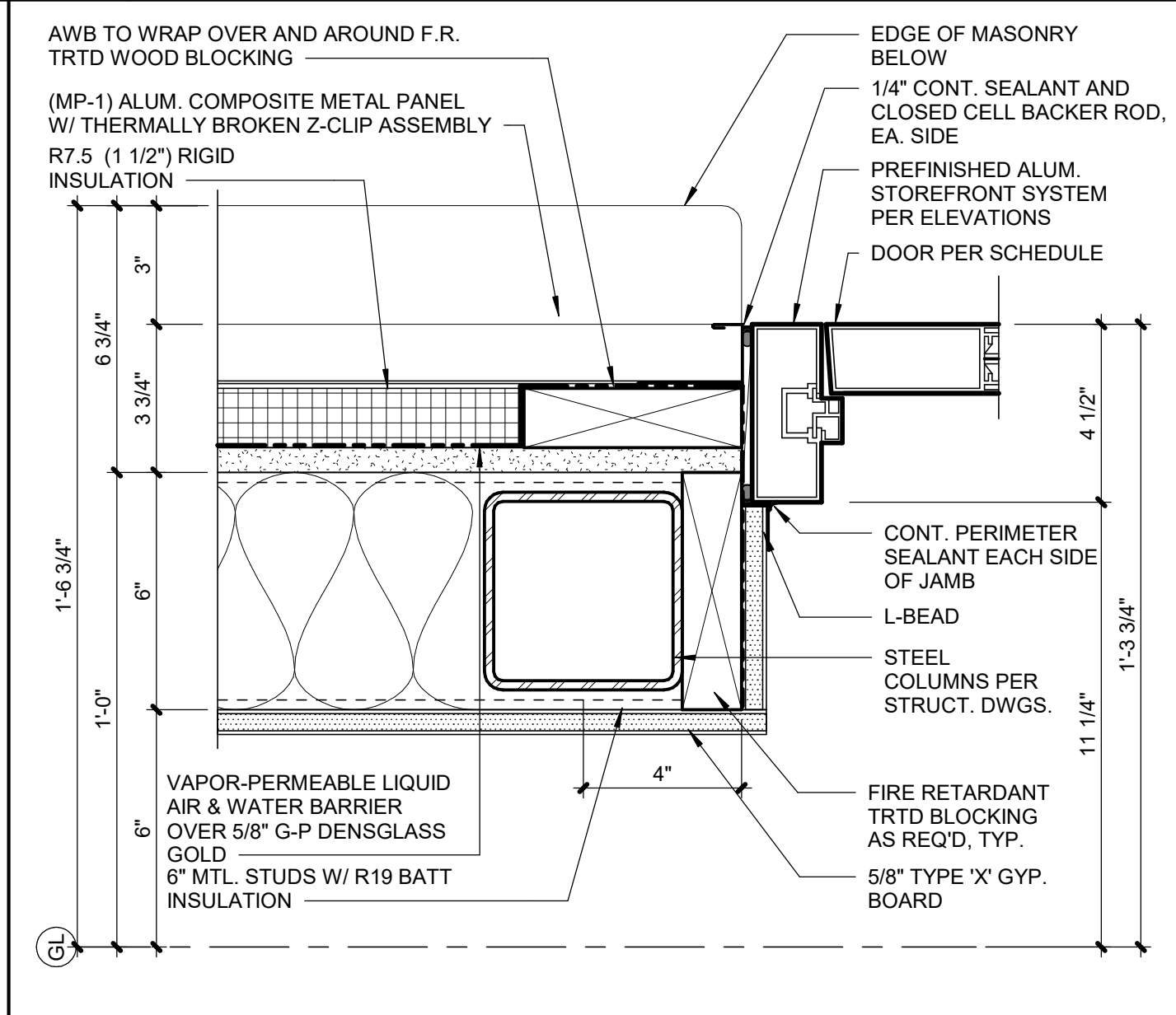
14	DOOR JAMB DETAIL
A8.02	SCALE : 3" = 1'-0"



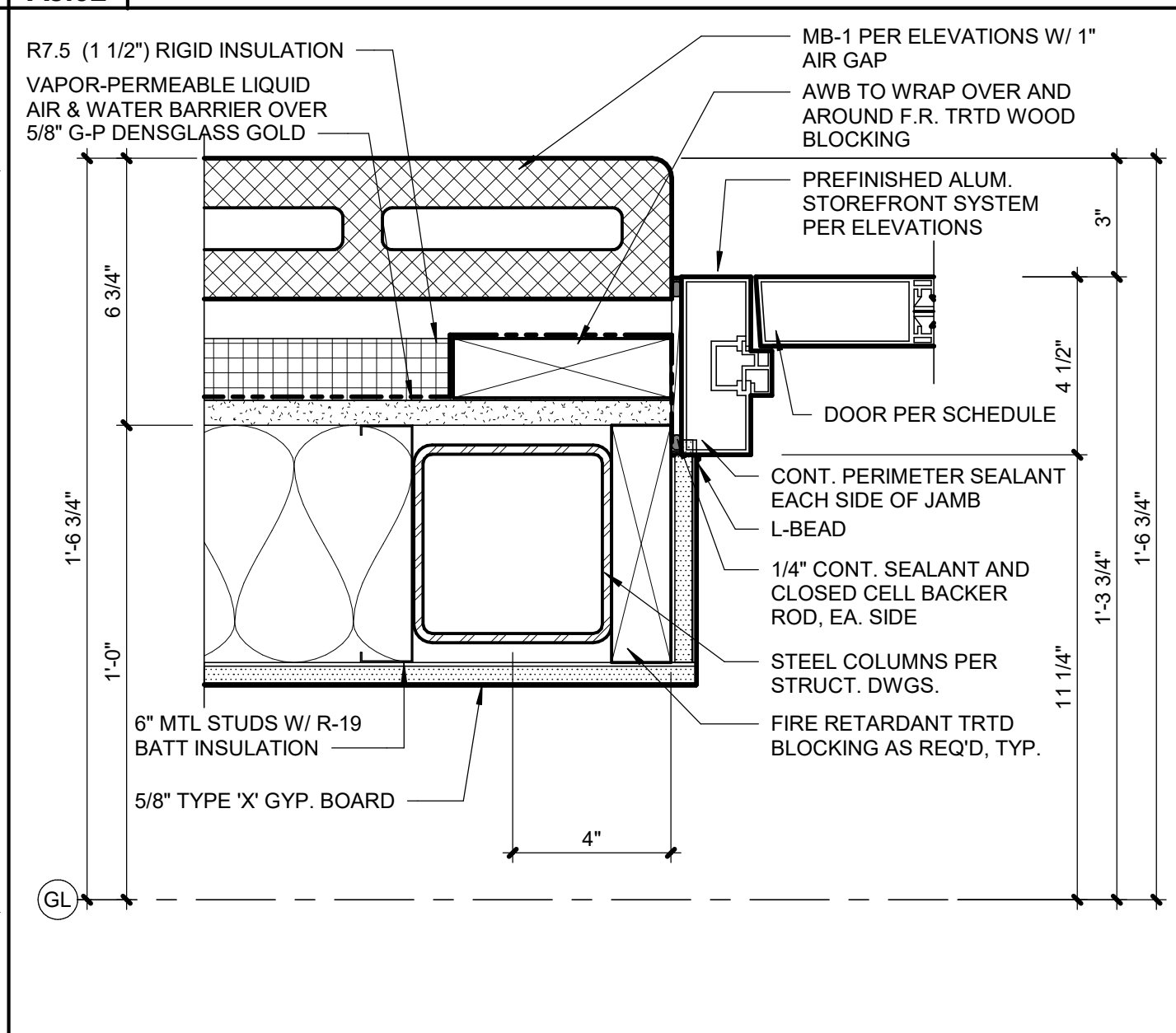
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A8.02	SCALE : 3" = 1'-0"



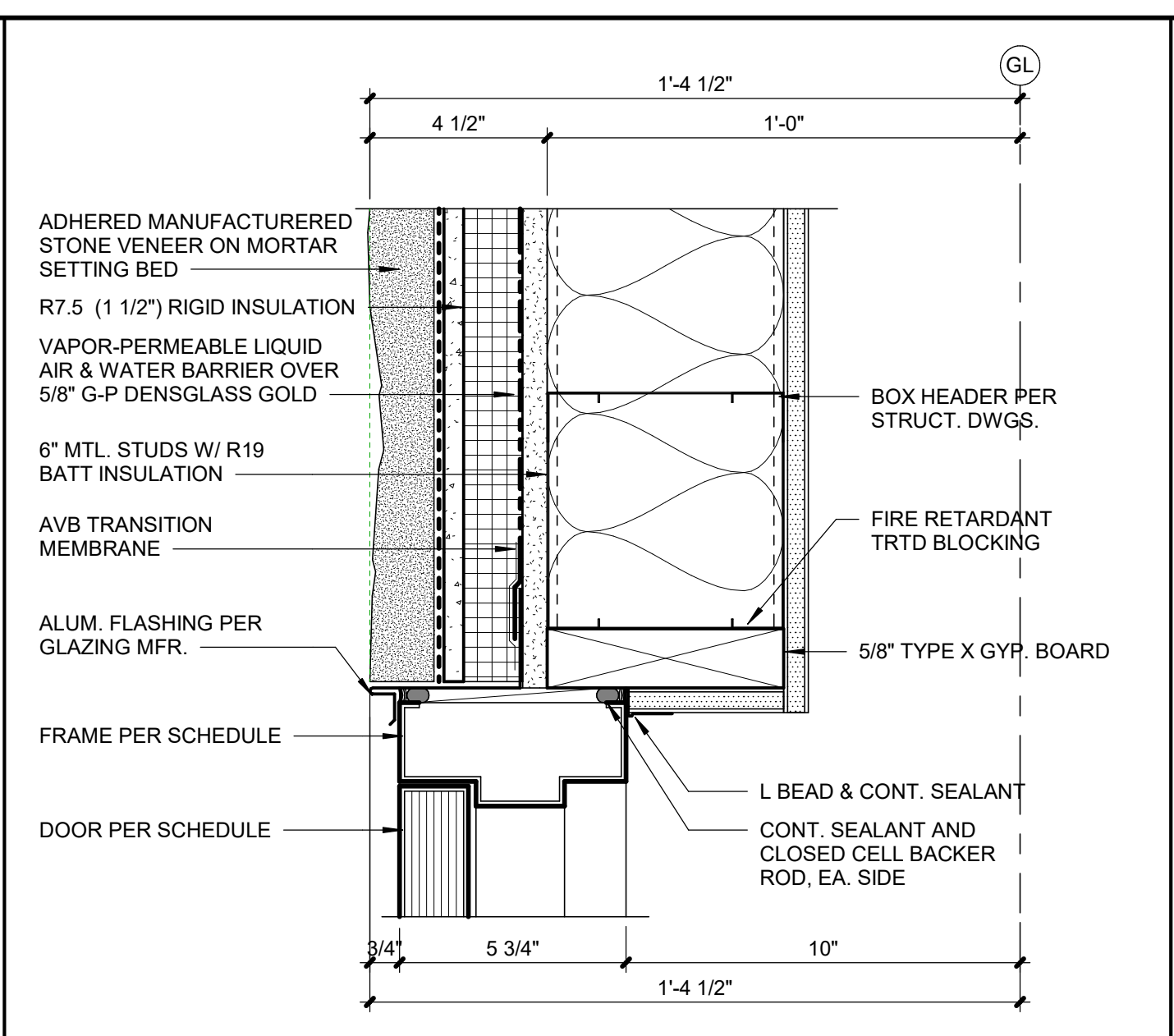
11	DOOR HEAD DETAIL
A8.02	SCALE : 3" = 1'-0"



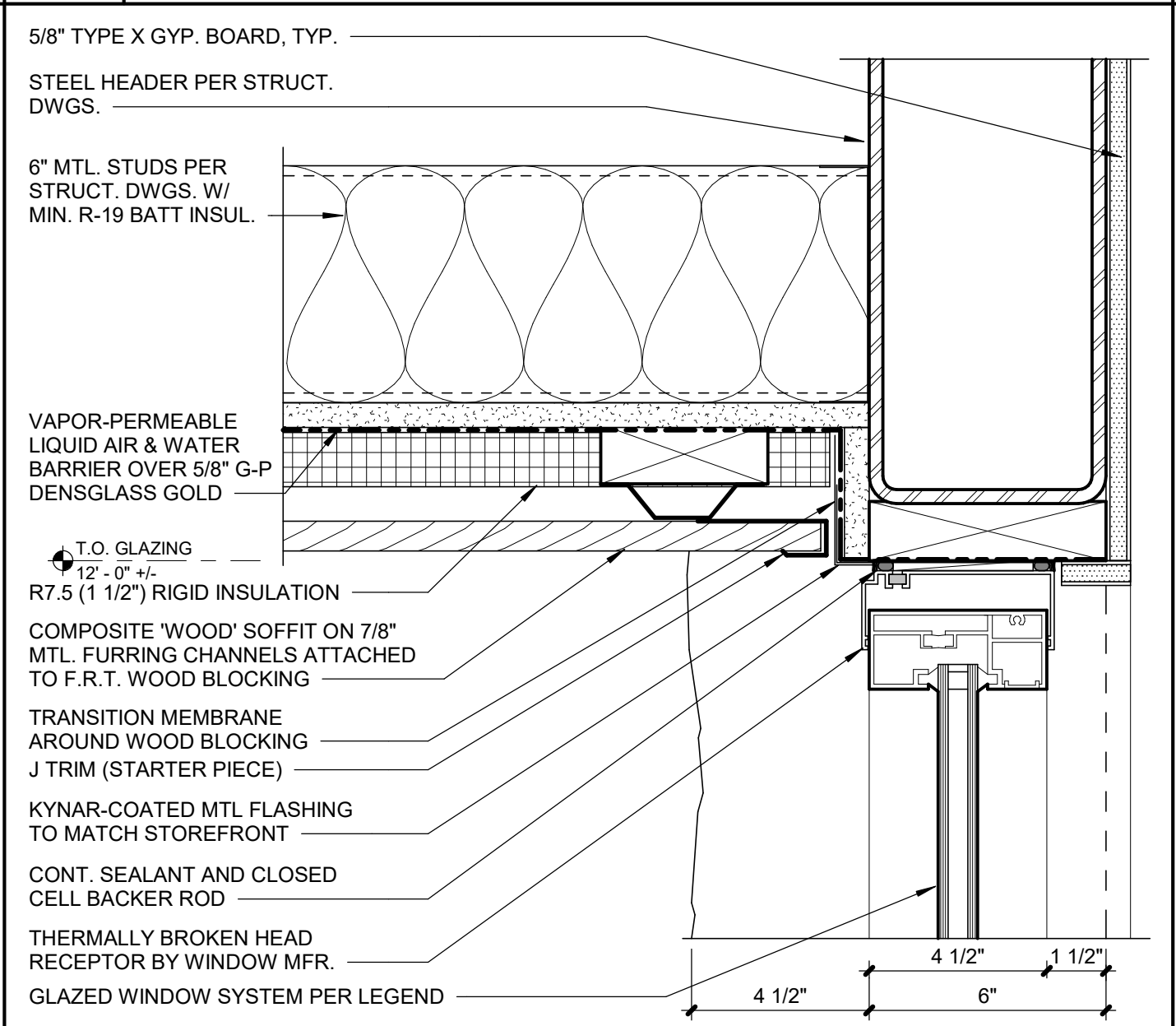
10	DOOR JAMB DETAIL
A8.02	SCALE : 3" = 1'-0"



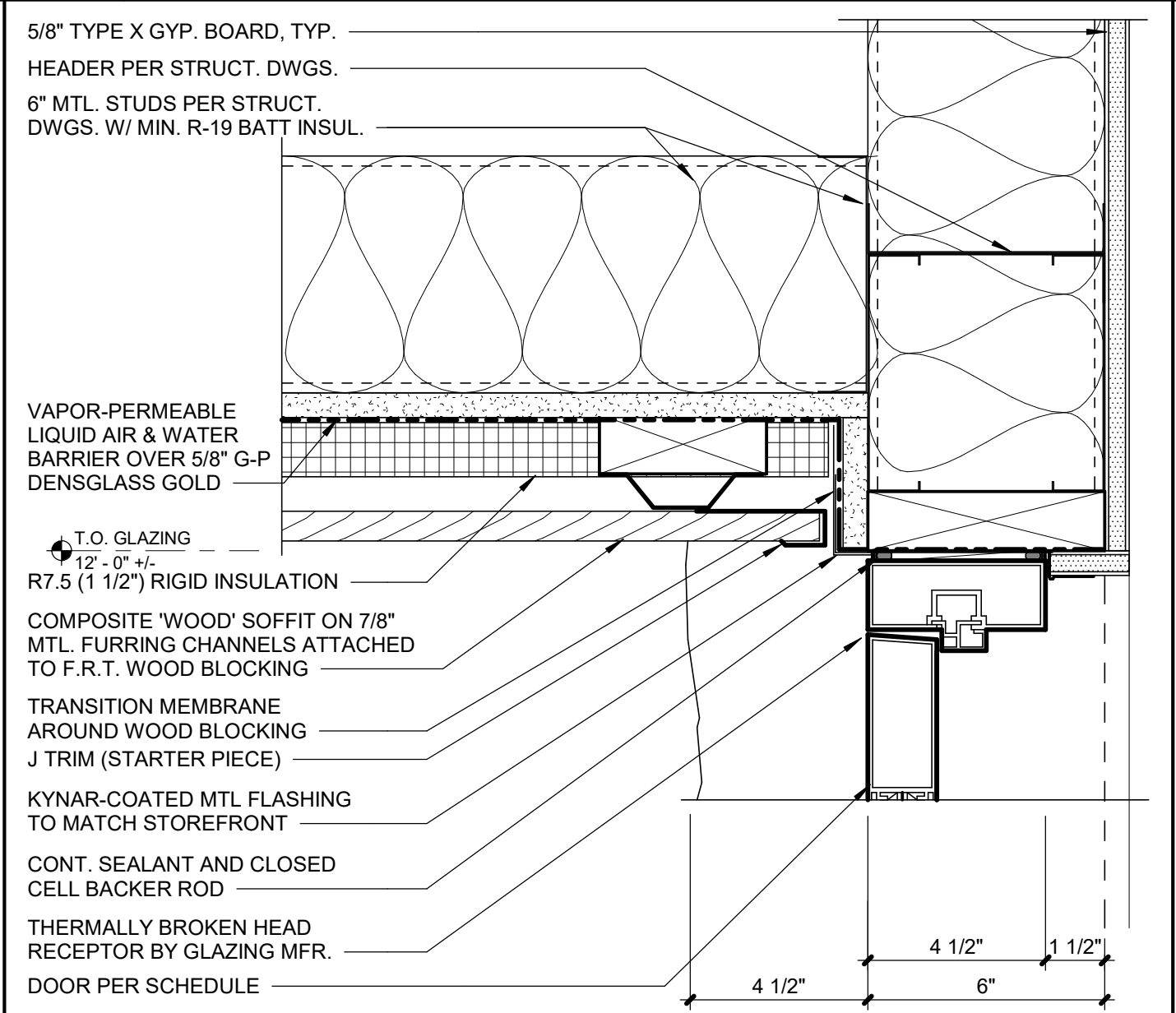
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A8.02	SCALE : 3" = 1'-0"



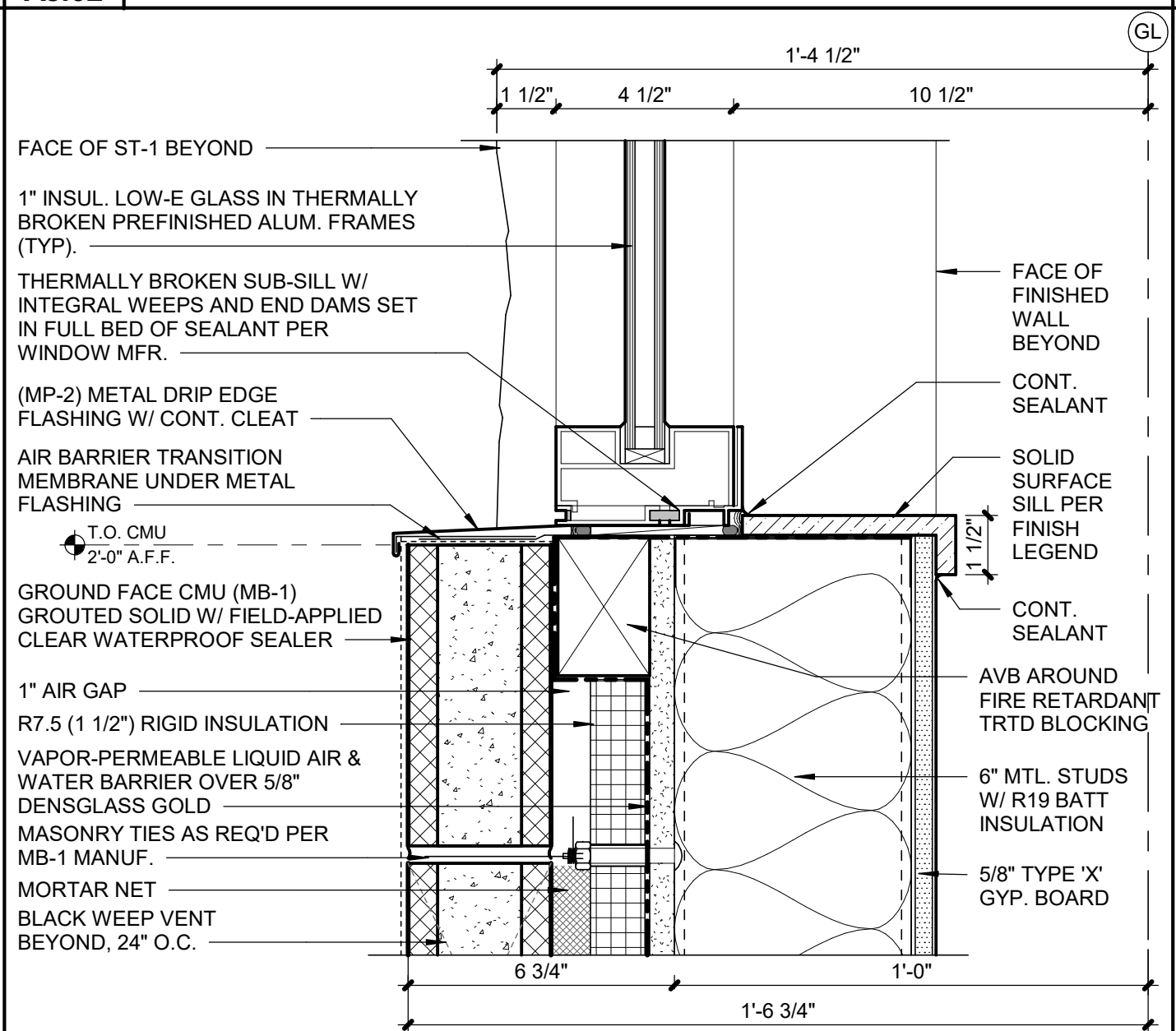
8	WINDOW HEAD DETAIL
A8.02	SCALE : 3" = 1'-0"



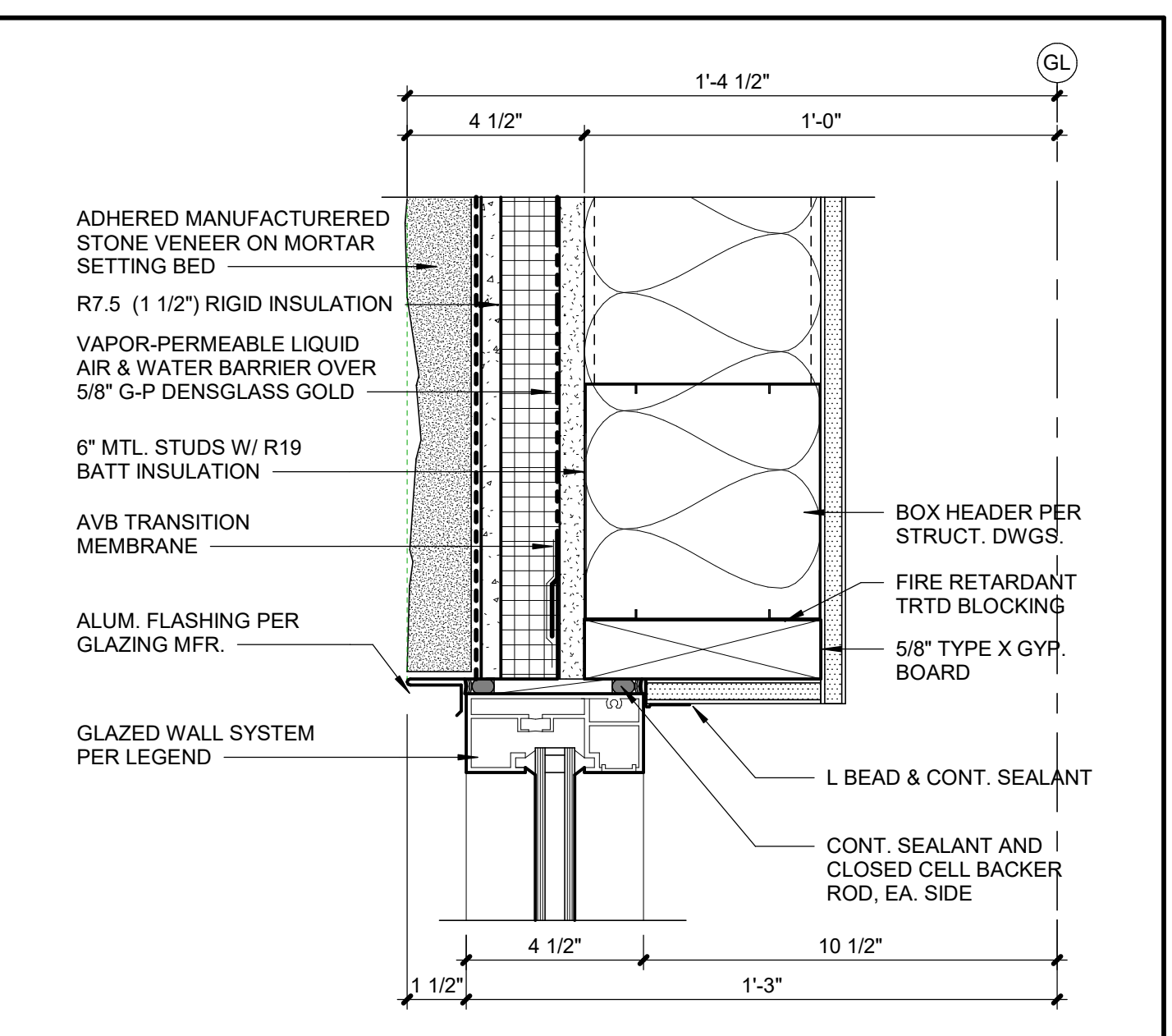
7	SOFFIT DETAIL
A8.02	SCALE : 3" = 1'-0"



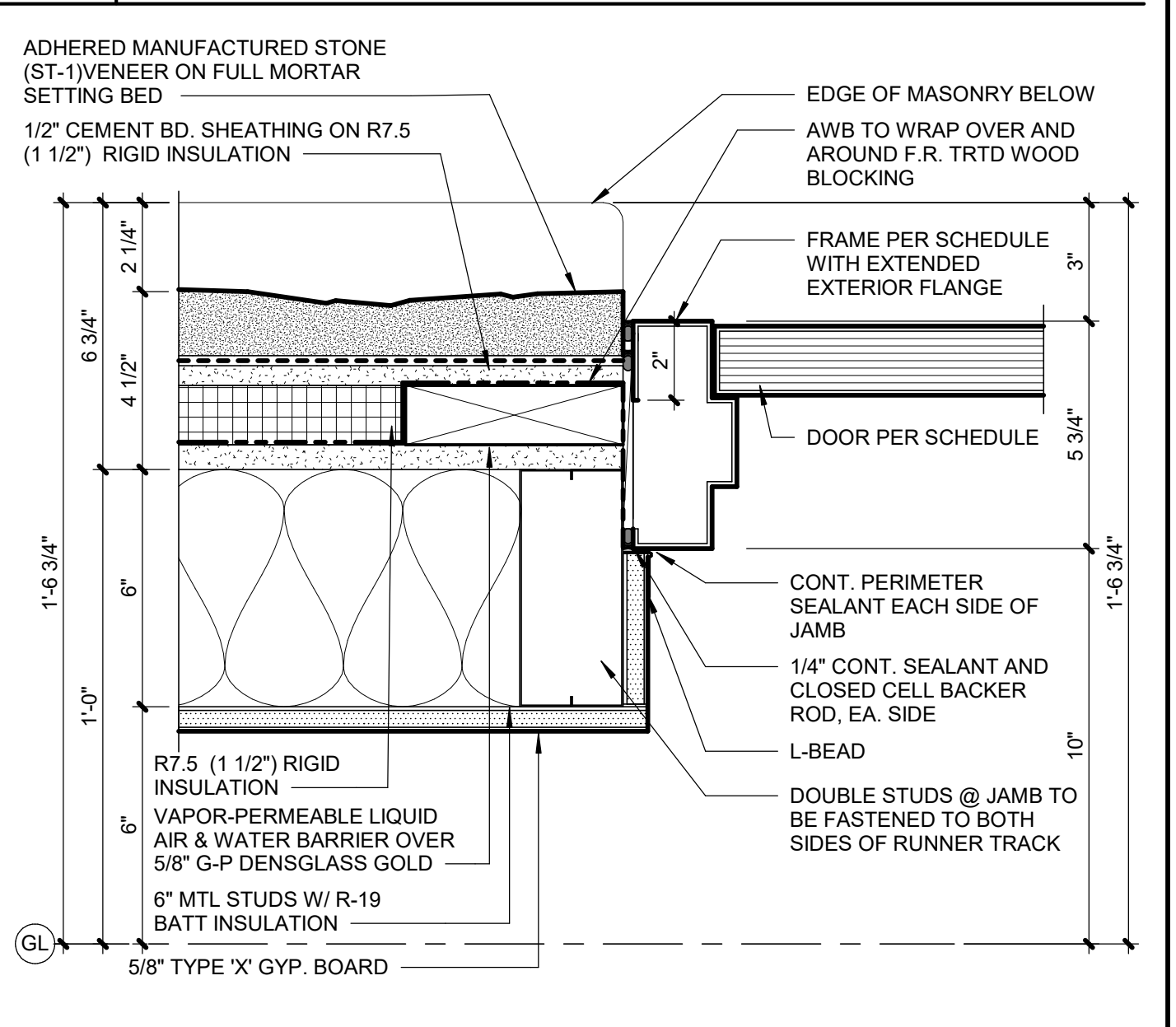
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A8.02	SCALE : 3" = 1'-0"



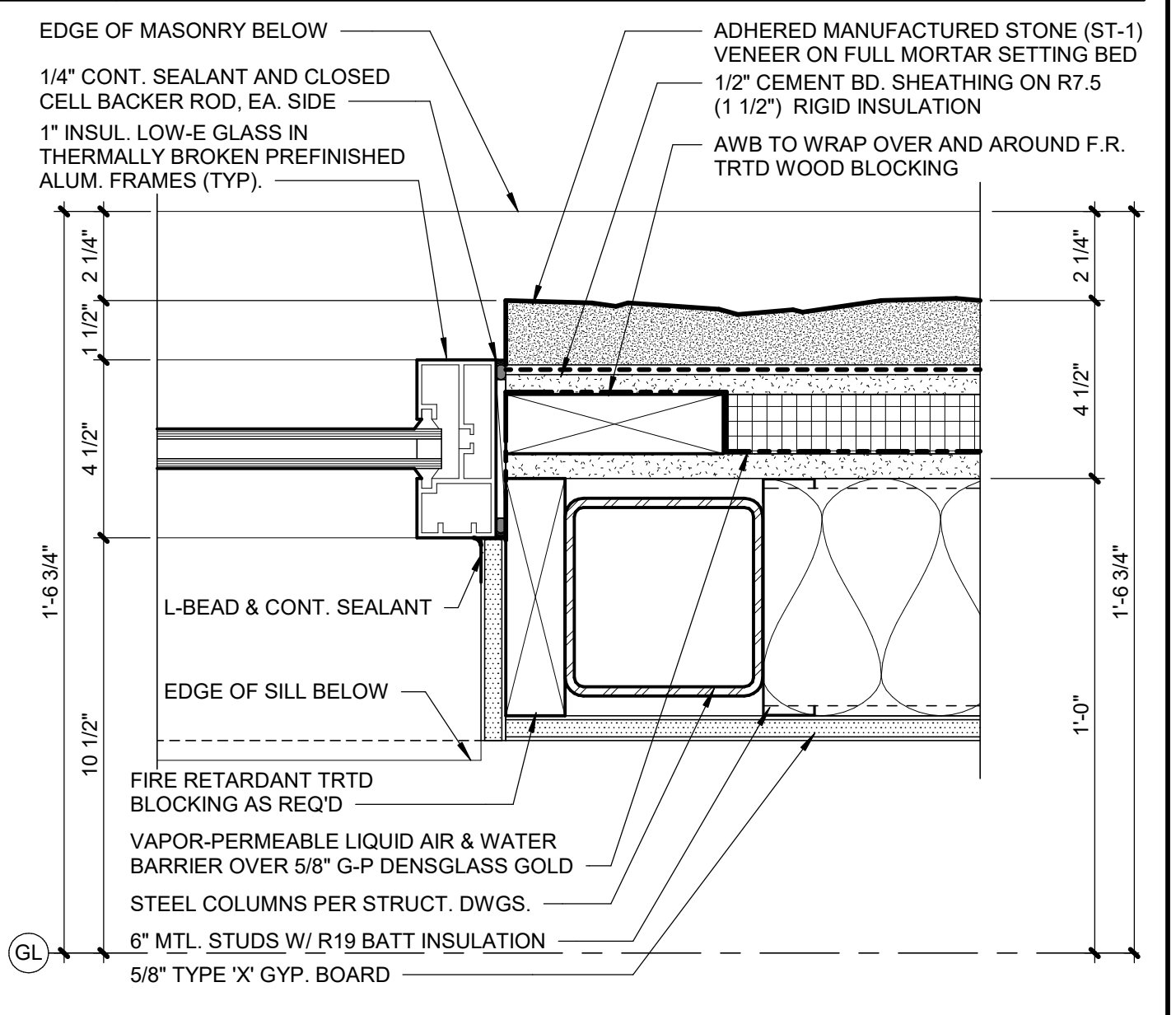
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A8.02	SCALE : 3" = 1'-0"



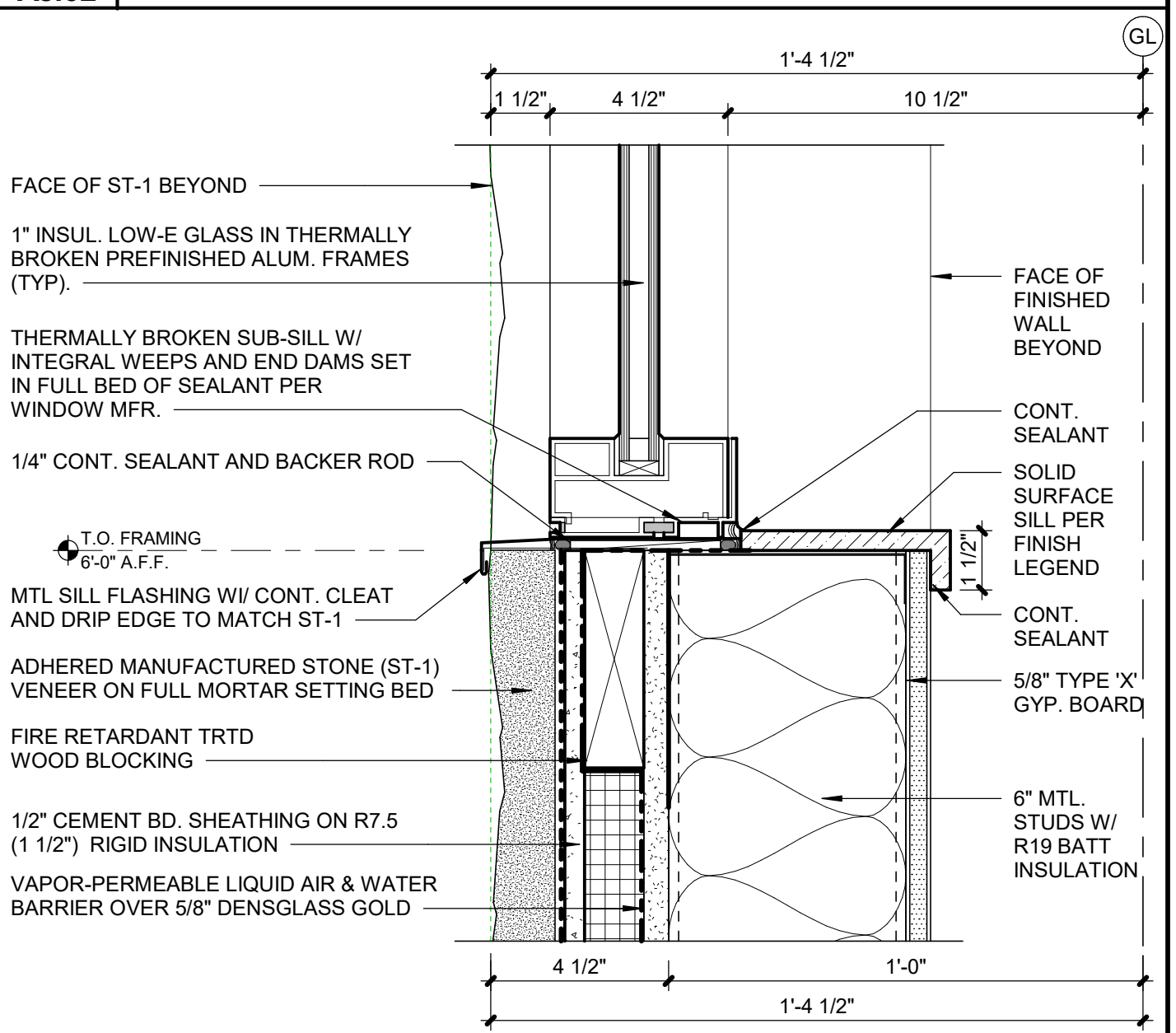
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A8.02	SCALE : 3" = 1'-0"



3	DOOR JAMB DETAIL
A8.02	SCALE : 3" = 1'-0"



2	WINDOW JAMB DETAIL
A8.02	SCALE : 3" = 1'-0"



1	WINDOW SILL DETAIL
A8.02	SCALE : 3" = 1'-0"



Project No.:	19050.02
Date:	04.29.22
Issued For:	PERMIT

[illegible]

REGISTRATION



4.29.22

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON

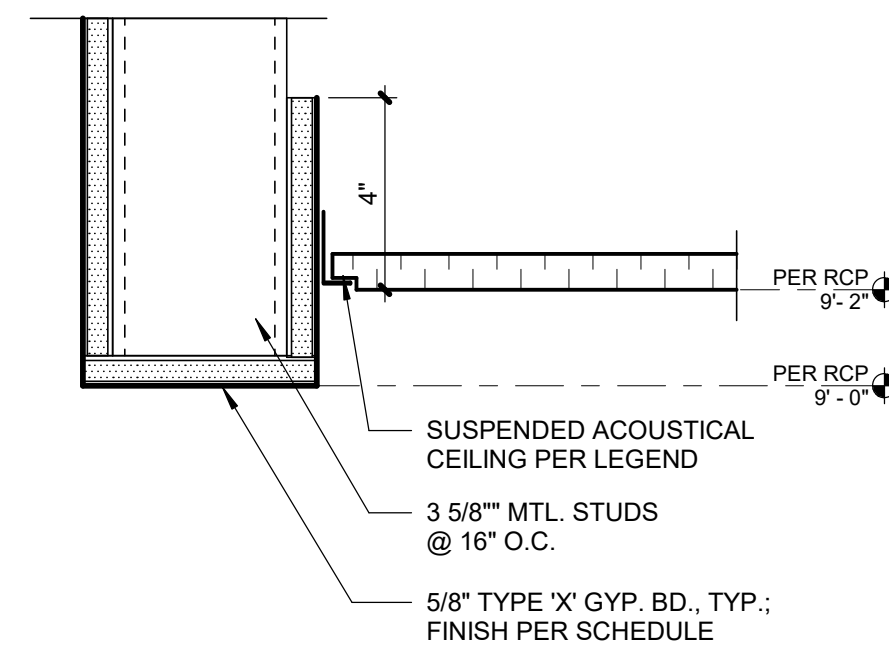
787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
913.498.1550
www.finklewilliams.com

EET TITLE

REFLECTED
CEILING PLAN

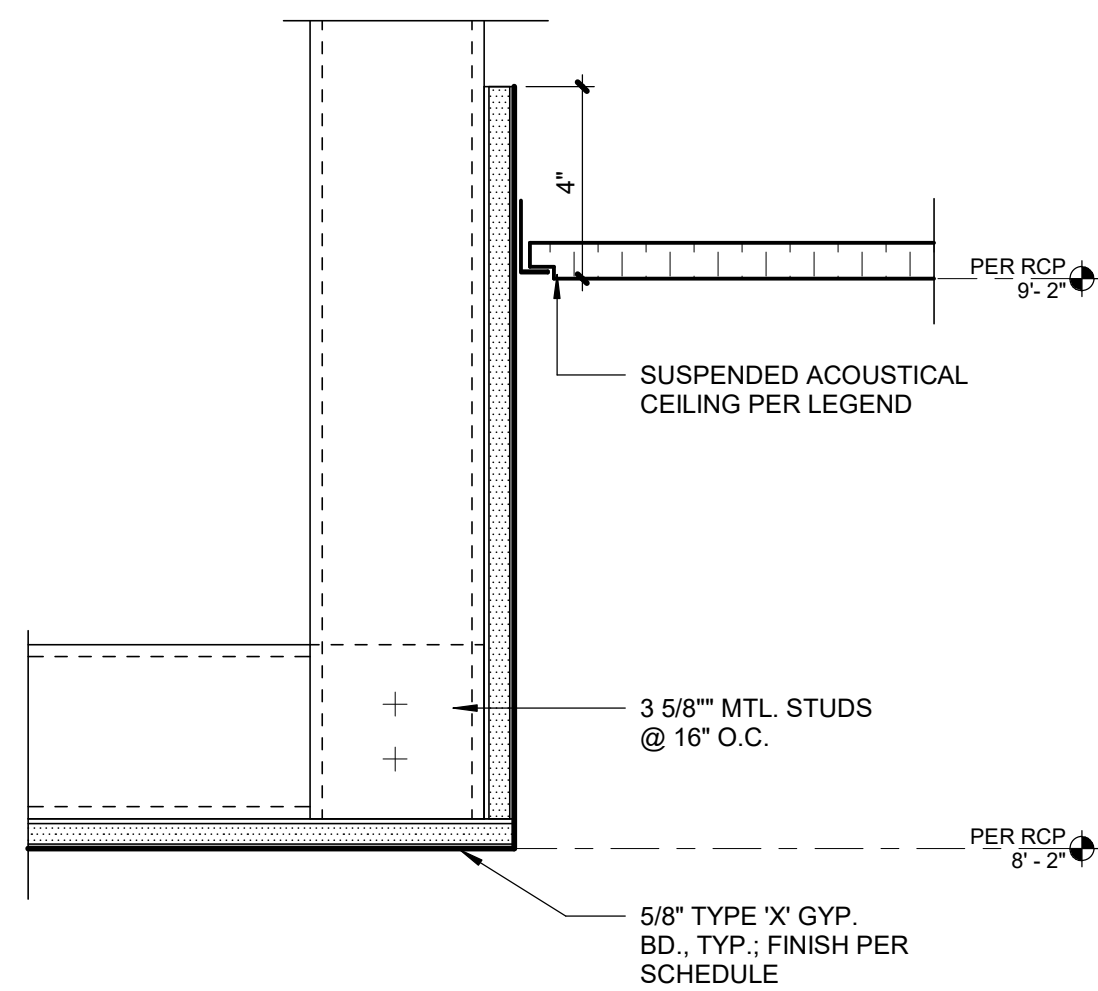
SHEET NUMBER

A9.01



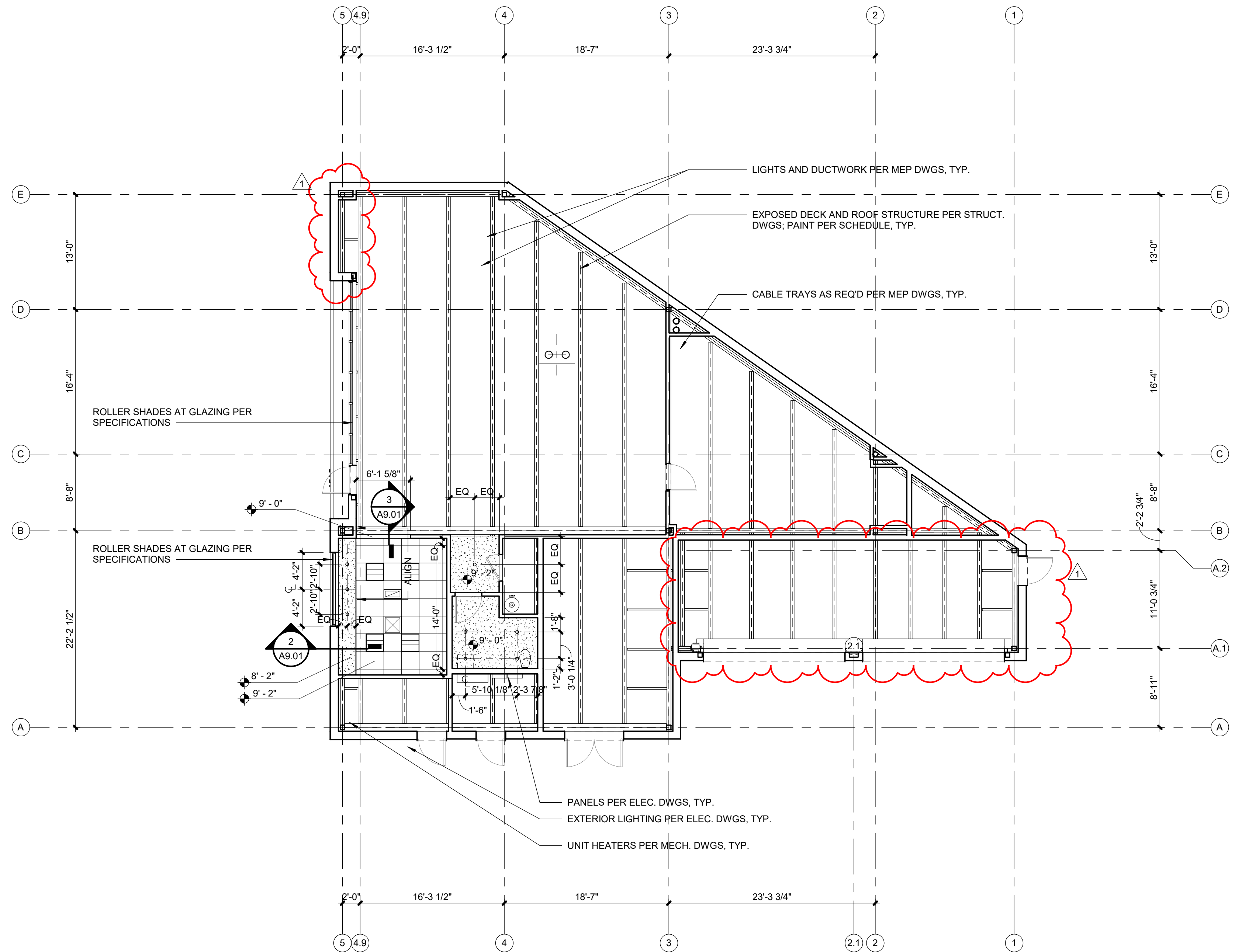
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A9.01	SCALE : 3" = 1'-0"
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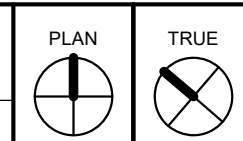
2 | CEILING TRANSITION DETAIL

A9.01	SCALE : 3" = 1'-0"
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1 REFLECTED CEILING PLAN

A9.01	1/8" = 1'-0"
-------	--------------



C:\Users\Jessica\Documents\Paragon Star HUB-Revised R21 Central ireedshultz@finklewilliams.com.mrt

Project No.:	19050.02
Date:	04.29.22
Issued For:	PERMIT

[illegible]

REGISTRATION



PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT / LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



SHEET TITLE

PROJECT SPECIFICATIONS

SHEET NUMBER

A11.12

C:\Users\Daniel.Nagall\Documents\Revit\Local2-C036-Paragon-Star-HUB-Building-Lee's-Summit_MO_dragon1.vnt

Governing Building Code: 2018 IRC

Design Specifications:

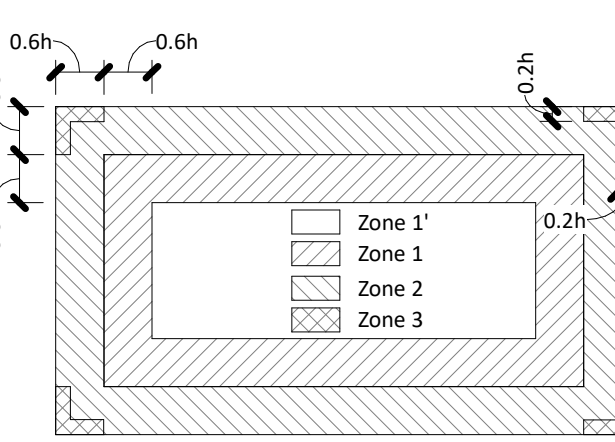
- ASCE 7-16
- ACI 318-14
- ACI 308-16
- AISC 360-15
- AISI S100-16

Design Loads:

Roof Loads:		Wind Loads:		Seismic Loads:	
• Dead Load:	20 psf	• Occupancy:	II	• Ie:	1.0
• Solar Dead Load:	10 psf	• Velocity:	109 mph	• Ss:	0.099 g
• Live Load:	20 psf	• Exposure:	C	• S1:	0.068 g
		• Hw:	1.0	• Site Class:	0
				• Sds:	0.105 g
				• Sd1:	0.109 g
				• Sd2:	0.105 g
				• Sd3:	0.105 g
				• Sd4:	0.105 g
				• Sd5:	0.105 g
				• Sd6:	0.105 g
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Design Loading Notes:

- Dead load shown includes collateral load of 3 psf.
- See components and cladding table for design wind pressures.



Components & Cladding Wind Zone Diagram

- The components & cladding (C&C) wind pressures shown assume a mean roof height of 15'-10' above finished floor elevation. All components shall be designed to resist the provided pressures, which shall be clearly defined on all shop drawings. Refer to wind zone diagram for zone locations. Plus and minus signs signify pressures acting toward and away from surfaces, respectively.
- The components & cladding wind zone diagram is generalized to show all possible conditions. The diagram shape may not match the specific layout for this project.
- Internal Pressure Coefficient = +0.18

General:

- The structural systems shown on these documents have been designed for the final, in place usage of the structure based on the intended occupancy and code requirements. While general constructability has been considered, the structural systems have not been designed to accommodate specific construction means and methods that might be utilized by the Contractor.
- The Contractor shall field verify all existing dimensions prior to fabrication.

- The Contractor shall notify the Engineer of any observed discrepancies in dimensions, detailing, or other items as shown on the plans or specified prior to proceeding with work relating to said discrepancies.

- Post-installed anchors shall only be used where specified in the construction documents or approved by the engineer.

- The Contractor shall obtain written approval from the Engineer prior to installing post-installed anchors for misplaced-placed anchors.

- Care shall be taken with placing post-installed anchors to avoid damaging existing reinforcement.

- The holes shall be drilled and cleared in accordance with the manufacturer's specifications.

- Post-installed anchors shall meet ACI 318 Appendix D criteria. The following are specified post-installed anchors:

- All adhesive anchoring systems referred to in these drawings shall be one of the following:
a. Hilti HIT HY 200 V3 / 1
b. Powers AC108 Gold
c. Simpson Strong-Tie SET-36
d. Or Approved Equivalent

- All screw anchors referred to in these drawings shall be one of the following:
a. Hilti H4-EZ
b. Powers Wedge Bolt+
c. Simpson Strong-Tie Titan HD
d. Or Approved Equivalent

Masonry:

- Mortar shall be Type S for all masonry work and must achieve a minimum compressive strength of 1800 psi at the 28-day test. Masonry units shall have a minimum strength of f'm = 2000 psi.
- Masonry grout shall be a coarse-type grout and must achieve a minimum compressive strength of 2000 psi at the 28-day test. Slump shall range from 5" minimum to 10" maximum. Grout materials and proportions shall conform to ASTM C476.

Structural Engineer Site Observations:

- The contract structural drawings & specifications represent the finished structure, and, except where specifically shown, do not indicate the method or means of construction. The Contractor shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, and sequence.

- The Engineer shall not have control nor charge of and shall not be responsible for, construction means, methods, techniques, sequences, or procedures, for safety precautions & programs in connection with the work, for the acts or omission of the Contractor, subcontractor, or any other persons performing any of the work, or for the failure of any of them to carry out the work in accordance with the contract documents.

- Periodic site observation by field representatives of BSE Structural Engineers LLC is solely for the purpose of determining if the work of the Contractor is proceeding in general accordance with the structural contract documents. This limited site observation should not be construed as exhaustive or continuous to check the quality or quantity of work, but rather periodic in an effort to guard the Client against defects or deficiencies in the work of the Contractor.

Slab On Grade:

- Welded wire fabric shall be supplied in sheets only. Rolls will not be permitted. (As required on construction documents.)
- Welded wire fabric shall be supported on chairs or blocks prior to concrete placement. Mesh shall not be hooked and pulled up during concrete placement. (As required on construction documents.)
- Welded wire fabric shall have end and edge laps of one full mesh plus "2" between cross wires. Wire all laps securely together.
- Welded wire fabric shall conform to ASTM A1064.

- Floor finish requirements: Slab-on-grade shall be finished to overall floor flatness, overall floor levelness, local floor flatness, and local floor levelness requirements as defined by the Owner. Coordinate requirements as required with G.C. prior to slab-on-grade placement. Floor finish requirements to be determined in accordance with ASTM E 1155.

Foundations:

- Foundations for this project have been designed in accordance with requirements set forth in a geotechnical report prepared by Terracon Consultants (Project R0215001) dated July 21, 2021. Continuous and individual footings have been designed for an allowable soil bearing value of 1500 psf. The Contractor shall refer to the Geotechnical Report for all requirements and recommendations pertinent to this project.
- Anchor rods shall conform to ASTM F1554 Gr. 36 (U.N.O.) and shall be located by means of a template. Provide a nut above and below template to assure proper vertical alignment.
- All foundations shall be square and level.
- Grout shall be dry and to prevent shrinkage, with a minimum compressive strength of 4000 psi. Grout below column base plates and precast panels as required. Thoroughly compact grout beneath base plates.

Concrete and Reinforcing Steel:

- Concrete mix designs shall meet the following requirements:

Location	Minimum Compressive Strength (psi)	Max. Aggregate Size	Max. Water/Cement Ratio	Slump (in.)	Air Entrainment (%)
Interior Slabs	4000	3/4"	0.50	4 ± 1	0
Exterior Slabs	4500	3/4"	0.45	4 ± 1	6 ± 1
Interior Foundations	3500	1"	0.50	4 ± 1	0
Perimeter Foundations	3500	1"	0.50	4 ± 1	6 ± 1

- Fly ash shall not be used unless approved in writing by the Engineer. Fly ash, if approved, shall conform to ASTM C618 and ACI 232.2R-96. Fly ash shall be limited to types C & F and shall not exceed 15% of the total cement mass.

- The use of admixtures to increase the slump shall not be used unless approved in writing by the Engineer.

- All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.

- Construction joints in grade beams shall be at midspan unless noted otherwise. Reinforcing steel shall be continuous through construction joints unless noted otherwise.

- No aluminum items shall be embedded in any concrete or placed in contact with concrete.

- Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60. Smaller bars shall be Grade 40.

- Concrete coverage of reinforcement shall have the following clear distances unless noted otherwise on the drawings:

Cast against earth: 3"

Formed concrete exposed to earth or weather: 2"

Not exposed to earth or weather: 1" Slabs, 1 1/2" Beams and columns

- Embed and all reinforcing bars marked continuous shall be embedded to the full tensile capacity of the bar. Laps shall be Class B tension laps unless specified otherwise on the drawings. Unless shown otherwise, splice top bars near midspan and splice bottom bars over supports.

- Supply corner bars 4'-0" long (min. 2'-0" in each direction) in outside face of wall at all corners of all walks and grade beams, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply three (3) #4 vertical support bars for corner bars.

- All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per the latest edition of CRSI's "Recommended Practice for Placing Reinforcing Bars." Accessories for exposed concrete shall be plastic or shall have plastic-tipped feet.

- Concrete placed during cold weather shall conform to the requirements of the most recent version of ACI 308R. Cold weather is defined as a period when, for more than 3 successive days, the mean daily temperature drops below 40°F.

- Concrete placed during hot weather shall conform to the requirements of the most recent version of ACI 305R. Hot weather is defined as that combination of air temperature, concrete temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq ft/hr. or more as defined by Figure 2.1.5 of ACI 305R.

- Do not add water to concrete during delivery, at Project Site, or during placement, unless approved by the Engineer.

- Provide 3/4" chamfer on all exposed corners unless noted otherwise on architectural or structural construction documents.

- All cold joints shall be roughened and cleaned unless noted otherwise.

- Vertical control joints in walls shall be placed at 30'-0" maximum spacing unless noted otherwise. Locate joints beside piers monolithic with walls, near corners, and in concealed locations where possible. Construction joints may be placed in lieu of control joints at Contractor's discretion. Coordinate location of control joints with Architect.

- Refer to architectural drawings for foundation insulation requirements.

Post-Installed Anchors:

- Post-installed anchors shall only be used where specified in the construction documents or approved by the engineer.

- The Contractor shall obtain written approval from the Engineer prior to installing post-installed anchors for misplaced-placed anchors.

- Care shall be taken with placing post-installed anchors to avoid damaging existing reinforcement.

- The holes shall be drilled and cleared in accordance with the manufacturer's specifications.

- Post-installed anchors shall meet ACI 318 Appendix D criteria. The following are specified post-installed anchors:

- All adhesive anchoring systems referred to in these drawings shall be one of the following:
a. Hilti HIT HY 200 V3 / 1
b. Powers AC108 Gold
c. Simpson Strong-Tie SET-36
d. Or Approved Equivalent

- All screw anchors referred to in these drawings shall be one of the following:
a. Hilti H4-EZ
b. Powers Wedge Bolt+
c. Simpson Strong-Tie Titan HD
d. Or Approved Equivalent

Masonry:

- Mortar shall be Type S for all masonry work and must achieve a minimum compressive strength of 1800 psi at the 28-day test. Masonry units shall have a minimum strength of f'm = 2000 psi.
- Masonry grout shall be a coarse-type grout and must achieve a minimum compressive strength of 2000 psi at the 28-day test. Slump shall range from 5" minimum to 10" maximum. Grout materials and proportions shall conform to ASTM C476.

- All masonry shall be reinforced with horizontal 9 gauge truss type reinforcement at 16" o.c. vertical or as shown on the drawings.

- Vertical reinforcing shall be installed as noted on the drawings. Reinforcing bars shall be lapped as specified on the design drawings. If no lap length is shown, contact the Engineer.

- Vertical control joints in masonry shall be 3/8" wide, full height of wall at locations shown on the Architectural drawings. Joints shall be spaced at a maximum of 25'-0" apart and coordinated with the Architect. All horizontal joint reinforcing shall be discontinuous at masonry control joints. Refer to typical details for additional information for them to carry out the work in accordance with the contract documents.

- Lintels over openings shall be installed as indicated on the drawings. If no lintels are indicated, notify the Engineer.

- Provide at least (1) vertical rebar at each end of each wall, side of control joints, jambs, corner, and intersection of all reinforced masonry walls. Size of rebar to match the size of typical vertical reinforcing shown.

- Provide (1) corner bar at each horizontal bond beam. Size of rebar to match typical bond beam reinforcing shown.

- Submit shop drawings including plan and elevation views of reinforced masonry walls including bond beams, control joints, expansion joints, and lintels.

- All steel beams bearing on masonry shall have (3) cores minimum grouted full directly below the bearing locations unless noted otherwise.

- All bond beam reinforcing shall continue through control joints.

- All cells containing reinforcing, bolts, or other metal anchors shall be grouted solid. Any cells below grade shall be grouted solid whether reinforced or not.

Structural Steel:

- All structural steel shall conform to the following (U.N.O.):

- Structural Steel Wide Flanges: ASTM A992

- Miscellaneous Steel: ASTM A36

- Structural Tubing: ASTM A500, Grade B (Fy = 46 ksi)

- Steel Pipe: ASTM A53, Type E or S, Grade B

- Bolts shall be as follows (U.N.O.):

- Connection Bolts: ASTM A325

- Anchor Rods: ASTM F1554, Grade 36

- Shear Studs: ASTM A108, Grade 1015 through 1020

- Welding shall conform to the latest publication of applicable codes set forth by the American Welding Society. Welding electrodes shall be E70XX.

- All exterior steel exposed to weather shall be hot-dipped galvanized and/or painted per Architect unless noted other wise.

- All openings in the roof shall be framed with a 4 x 4 x 1/4 angle minimum, unless noted otherwise. Mechanical units shall be supported with structural steel frames as required. If framing is not shown for mechanical units, notify the Engineer.

Light Gauge Metal Framing:

- All light gauge structural studs, track and accessories shall be designed in accordance with the latest edition of the American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members," and shall be of type, size, gauge and spacing shown on the drawings.

- All 16 gauge and heavier studs and joists shall be formed from corrosion-resistant steel corresponding to the requirements of ASTM A446, with a minimum yield strength of 50 ksi. All 18 gauge and lighter studs, joists, track and accessories shall be formed from corrosion-resistant steel corresponding to the requirements of ASTM A446, with a minimum yield strength of 33 ksi.

- Prior to fabrication of framing, the Contractor shall submit fabrication and erection drawings to the Architect/Engineer for approval.

- Prefabricated panels shall be square, with components attached in a manner to prevent racking and minimize distortion while lifting. The Contractor shall provide temporary bracing where required.

- All framing components shall be cut squarely for attachment to perpendicular members, or as required, for angular fit against abutting members. Splicing of axial loaded members is not permitted.



Project No.:	19050.02
Date:	04.29.22
Issued For:	PERMIT SET

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REGISTRATION



PROJECT TEAM

ARCHITECT	FINKLE- WILLIAMS ARCHITECTURE
CIVIL	G&A
LANDSCAPE	HOERR SCHAUDT/ LAND3
FOUNDATIONS	
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON

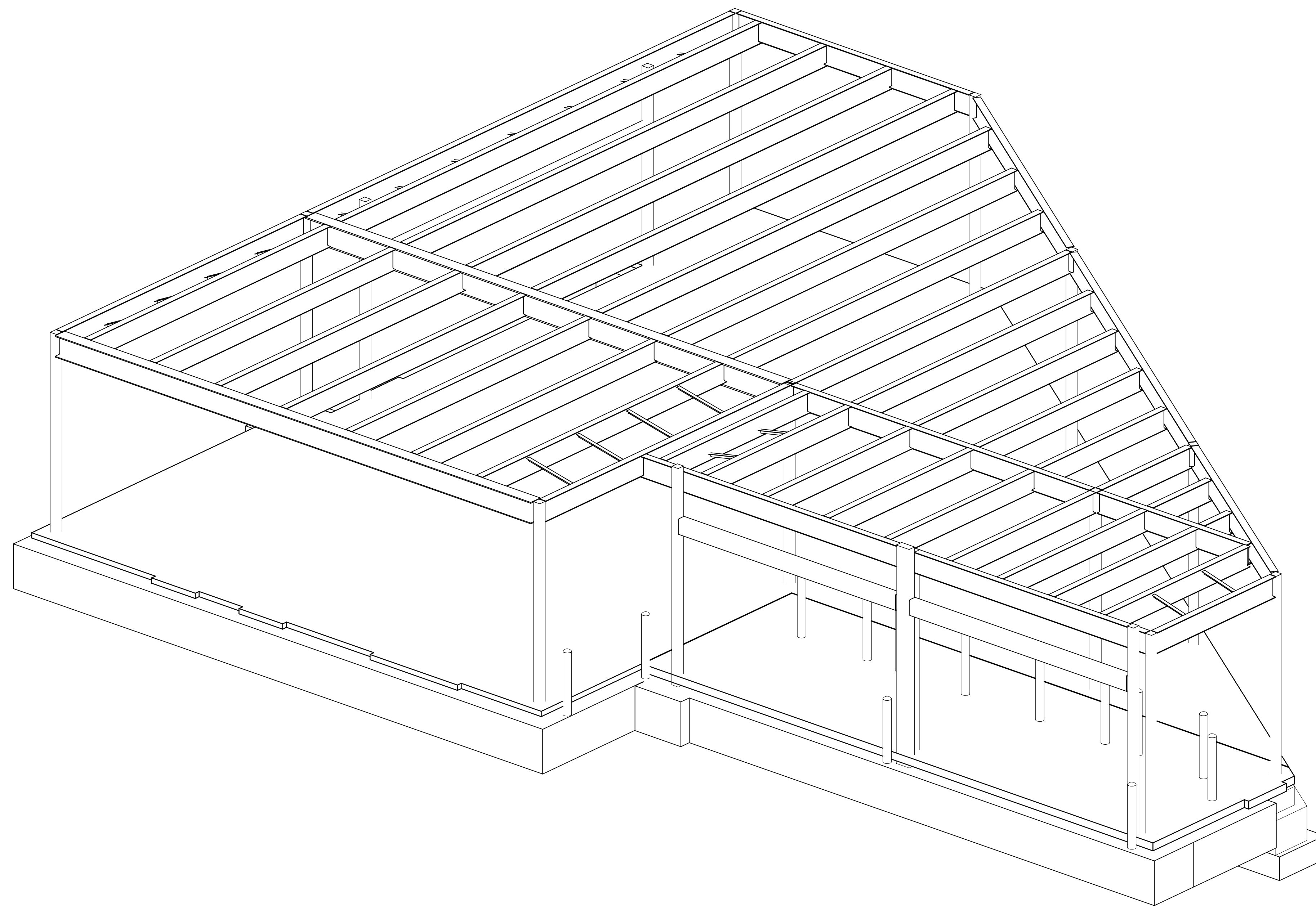


SHEET TITLE

ISOMETRIC

SHEET NUMBER

S0.1

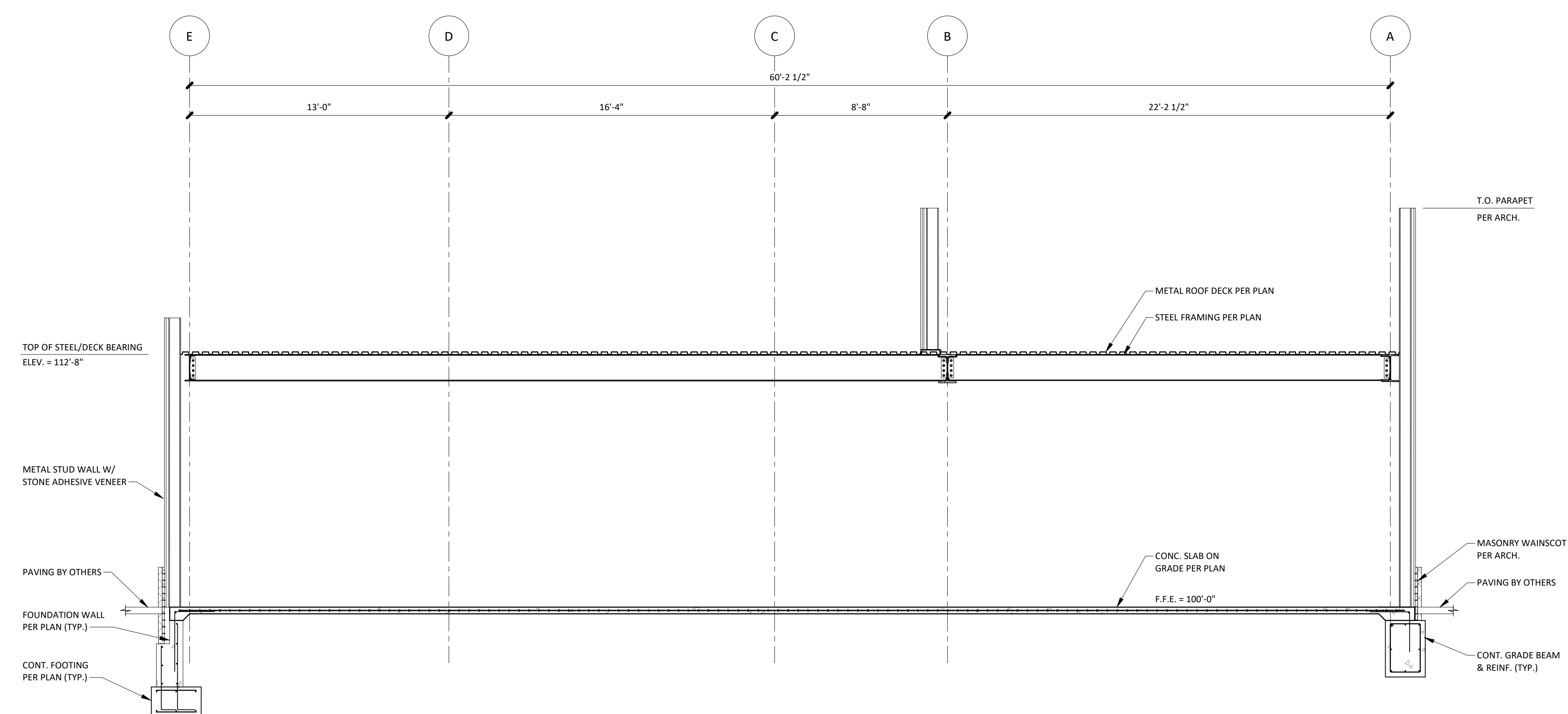


NOTES:

1.) ISOMETRIC VIEWS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

ISOMETRIC | 01

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NOTES:

1.) BUILDING SECTIONS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

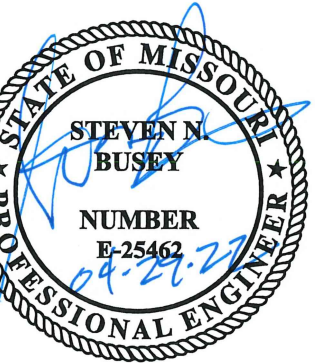
BUILDING SECTION | 02

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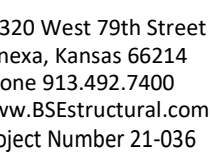
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REGISTRATION



PROJECT TEAM

CONTRACTOR FOGEL ANDERSON



FOUNDATION SCHEDULE (W/ PEDESTAL)						
MARK	DIMENSIONS	REINFORCEMENT	F.B.E.	PEDESTAL DIMENSIONS	PEDESTAL REINFORCEMENT	COMMENTS
F1	3'-6" x 3'-6" x 2'-10"	#5 @ 12" SPA. EA. WAY TOP & BOTTL.	96.50	18" x 18"		
F2	4'-0" x 4'-0" x 1'-6"	#5 @ 12" SPA. EA. WAY TOP & BOTTL.	94.50	18" x 18"	(4) RG VERT. W/ #3 TIES @ 12" SPA.	
F3	5'-0" x 5'-0" x 2'-10"	#6 @ 12" SPA. EA. WAY TOP & BOTTL.	96.50	18" x 18"		

3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

FOUNDATION PLAN | 01



SHEET TITLE

FOUNDATION PLAN

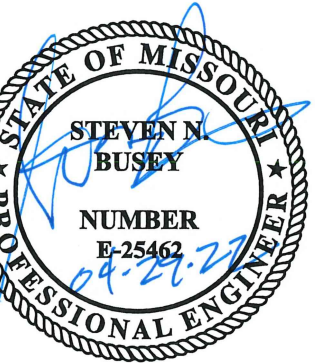
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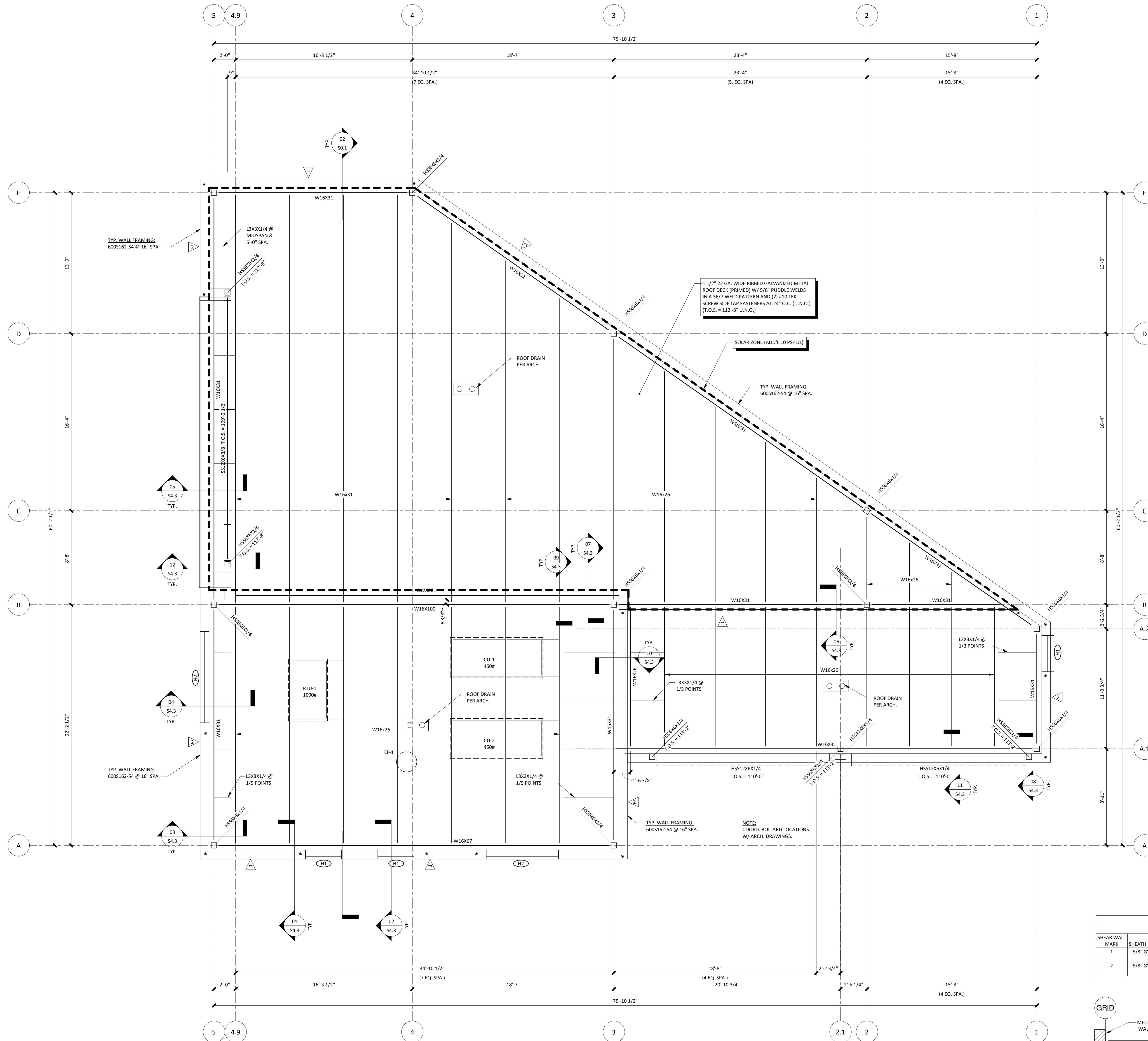
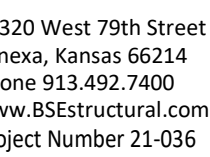
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REGISTRATION

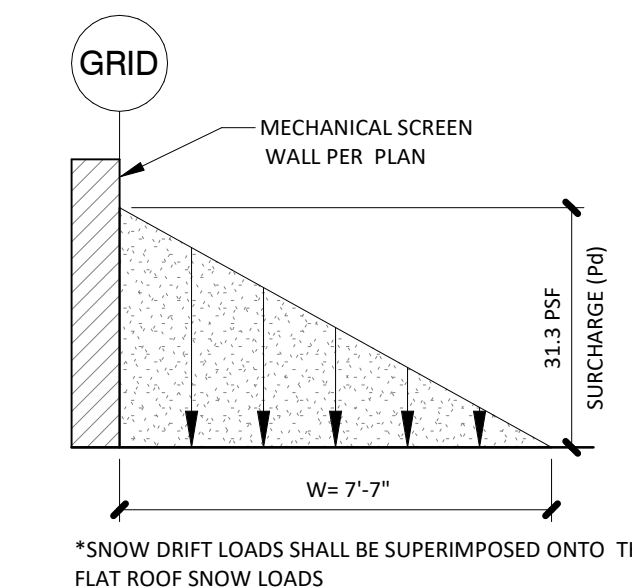


PROJECT TEAM



HEADER/BEARING STUD SCHEDULE			
MARK	HEADER	KING STUDS	BEARING STUDS
H1	(2) 600S162-54 W/ CONT. 54 MIL TRACK TOP & BOT.	(1) 600S162-54	(1) 600S162-54
H2	(2) 800S200-54 W/ CONT. 54 MIL TRACK TOP & BOT.	(2) 600S162-54	(2) 600S162-54

SHEAR WALL SCHEDULE					
SHEAR WALL MARK	SHEATHING MATERIAL	FASTENING	HOLD DOWN AT FOUNDATION	HOLD DOWN ANCHORS	CHORD MEMBERS
1	5/8" GYP. (2) SIDES	10" SCREWS @ 7" SPA IN FIELD & @ PANEL EDGE	5/MDU4	5/8" DIA. ANCHOR W/ (6) #14 SCREWS TO END STUDS	(2)600S162-54
2	5/8" GYP. (2) SIDES	10" SCREWS @ 4" SPA IN FIELD & @ PANEL EDGE	5/MDU6	5/8" DIA. ANCHOR W/ (12) #14 SCREWS TO END STUDS	(2)600S162-54



NOTES:

- 1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.
- 2.) REFERENCE DRAWING S4.1 FOR TYPICAL FRAMING DETAILS.
- 3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.
- 4.) REFERENCE ARCHITECTURAL DRAWINGS TO VERIFY SIZE & LOCATIONS OF ALL ROOF & WALL OPENINGS.

ROOF FRAMING PLAN | 01

$1/4" = 1'-0"$	S2.1
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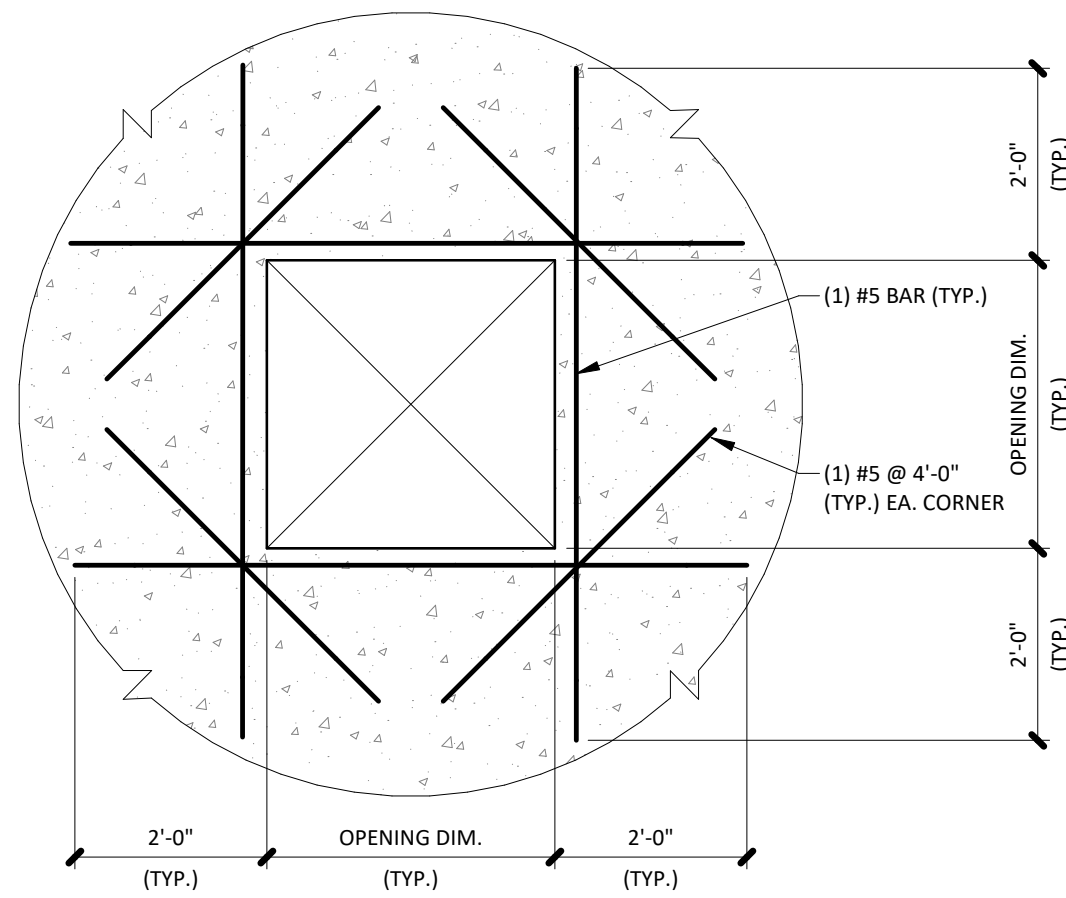
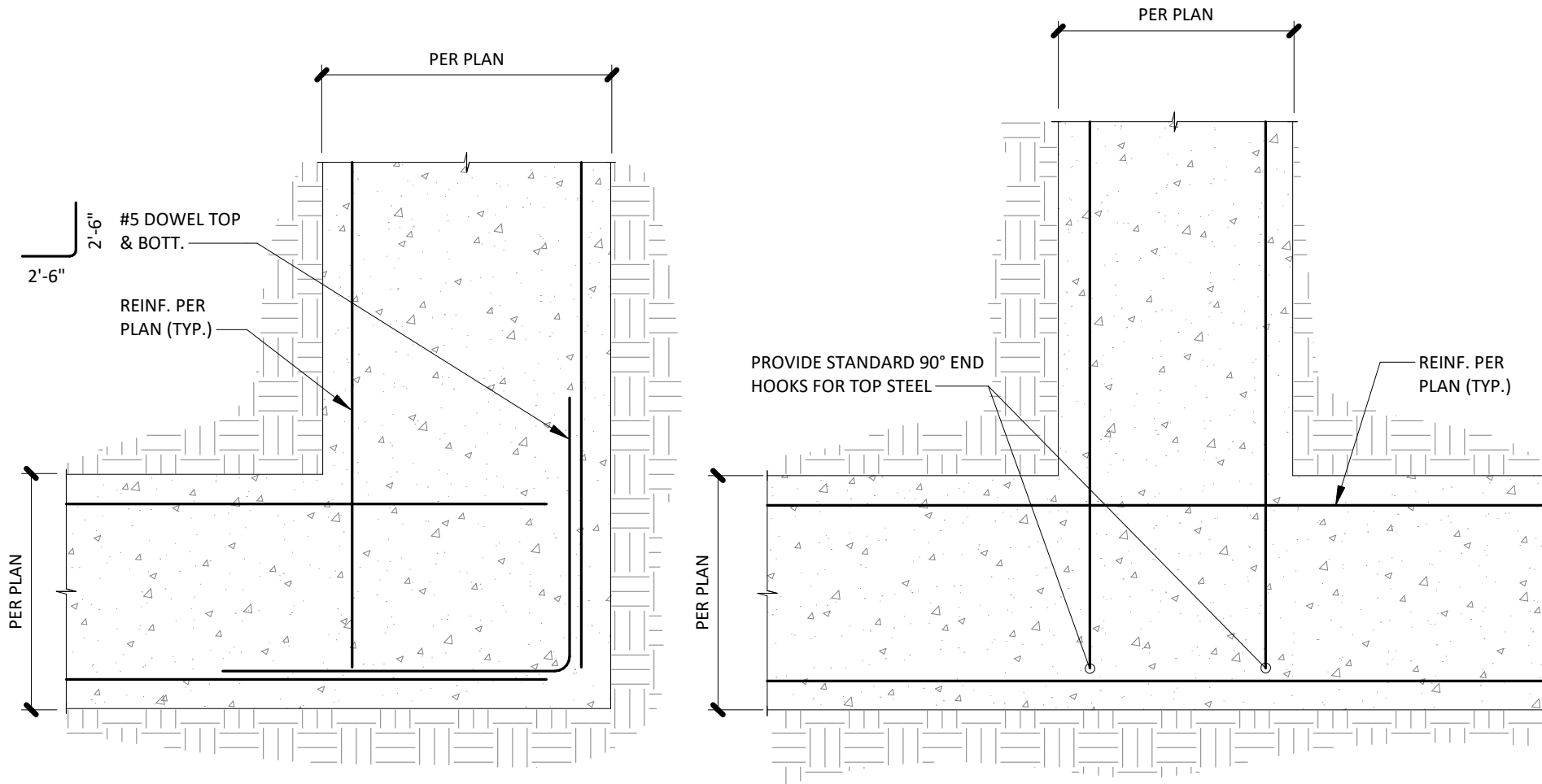
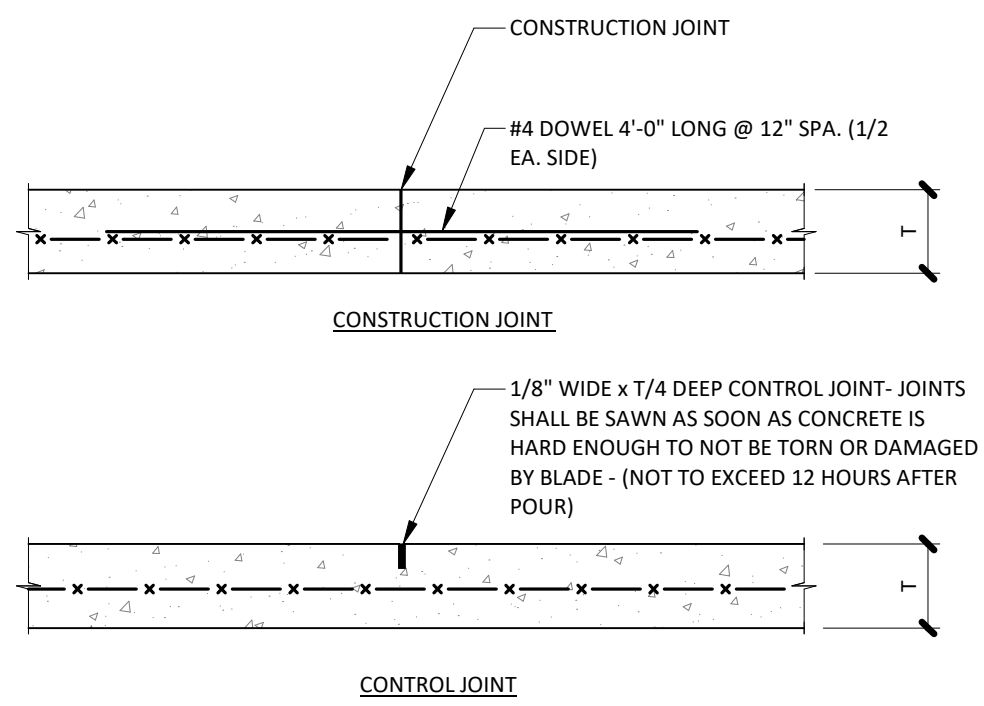
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ROOF FRAMING PLAN

EET NUMBER

S2.1

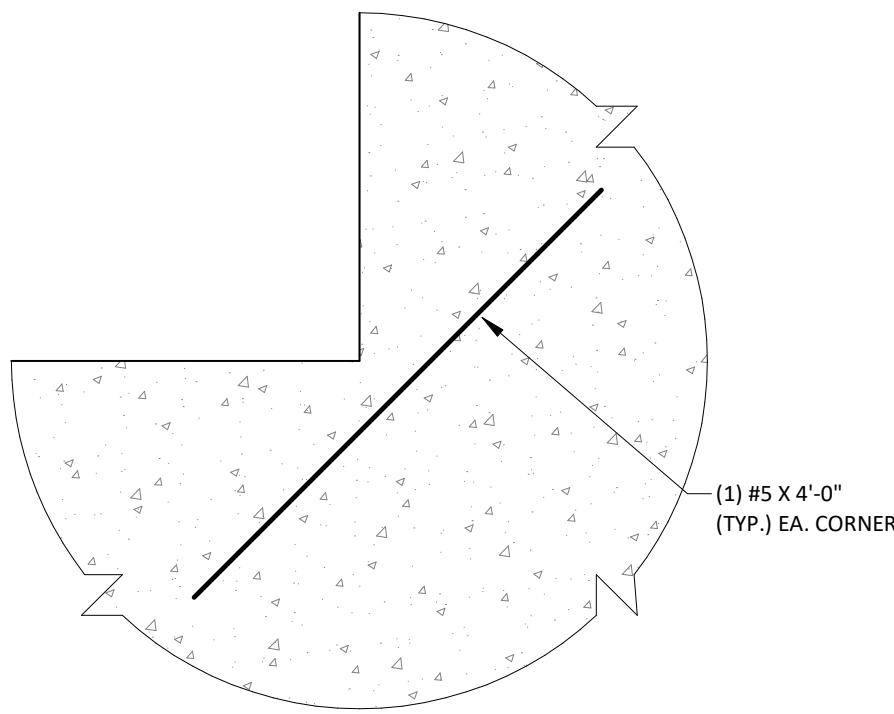
$1\frac{1}{2}'' = 1'-0''$	S3.1
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$$1/2'' = 1'-0'' \quad \text{S3.1}$$

$$\frac{3}{4}'' = 1'-0'' \quad S3.1$$


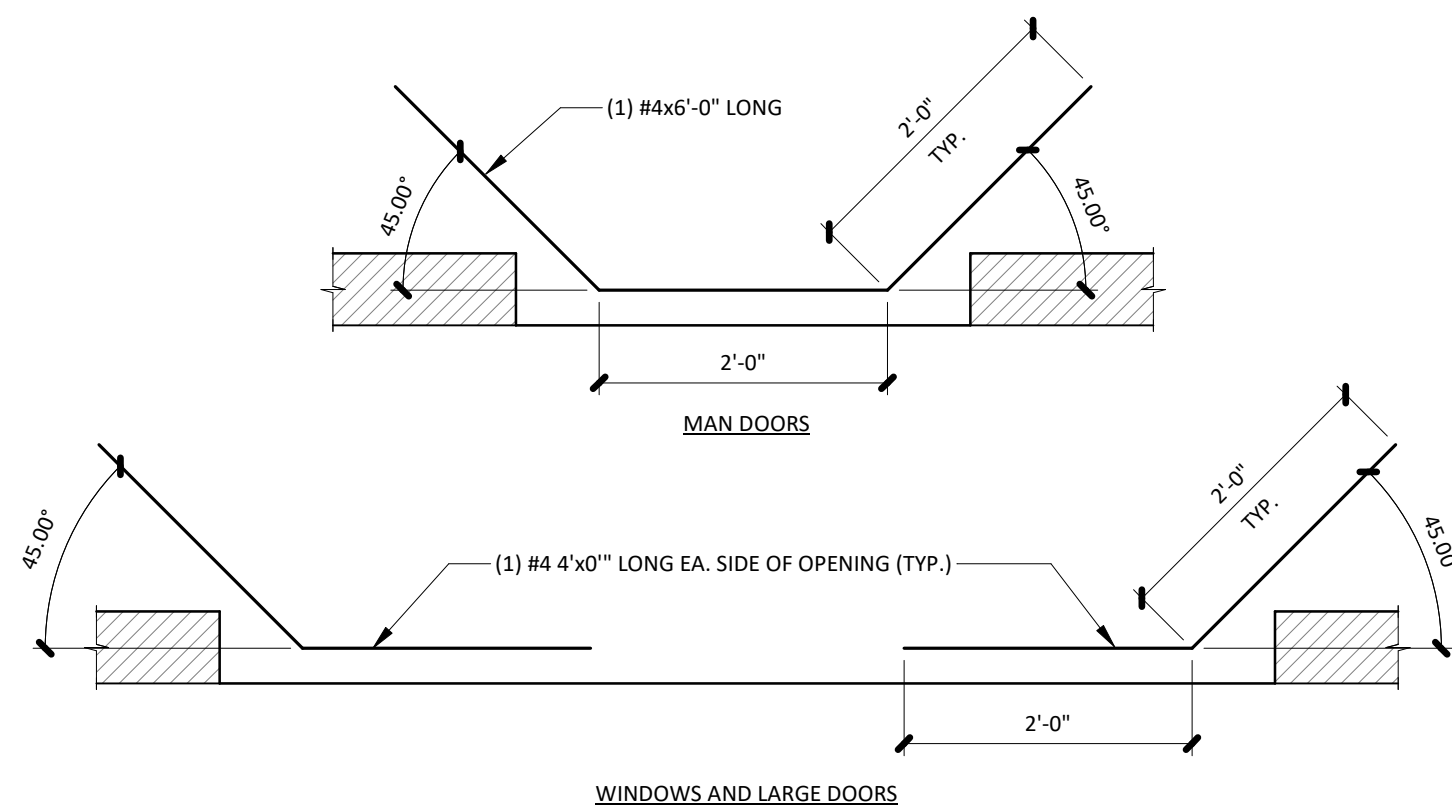
$3/4'' = 1'-0''$	S3.1
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STANDARD 90° HOOK TABLE | 05

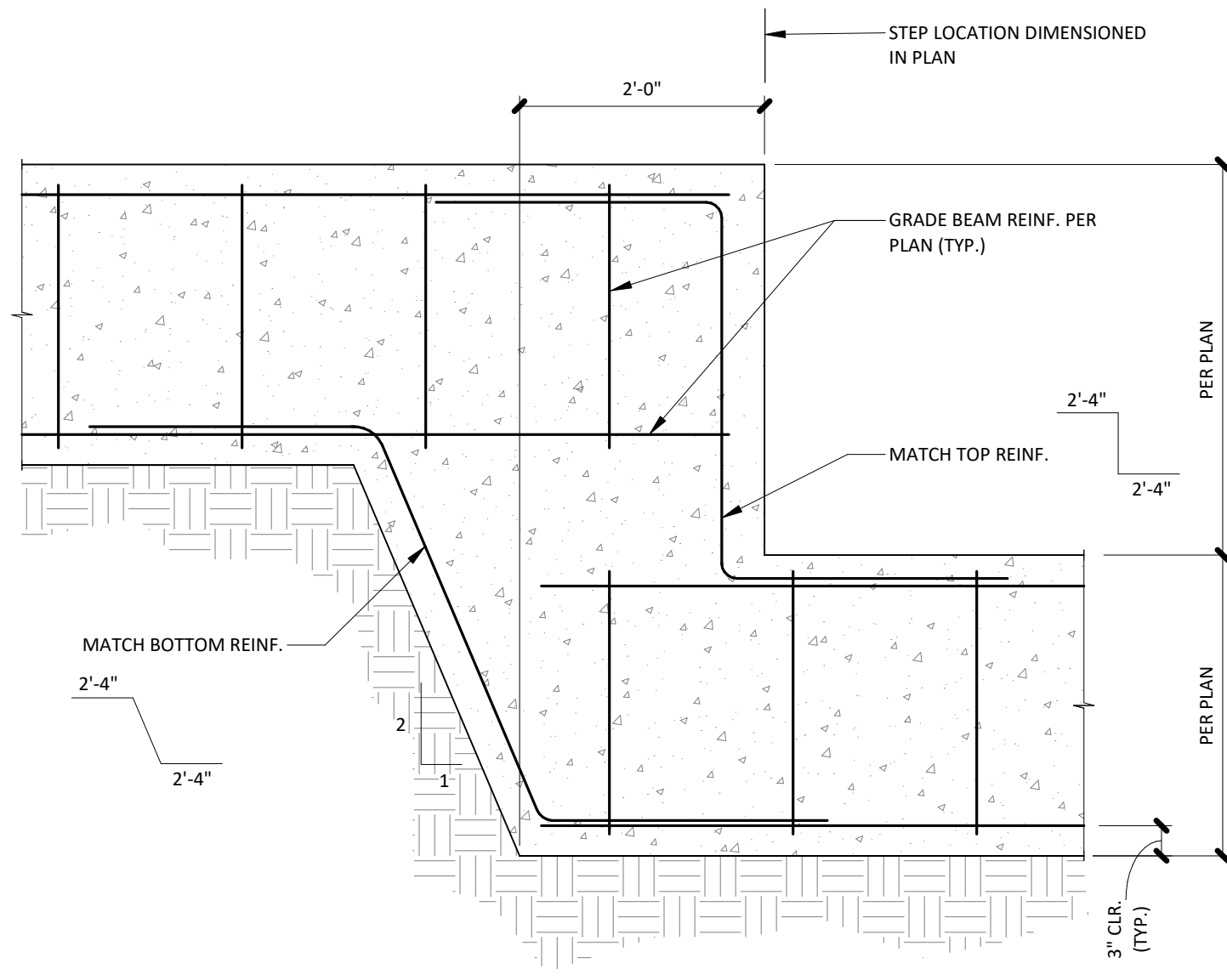
STANDARD 90° HOOK TABLE | 05



$3/4'' = 1'-0''$	S3.1
------------------	------



$3/4" = 1'-0"$	S3.1
----------------	------



$3/4" = 1'-0"$	S3.1
----------------	------

NOTES:

1. TABULATED VOLUMES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHTED CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPICE LENGTHS ARE BASED ON A318, SECTIONS 12.2.4 AND 12.15, RESPECTIVELY.
3. TABULATED VOLUMES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
4. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:
 - BEAMS OR COLUMNS:
 - CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C-C SPACING AT LEAST (2) BAR DIAMETERS
 - CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C-C SPACING LESS THAN (2) BAR DIAMETERS
5. ALL OTHERS:
 - CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C-C SPACING AT LEAST (3) BAR DIAMETERS
 - CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C-C SPACING LESS THAN (3) BAR DIAMETERS
6. LAP CLASS VOLUMES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS, 16 LAP CLASS LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0d and CLASS B - 1.3d (A318, SECTION 12.15.1)
7. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R
8. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
9. LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR LAP OR EPOXY COATED BARS (A318 SECTION 12.2.4)
10. WHEN BARS OF DIFFERENT SIZES ARE LAP SPICED, THE SPICE LENGTH FOR THE LARGER BAR SHALL BE USED.

$1/2'' = 1'-0''$	S3.1
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NOTES:

- 1.) TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
- 2.) COMPRESSION DEVELOPMENT LENGTHS AND COMPRESSION SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.3 AND 12.16, RESPECTIVELY.
- 3.) ALL VALUES ARE SHOWN IN INCHES
- 4.) COMPRESSION SPLICE PERMISSIBLE ONLY WHERE SPECIFICALLY NOTED
- 5.) TABLE IS NOT APPLICABLE FOR EPOXY-COATED REINFORCEMENT.
- 6.) "SIDE LAP" ALL LAP SPLICES TO MAINTAIN SPECIFIED CONCRETE COVER.
- 7.) WHEN BARS OF A DIFFERENT SIZE ARE LAP SPLICED, THE SPLICE LENGTH SHALL BE THE LARGER OF THE DEVELOPMENT LENGTH OF THE LARGER BAR, OR THE SPLICE LENGTH OF THE SMALLER BAR.

$1/2'' = 1'-0''$	S3.1
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NOTES

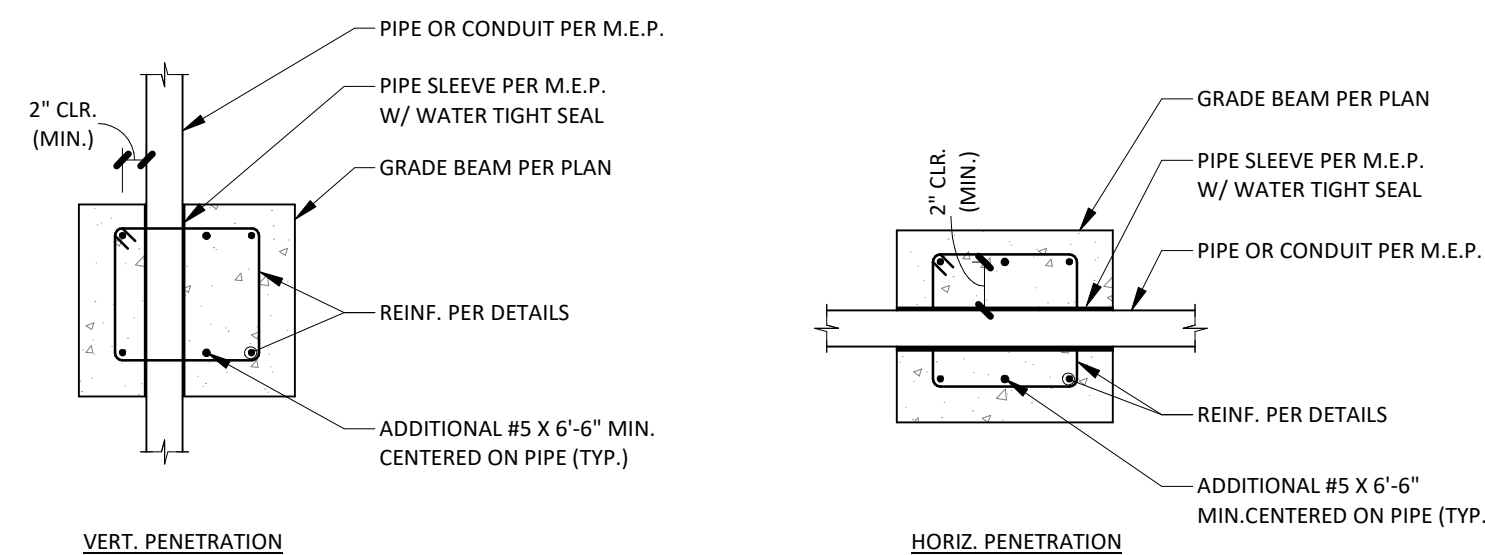
3. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
4. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY.
5. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
6. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, COVER, DEVELOPMENT, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:

BEAMS OR COLUMNS:
CASE 1: COVER AT LEAST (1) BAR DIAMETERS
AND C-C SPACING AT LEAST (2) BAR DIAMETERS

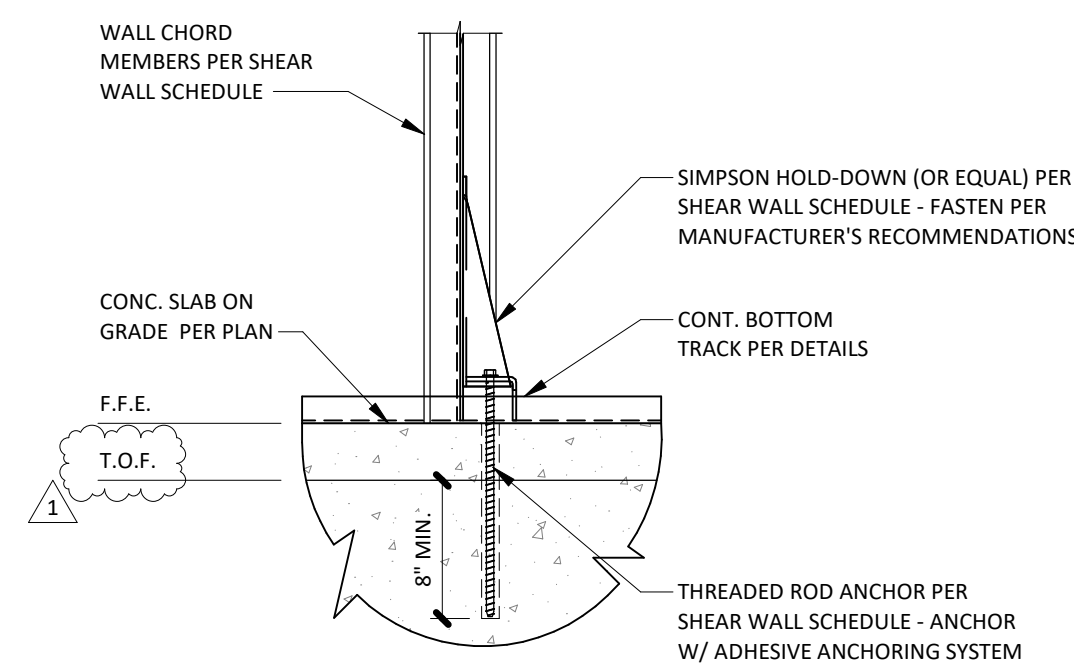
CASE 2: COVER LESS THAN (1) BAR DIAMETER AND
C-C SPACING LESS THAN (2) BAR DIAMETERS
7. ALL OTHERS:
CASE 1: COVER AT LEAST (1) BAR DIAMETERS
AND C-C SPACING AT LEAST (3) BAR DIAMETERS

CASE 2: COVER LESS THAN (1) BAR DIAMETER AND
C-C SPACING LESS THAN (3) BAR DIAMETERS
8. LAP CLASS A VALUES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS. LAP CLASS B VALUES ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0d AND CLASS B - 1.3d (ACI 318, SECTION 12.15.1)
9. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R
10. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
11. LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR ALL EPOXY COATED BARS (ACI 318, SECTION 12.2.4)
12. WHEN BARS OF DIFFERENT SIZES ARE LAP-SPLICED, THE SPICE LENGTH FOR THE LARGER BAR SHALL BE USED.

$1/2'' = 1'-0''$	S3.1
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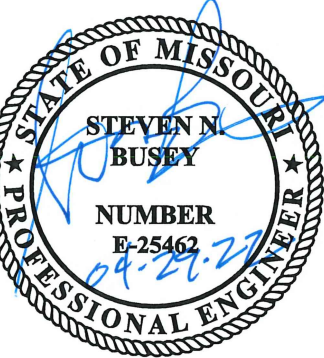
$3/4'' = 1'-0''$	S3.1
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3/4" = 1'-0"	S3.1
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[illegible]

REGISTRATION



PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT/ LAND3
FOUNDATIONS	
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



11320 West 79th Street
Lenexa, Kansas 66214
Phone 913.492.7400
www.BSEstructural.com
Project Number 21-036



Project No.: 19050.02
Date: 04.29.22
Issued For: PERMIT SET

[illegible]

REGISTRATION



PROJECT TEAM	
ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAEFER LANDS
FOUNDATIONS	
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



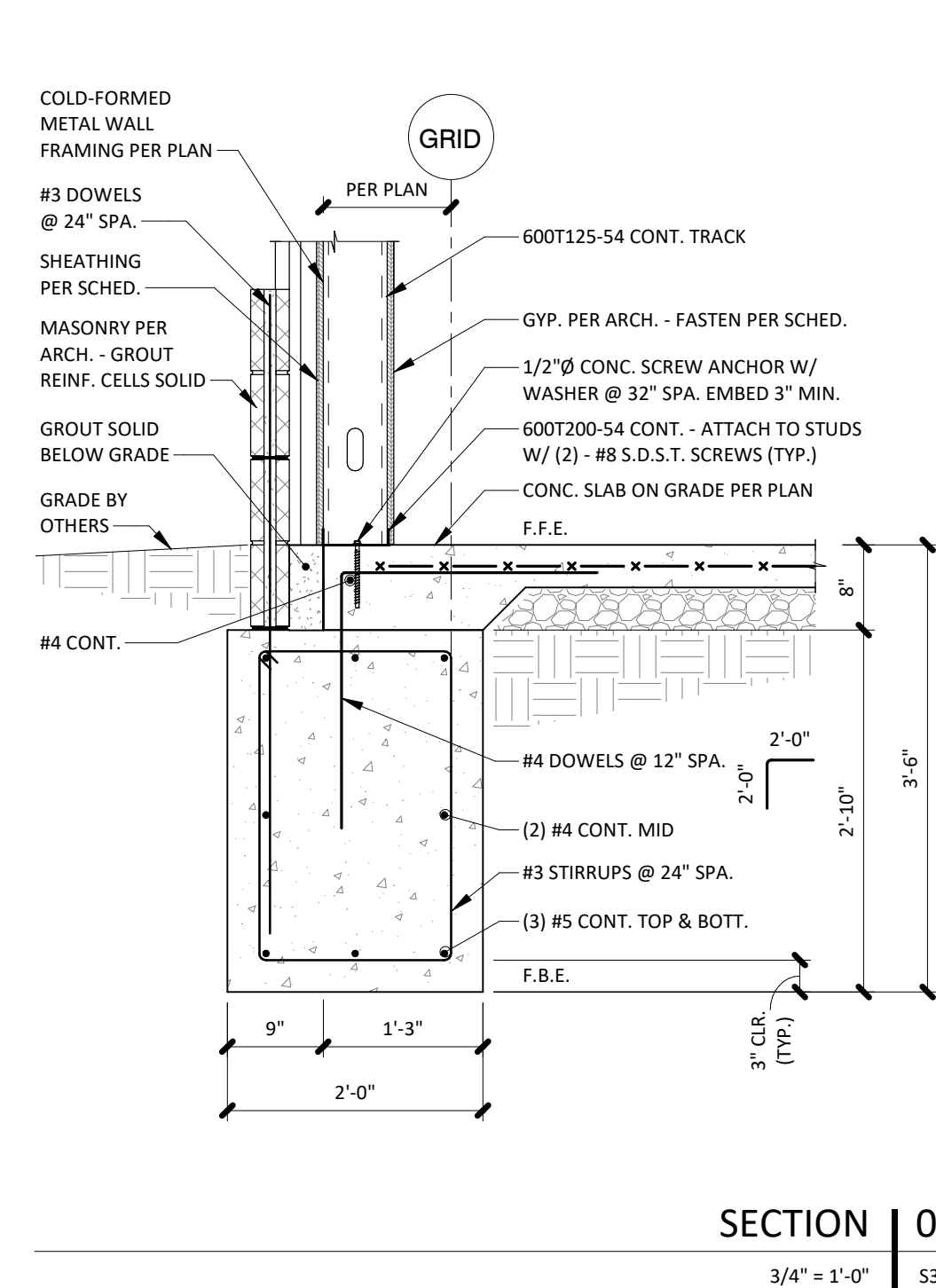
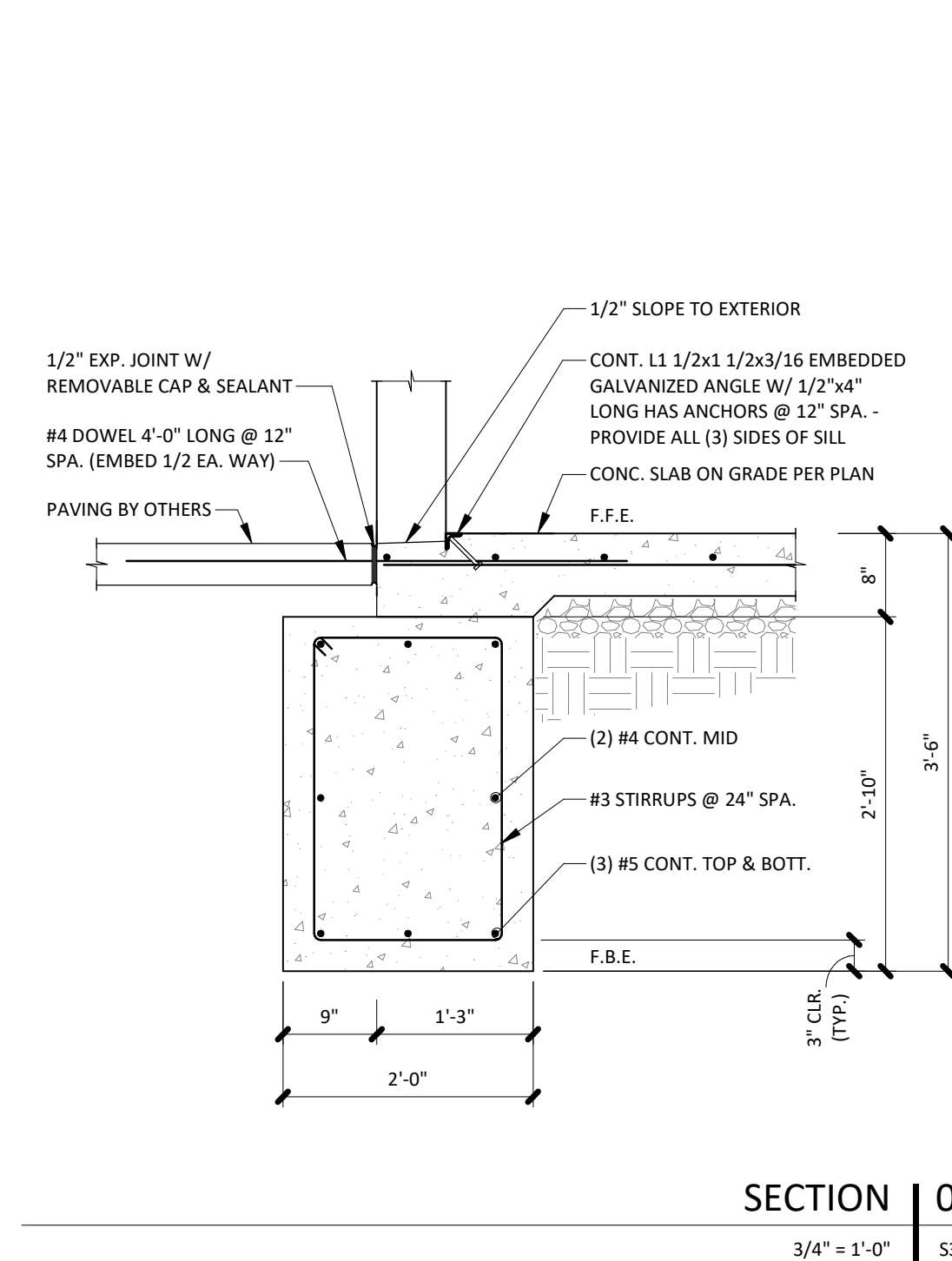
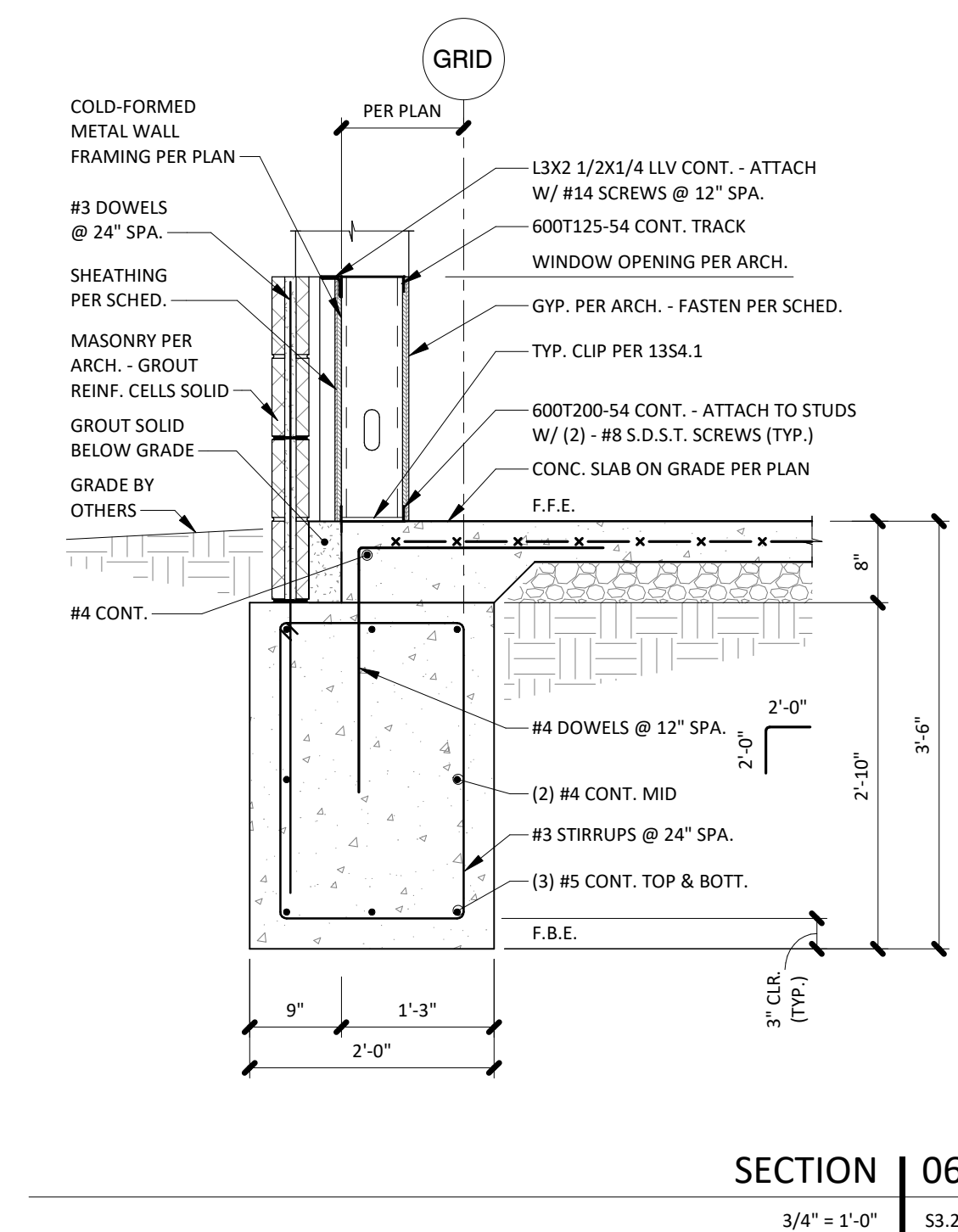
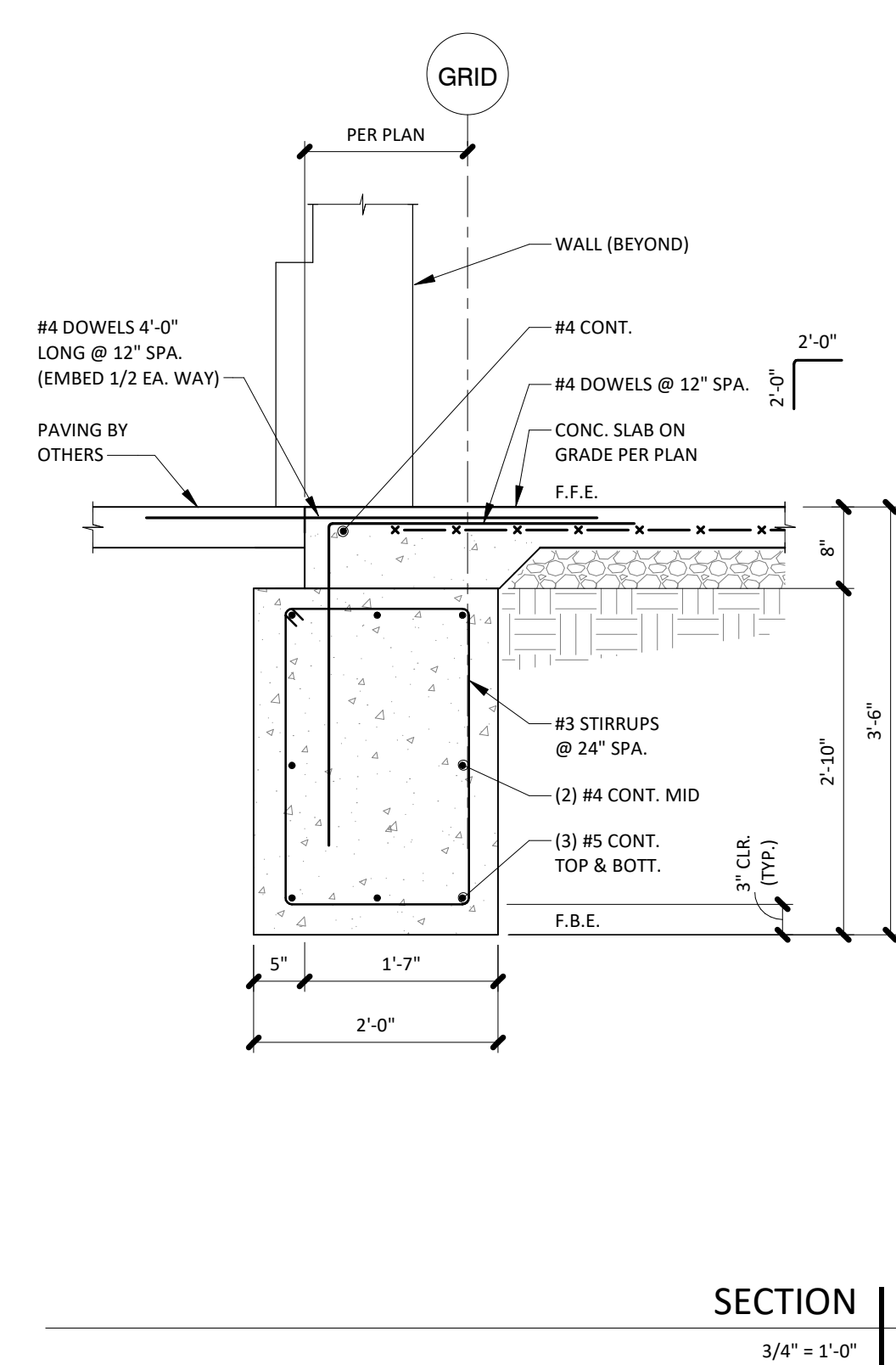
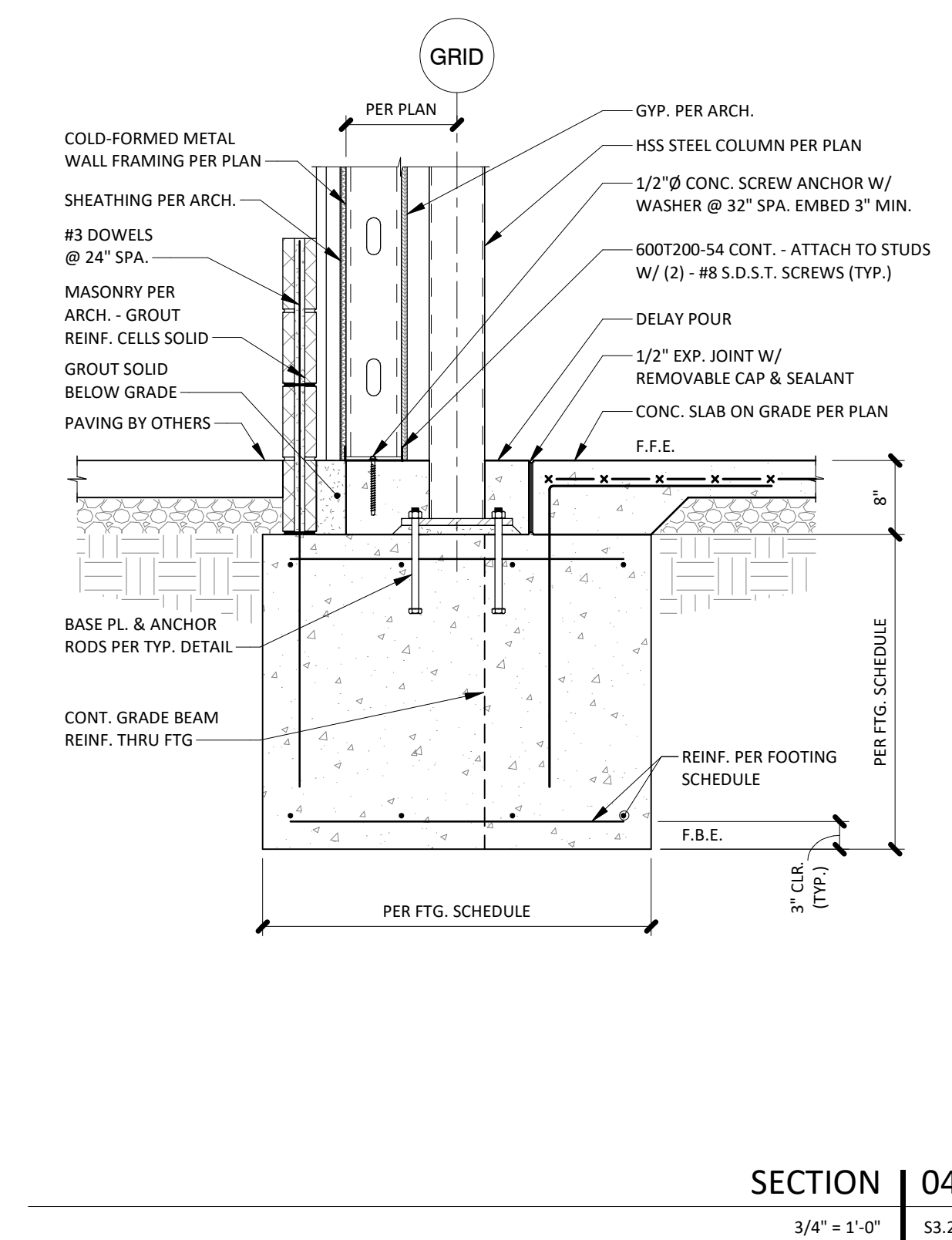
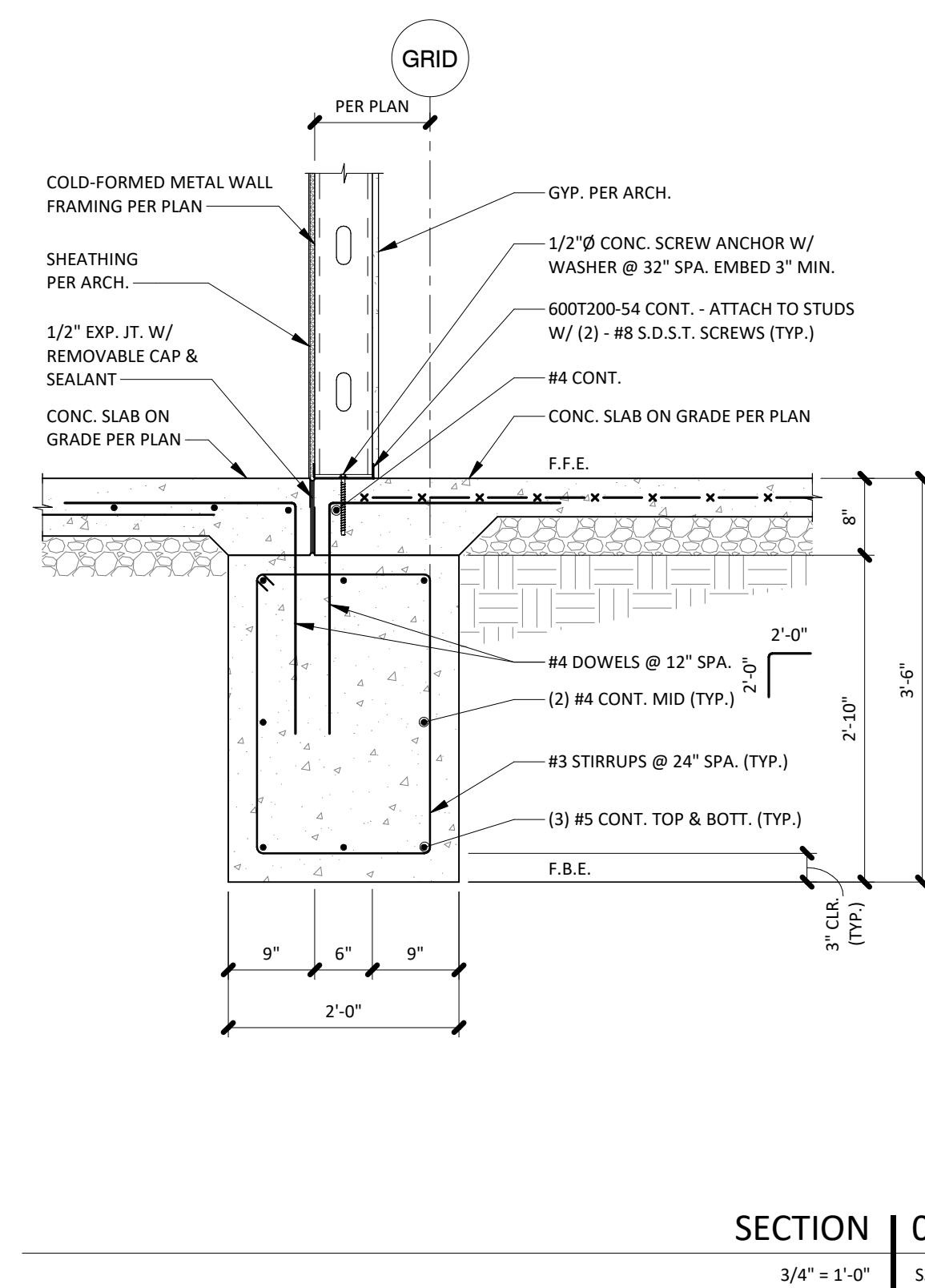
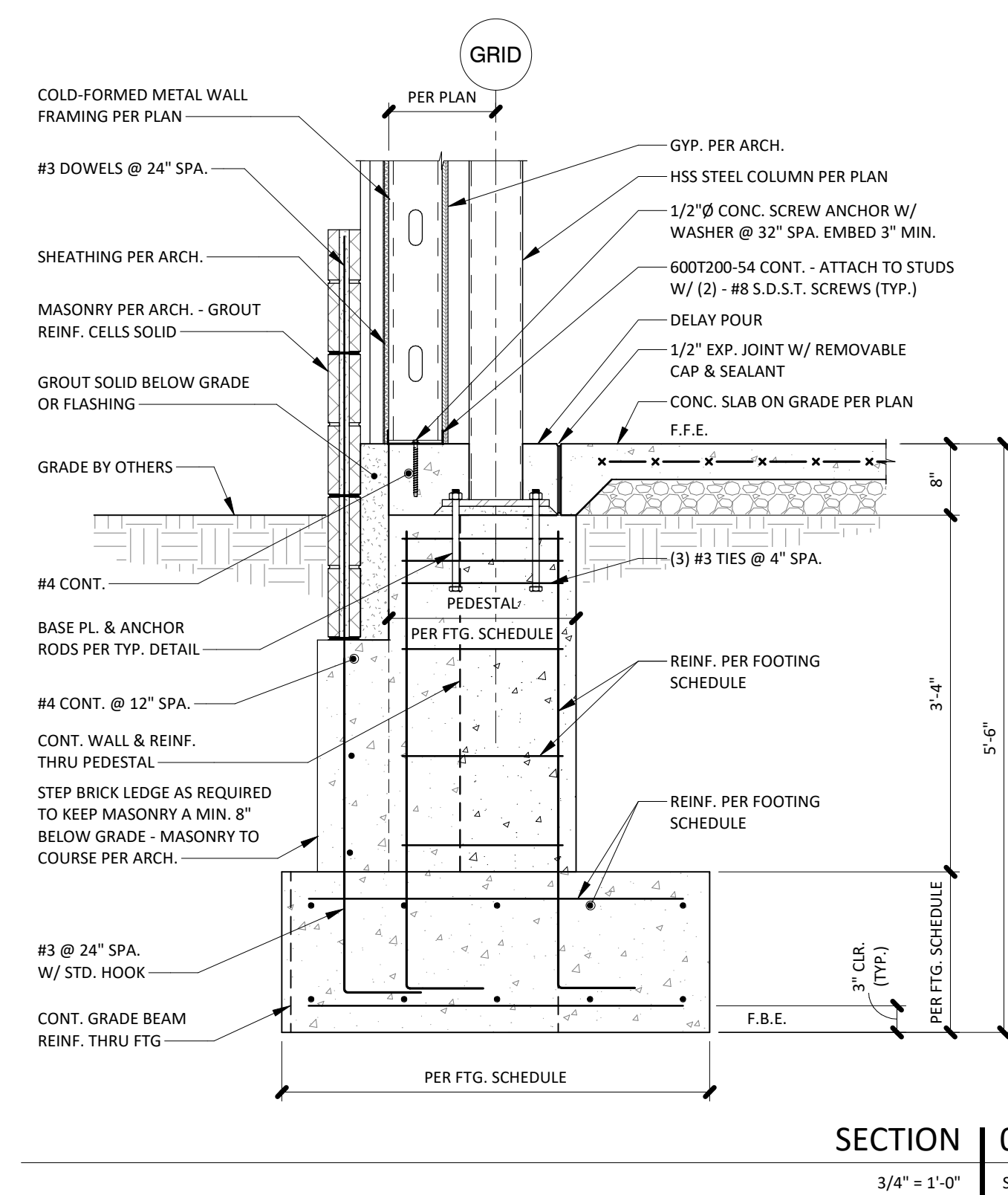
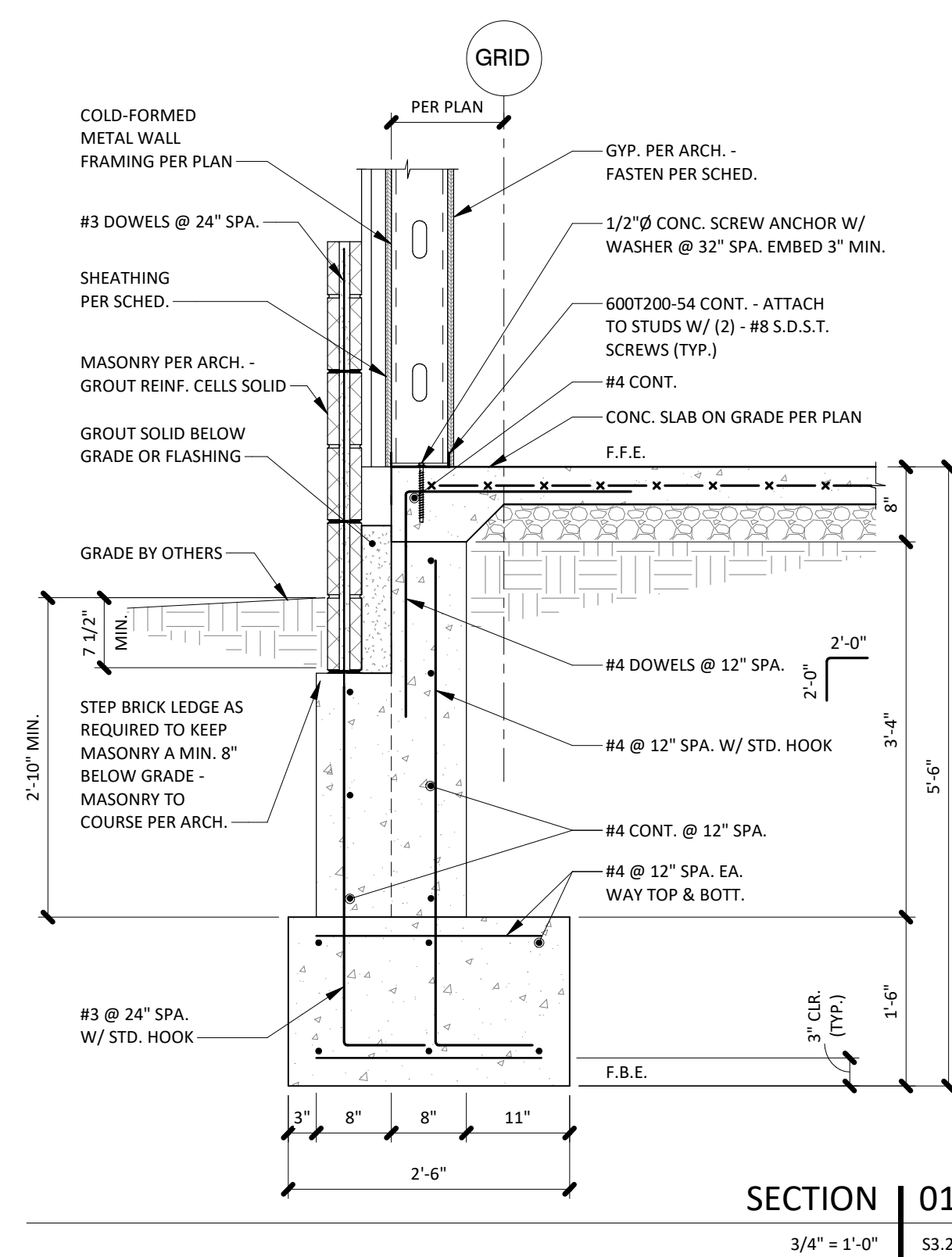
11320 West 79th Street
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Phone 913.492.7400
www.BSEstructural.com
Project Number 21-036

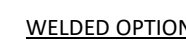
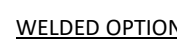
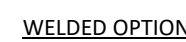
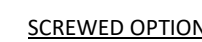
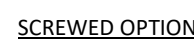
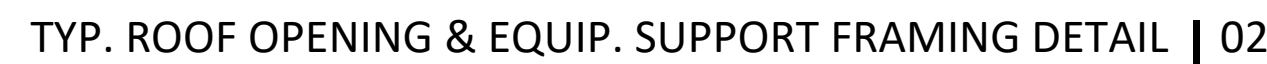
SHEET TITLE

FOUNDATION DETAILS

SHEET NUMBER

S3.2







CASE A

CASE B



LOT 20 - HUB
BUILDING

2151 NW PARAGON PKWY,
LEE'S SUMMIT, MO 64081

Project No.: 19050.02
Date: 04.29.22
Issued For: PERMIT

REVISIONS		
No.	Date	Description
1	4/29/22	Addendum 1

REGISTRATION



04/29/2022
ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT / LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON

HENDERSON
ENGINEERS
1501 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
TEL 816.663.8700 FAX 816.663.8701
WWW.HENDERSONENGINEERS.COM
165004412
MO. CORPORATE NO. E-556D
EXPIRES 12/31/2022

SHEET TITLE

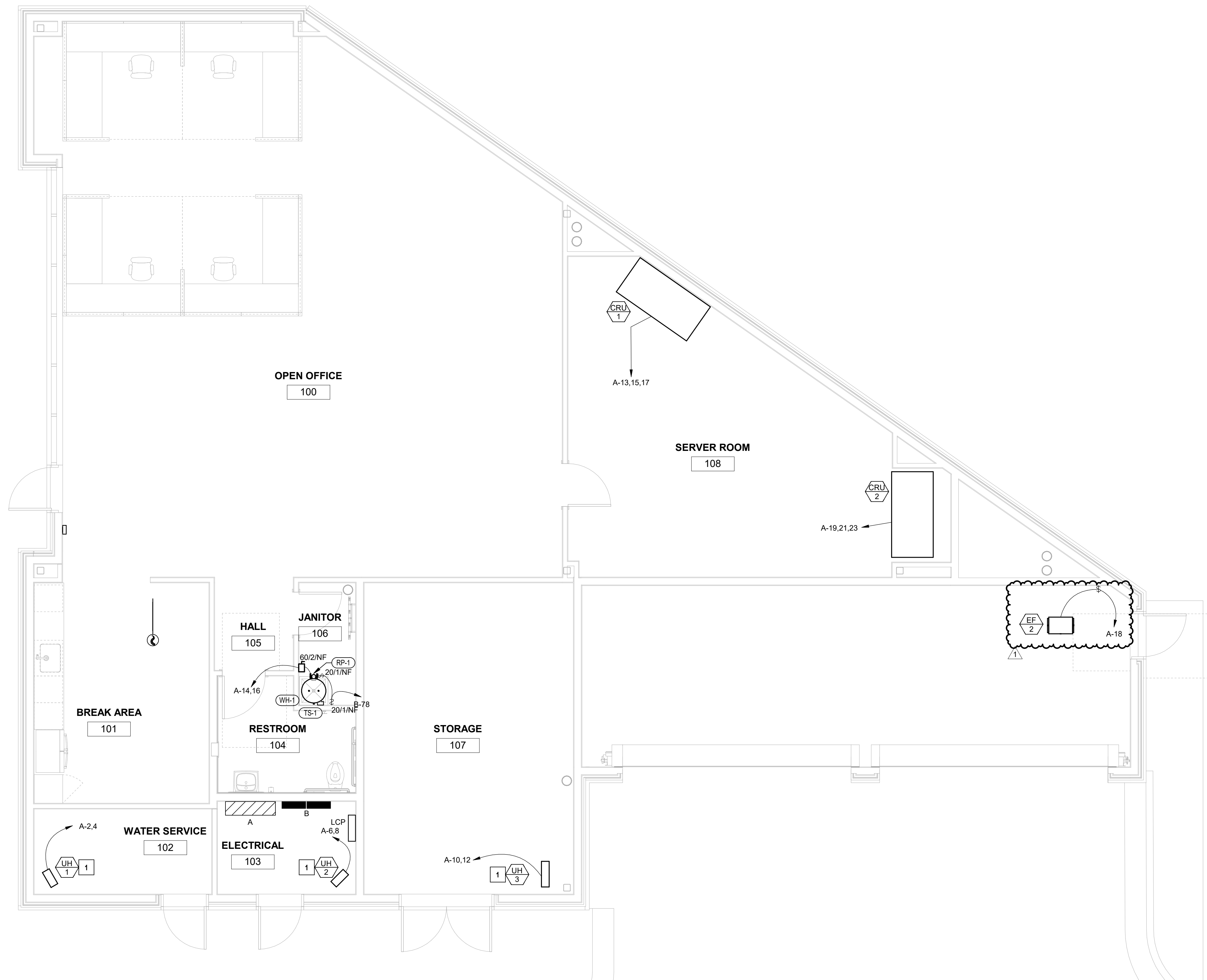
EQUIPMENT
CONNECTION
PLAN

SHEET NUMBER

E3.01



1 EQUIPMENT CONNECTION PLAN
1/4" = 1'-0"



Division 26: GENERAL ELECTRICAL REQUIREMENTS

1 GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as shown on the drawings and specified. The Contractor shall reasonably infer to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancy between the specifications and drawings, clarification prior to proceeding with the work is required.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, conduit lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
Division 21 - Fire Suppression	Division 15
Division 22 - Plumbing	Division 15
Division 23 - HVAC	Division 15
Division 24 - Electrical	Division 16
Division 27 - Communications	Division 16
Division 28 - Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, cutting, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this Division, "Engineer" is the Engineer of Record (the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this Division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the Work.

NRTL: Nationally Recognized Testing Laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Homework: That portion of an electrical circuit originating at a junction box, termination box, receptacle, or switch with termination at an electrical panelboard. Note: Where MC cable is utilized for receptance and/or lighting branch circuiting loads, the originating point of the homework shall be at the first load as circuit or at a junction box located in an accessible ceiling space in the case as provided for the first load.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitutions for Convenience: Changes proposed by Contractor or owner that are not required in order to meet other project requirements but may offer advantage to contractor or owner.

When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

The terms "approved equal," "equivalent," or "equal" are used synonymously and shall mean "equivalent" or "acceptable to the Engineer as equivalent to the item or manufacturer specified." The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

C. PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, or of best quality normally used for the purpose in good condition, and free from defects. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size, and capacity. All workmanship shall be of the finest possible by experienced mechanics of the proper trade. In general, provide the following quality grade(s) for all materials and equipment.

Commercial specification grade

Provide all hoists, scaffolds, staging, runways, tools, machinery, and equipment required for the performance of the electrical work. Store and maintain material and equipment in clean condition, and protected from weather, moisture, and physical damage.

Furnish only material and equipment that are listed, labeled, certified, or all three, by an NRTL, whenever any listing or labeling exists for the types of material and equipment specified.

At a minimum, general work practices for electrical construction shall be in accordance with NECA 1 (latest edition), "Standard Practices for Good Workmanship in Electrical Construction".

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus two for mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

F. COORDINATION

Coordinate all work with other divisions and trades so that various components of the systems are installed at the proper time, fit the available space, and allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

All roof penetrations, floor chasing and/or core drilling shall require the specific approval of the Landlord and Owner. All work in common areas, shafts, and corridors affecting this division, section, and/or trades must be approved by the Landlord and Owner prior to commencement of the work. Contractor shall minimize any disruption and disturbances to other work in the building. The Engineer shall coordinate with the Landlord and Owner prior to commencement of the work. Contractor shall coordinate with the Landlord and Owner prior to commencement of the work.

Unless otherwise indicated, the General Contractor shall provide phases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where phases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take the own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

Make all offsets required to clear equipment, beams, and other structural members, and to facilitate the routing of raceways in the manner anticipated in the design. Provide materials with trim that will fit properly the types of ceiling, wall, or floor finishes actually installed.

Coordinate all work with Architectural phasing drawings to properly stage transitions of work to provide power to existing, new and temporary loads. Monitor loads on distribution system to ensure shifting of loads does not overload electrical equipment.]

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

- National Fire Protection Association (NFPA)
- Underwriters Laboratories (UL)
- Occupational Safety and Health Administration (OSHA)
- American National Standards Institute (ANSI)
- American Society of Testing Materials (ASTM)
- Rules and regulations of public utilities and municipal departments affected by contract of services
- Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

Electrical equipment shall be located so that the code required minimum working clearance and dedicated electrical space are maintained. Existing equipment shall be relocated to meet the minimum working clearances, unless otherwise allowed by the AHJ, Engineer and Owner.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected, and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Conduit, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Protect adjacent materials indicated to remain. For work specific to this Division, install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition operations are complete.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

- Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
- Proposed substitution is consistent with the Contract Documents and will not cause interference with the operation, performance, maintenance service, and sourcing of replacement parts.

Proposed substitution has received necessary approvals of authorities having jurisdiction.

Same warranty will be furnished for proposed substitution as for specified Work.

If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.

Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

Provide factory generated point-by-point calculations for all exterior light fixtures (photometric files supplied) so the engineer can generate a point-by-point do not suffer from the point-by-point calculations). Provide interior point-by-point calculations at the discretion of the engineer.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittal information in sufficient detail so as to demonstrate compliance with Contract Documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible with and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus two for mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identification, and dimensions as shown on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples, and other submittals required by this division. Highlight, underline, and circle the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain firm name, logo, the seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be information where phases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take the own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Make all offsets required to clear equipment, beams, and other structural members, and to facilitate the routing of raceways in the manner anticipated in the design. Provide materials with trim that will fit properly the types of ceiling, wall, or floor finishes actually installed.

Coordinate all work with Architectural phasing drawings to properly stage transitions of work to provide power to existing, new and temporary loads. Monitor loads on distribution system to ensure shifting of loads does not overload electrical equipment.]

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

Electrical equipment shall be located so that the code required minimum working clearance and dedicated electrical space are maintained. Existing equipment shall be relocated to meet the minimum working clearances, unless otherwise allowed by the AHJ, Engineer and Owner.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected, and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Conduit, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Protect adjacent materials indicated to remain. For work specific to this Division, install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition operations are complete.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

Substitutions for Convenience: Changes proposed by Contractor or owner that are not required in order to meet other project requirements but may offer advantage to contractor or owner.

When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

The terms "approved equal," "equivalent," or "equal" are used synonymously and shall mean "equivalent" or "acceptable to the Engineer as equivalent to the item or manufacturer specified." The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

C. PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, or of best quality normally used for the purpose in good condition, and free from defects. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size, and capacity. All workmanship shall be of the finest possible by experienced mechanics of the proper trade. In general, provide the following quality grade(s) for all materials and equipment.

Commercial specification grade

Provide all hoists, scaffolds, staging, runways, tools, machinery, and equipment required for the performance of the electrical work. Store and maintain material and equipment in clean condition, and protected from weather, moisture, and physical damage.

Furnish only material and equipment that are listed, labeled, certified, or all three, by an NRTL, whenever any listing or labeling exists for the types of material and equipment specified.

At a minimum, general work practices for electrical construction shall be in accordance with NECA 1 (latest edition), "Standard Practices for Good Workmanship in Electrical Construction".

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus two for mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

Only resubmit those sections requested for resubmittal.

C. SUPPORT SYSTEMS

Steel-Slotted Support Systems (Slotted Channel): Comply with MFMA-3, factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Finishes:

- Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.
- Normally Coatings: Manufacturer's standard PVC, polyurethane or polyester coating applied according to MFMA-3.
- Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-3.

Aluminum Slotted Support Systems (Slotted Channel): Comply with MFMA-3, Type 6063-T6, per ASTM B221; factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Manufacturers: Cooper-B-Line, ERICO International, Hill, Power-Strut, Thomas and Betts, or Unistrut.

Field Fabrication:

Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufactured surfaces.

For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abrasive material (e.g., file, grinding stone, or similar) and cleanser to remove oils, rust, sharp edges, and shards.

D. ACCESS DOORS

Provide access doors for all concealed equipment where indicated or as required, except where above lay-in ceilings. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for the type of construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation. Coordinate electrical requirements of the Architect and other trades, and provide access doors manufactured by: Bar-CO, J.L. Industries, Karp Associates, Milcor, Nystrom Building Products, Wade, and Zum.

E. PENETRATIONS

Coordinate sleeve selection and application with selection and application of fire-stoppeing specified in Division 07 section "Through-Penetration Firestop Systems."

Install raceways to requirements of structure, to requirements of all other work on the project, and to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstructions.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure.

Except where approved in writing by the Engineer, install no raceway in a slab-on-grade. Locate raceway below granular fill below slabs-on-grade.

Install raceways a minimum of 24" below bottom of slab/jacking/grade where practicable.

Install raceways continuous between connections to outlets, boxes, and cabinets with a minimum possible number of bends and not more than the equivalent in 90-degree bends. All raceways shall be installed in accordance with the following:

- Steel Pipe Sleeves for Raceways and Cables: ASTM A53/A53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends, and drip flange.
- Cast-iron Pipe Sleeves for Raceways and Cables: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends, and minimum wall thickness of 1/2 inch.
- Sleeves for Rectangular Openings: Galvanized steel sheet with minimum 0.02 inch thickness and of length to suit application.

F. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilli, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M Corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation instructions for each penetration. The fire-resistance rating shall be as required for proper operation of the complete system, in accordance with the manufacturers' instructions.

Contractor shall be responsible for correct rough-in dimensions, and verify them with Architect and/or equipment supplier prior to rough-in and service installations.

G. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier or Owner shall be provided by the Contractor. Equipment shall be required for proper operation of the complete system, in accordance with the manufacturers' instructions.

Contractor shall be responsible for correct rough-in dimensions, and verify them with Architect and/or equipment supplier prior to rough-in and service installations.

H. SYSTEM TESTING AND ADJUSTING

Adjust, align, and test all electrical equipment on this project provided for (if embedded) or across (if exposed) in the building. The Contractor shall RNC or RAC in exposed environments in accordance with NFPA 70 and installation/configuration properties of RNC or RAC.

Test all systems and equipment according to the requirements in NFPA 70 (latest edition) and all additional requirements specified in following sections.

Maintain the following on the project premises at all times: a true RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter for testing insulation resistance. Provide test data readings as requested or as required by the Engineer.

I. EQUIPMENT IDENTIFICATION

Provide equipment identification nameplates on all panelboards, electrical equipment enclosures, access doors, contact switches, enclosed circuit breakers, and feeder devices in distribution panelboards.

Nameplates:

- Engraved, contrasting color, three-layer, laminated plastic, indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications.
- Field-applied permanent opaque adhesive, compatible with the equipment finish.
- Self-adhering, with a permanent waterproof adhesive.
- Attached with stainless steel screws and hardware.

Attachment method shall be acceptable to the manufacturers of the equipment to which the nameplates are being applied.

K. UNDERGROUND RACEWAY USE:

Provide GRS installed below grade with a corrosion-resistant bonded-plastic or approved mastics coating. This shall include the 90-degree elbow below grade and the entire vertical transition to above.

RNC conduit may be used underground where permitted by local code and where not specifically restricted by these rules. When used, provide plastic-coated GRS, as specified above, for all bends greater than 30 degrees, including the 90-degree elbows below grade and the entire vertical transition for transitions from below grade to above slab.

All site electrical conduits shall be 1" minimum, unless noted otherwise.

L. EQUIPMENT CONNECTIONS

Use FMC for final connection to each motor, transformer, and any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors, or sunlight. Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors.

END OF SECTION 26

Division 26: BASIC ELECTRICAL MATERIALS AND METHODS

1 RACEWAYS

A. METALLIC CONDUIT AND TUBING

Electrical Metallic Tubing, Couplings, and Fittings (EMT): ANSI C80.3, UL 797, Only steel products allowed. Reduced wall EMT is not allowed.

Flexible Metallic Conduit (FMC): Zinc-coated steel or aluminum, UL 1. Reduced-wall FMC is not allowed.

Intermediate Metallic Conduit (IMC): Hot-dip Galvanized Rigid Steel Conduit, ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket, UL 360; fittings: NEMA FB 1.

Rigid Metal Conduit (RMC):

- Hot-dip Galvanized Rigid Steel Conduit (GRS): ANSI C80.1, UL 6.
- Rigid Aluminum Conduit (RAC): ANSI C80.5, UL 6A.

Plastic-Coated IMC, RMC, and Fittings: NEMA RN 1, NRTL listed. Coating thickness of 0.04 inches minimum.

IMC and RMC Listings: NEMA FB 1; compatible with conduit type and material, NRTL listed.

B. NON-METALLIC CONDUIT AND TUBING

Rigid Non-Metallic Conduit (RNC): Schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651

Fittings: NEMA TC 3, TC 6, UL 651, compatible with conduit/tubing type and material, NRTL listed.

Manufacturers: AFC Cable, Afflex, Anamet Electrical, Electri-Flex, Indalex, Manhatan/CDT/Cole-Flex, O-2/Gedney, Republic Raceway, Tyco International, Western Tube and Conduit, or Wheelstrand Tube.

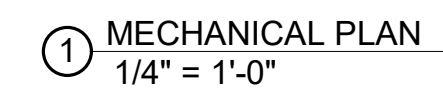
C. CONDUCTORS AND CABLES

A. GENERAL CONDUCTOR AND CABLE REQUIREMENTS

Annexed (soft) copper complying with IEEE C-595-65/NEMA WC70 and UL standards 44 or 63 as applicable.

Conductor Insulation Types: 90-degree C-rated. Type THHN/THWN-2 or XHHW-2 complying with IEEE A-59-65/NEMA WC70.

Sizes of conductors and cables indicated or specified are in American Wire Gage (AWG - Brown and Sharpe).</



ROOFTOP UNIT CONTROL MATRIX					
CONTROL FEATURE	UNITS	RTU-1 SETPOINT OR Y/N	POINT TYPE INTERFACE WITH DDC (READ/WRITE)	NOTES	
BUILDING AUTOMATION SYSTEM (BAS)					
BAS MONITORING AND MANAGEMENT INTERFACE (FOR FUTURE USE)		Y	BACNET		A
SETPOINTS					
COOLING - OCCUPIED SETPOINT		% F	75	READWRITE	
COOLING - UNOCCUPIED SETPOINT		% F	80	READWRITE	
DEAD BAND - MINIMUM HEATING AND COOLING TEMPERATURE SETPOINT DIFFERENCE		% F	5		
HEATING - OCCUPIED SETPOINT		% F	70	READWRITE	
HEATING - UNOCCUPIED SETPOINT		% F	60	READWRITE	
DEHUMIDIFICATION SETPOINT - HUMIDITY SENSOR FEEDBACK		% RH	60%	READWRITE	B
PROGRAMMED CONTROL FEATURES					
HVAC SYSTEM OCCUPIED/UNOCCUPIED MODE - PROGRAMMABLE THERMOSTAT		Y	READ		B
EQUIPMENT ACCESSORIES AND CONTROL MODULES					
OUTSIDE AIR DAMPER - MOTOR OPERATED (MODULATING)		Y	READ POSITION		L
INTEGRATED ECONOMIZER - ENTHALPHY ENABLE	BTULB	26	READWRITE		E
ECONOMIZER FAULT DETECTION AND DIAGNOSTICS (FDD) SYSTEM		Y	READ		F, G
RELIEF - BAROMETRIC DAMPER		Y			
COOLING COIL (DX - STAGED)		Y	READ STATUS		M
DEHUMIDIFICATION - HOT GAS REHEAT		Y	READ STATUS		O
HEATING COIL (ELECTRIC)		Y	READ STATUS		M
SUPPLY FAN CONTROL METHODS					
ON DURING OCCUPIED HOURS		Y			
CYCLE WITH LOADS DURING OCCUPIED HOURS		N			
VARIABLE VOLUME - STAGED FAN CONTROL, IN RESPONSE TO ACTIVE COOLING COIL STAGES		Y	READ STATUS		M, Q
SAFETIES, INTERLOCKS, AND ALARMS					
RETURN AIR SMOKE DETECTOR - SAFETY SHUTDOWN		Y	READ		U
<p>DIV. 23 CONTRACTOR SHALL PROVIDE CONTROL PANEL(S), WIRING, THERMOSTAT(S), TEMPERATURE SENSOR(S), HUMIDISTAT(S), AND/OR CO2 SENSOR(S) WHERE SHOWN ON THE DRAWINGS AND AS REQUIRED TO FACILITATE THE SCHEDULED CONTROL MODULES AND SEQUENCES OF OPERATION. EACH UNIT SHALL CONTROL BASED ON ITS OWN INTERNAL SAFETIES, TIME DELAYS, AND SEQUENCES UNLESS NOTED OTHERWISE. COORDINATE WITH OWNER FINAL BUILDING AND EQUIPMENT SCHEDULES DURING STARTUP. REFERENCE DESIGN SPECIFICATIONS FOR INDIVIDUAL DEVICE REQUIREMENTS.</p>					
NOTES:					
A. PROVIDE UNIT WITH FACTORY MOUNTED DDC CONTROLS AND INTEGRATE INTO THE BAS. BAS SHALL PROVIDE REMOTE SETPOINT ADJUSTMENT, SCHEDULING, AND MONITORING OF THE POINTS LISTED IN THE SCHEDULE FOR EACH UNIT.					
B. DIVISION 23 CONTRACTOR SHALL PROVIDE DEVICE.					
E. IF SETPOINT VALUE IS LISTED, IT INDICATES ECONOMIZER HIGH-LIMIT SHUTOFF. UNIT SHALL BE IN ECONOMIZER IF CONDITIONS ARE LESS THAN SETPOINT. THE FOLLOWING SENSORS SHALL DETERMINE ECONOMIZER ON POINT.					
F. DEVICE SHALL BE FACTORY MOUNTED AND PRE-WIRED FOR OPERATION SUBJECT TO THE ONBOARD CONTROLLER.					
G. PROVIDE UNIT WITH AN FDD SYSTEM CONSISTING OF PERMANENTLY INSTALLED OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR TEMPERATURE SENSORS. THE UNIT CONTROLLER SHALL AT A MINIMUM BE CAPABLE OF PROVIDING SYSTEM STATUS OF ECONOMIZER, COMPRESSOR, HEATING, MIXED AIR LOW LIMIT ALARM, AND SENSOR VALUES. EACH OPERATING MODE SHALL BE CAPABLE OF INDEPENDENTLY OPERATING FOR TESTING. THE SYSTEM SHALL REPORT FAULTS TO AN APPLICATION ACCESSIBLE BY SERVICE PERSONNEL. THE FOLLOWING FAULTS SHALL BE DETECTED: AIR TEMPERATURE SENSOR FAILURE, ECONOMIZER ENABLE/DISABLE WHEN ECONOMIZER SHOULD BE OFF, RESPECTIVELY, DAMPER NOT MODULATING, AND EXCESS OUTSIDE AIR.					
H. EQUIPMENT MANUFACTURER SHALL PROVIDE MODULATING DAMPER AND CONTROLS CAPABLE OF ADJUSTING THE DAMPER POSITION TO MAINTAIN THE SCHEDULED OUTSIDE AIR ON THE DRAWINGS ACROSS ALL FAN SPEEDS. DIV. 23 CONTRACTOR SHALL PROGRAM MULTIPLE DAMPER POSITION SETPOINTS IN THE FIELD DURING TESTING AND BALANCING TO MAINTAIN MINIMUM VENTILATION WHEN NOT IN ECONOMIZER. DAMPER SHALL BE CLOSED DURING UNOCCUPIED HOURS.					
M. UNITARY CONTROLLER SHALL MODULATE AND/OR COIL SUPPLY FAN SPEED SETTING AND COIL CAPACITY STAGES SUBJECT TO THE INTERNAL SAFETIES AND SEQUENCES TO MAINTAIN SCHEDULED SETPOINTS.					
Q. PROVIDE STAGED FAN CONTROL WITH MINIMUM 2 FAN SPEEDS. LOW SPEED SHALL NOT EXCEED 66% OF FULL SPEED AND SHALL DRAW NO MORE THAN 40% OF FAN POWER AT FULL SPEED.					
U. DIVISION 23 CONTRACTOR SHALL PROVIDE DEVICE.					

ROOFTOP UNIT SCHEDULE (DX COOLING, ELECTRIC HEATING)																														
MARK	MANUFACTURER	MODEL	NOMINAL TONS	SUPPLY FAN						COOLING COIL								HEATING COIL							ELECTRICAL				WEIGHT (LBS)	FPM
				CFM	ESP (IN)	NOM PH (I/O)	VFD (Y/N)	TH (MBH)	SH (MBH)	EAT (°F DB) (°F WB)	LAT (°F DB) (°F WB)	REFR TYPE	MIN EFF (EER)	MIN NO STAGES	MAX VEL (FPM)	MIN OUT (MBH)	NOM (KW)	EAT (°F DB) (°F WB)	MIN NO STAGES	M/A CFM										
					5	2000	0.8	1.00	NO	60.0	44.5	(75.8)	62.6	54.8	(52.0)	R410A	12	1	550	61.4	(18.0)	(61.7)	90.0	0	315					
RTU 1	TRANE	TSC060																		VPH	MCA	MOC	DISC TYPE	NON-FUSED	930	A-P				

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- A. REFER TO ROOFTOP UNIT CONTROL MATRIX FOR CONTROL FEATURES, MODULES, AND ACCESSORIES THAT SHALL BE PROVIDED WITH THE EQUIPMENT.
- B. EQUIPMENT SIZED FOR 105 °F AMBIENT TEMPERATURE.
- C. PROVIDE 4" MERV 13 EFFICIENT PLEATED THROWAWAY AIR FILTERS.
- D. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
- E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
- F. PROVIDE FACTORY 2-SPEED MOTOR TO FACILITATE STAGED FAN SPEED CONTROL.
- G. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
- H. 125 VAC, 20 AMP DUX CONDUIT RE-ENTRANCE UNITS TO UNIT READY FOR FIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCATIONS WHEN IN USE.
- I. SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXCLUDED TO UNIT.
- J. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 16 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE CURB THICKNESS AND ROOF PAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
- L. SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT AND CURB.
- M. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF 50 °F.
- N. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
- P. PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL KW IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT POWER SUPPLY WITH ELECTRICAL CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED.

MARK	SERVICE DESCRIPTION	MANUFACTURER	MODEL	MOUNTING	CFM	ESP (IN)	NOM HP	FAN RPM	DRIVE (BELT/DIRECT)	ELECTRICAL			WEIGHT (LBS)	NOTES
										V/PH	DISC TYPE	STARTER TYPE		
EF 1	EXHAUST	GREENHECK	G-070-VG	ROOF	160	0.4	0.07	1489	DIRECT	115/1	NON-FUSED	PVNR	30	A-D
EF 2	EXHAUST	GREENHECK	G-090-VG	ROOF	280	0.2	0.25	1074	DIRECT	115/1	NON-FUSED	PVNR	10-50	C-F
<p>MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.</p> <p>NOTES:</p> <p>A. PROVIDE INSULATED ROOF CURBS WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 8 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.</p> <p>B. PROVIDE BROSCHEEN AND GRAVITY GASKET/RAFT DAMPER.</p> <p>C. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.</p> <p>D. PROVIDE WITH MANUFACTURER'S ELECTRONICALLY COMMUTATED (EC) MOTOR.</p> <p>E. PROVIDE RUBBER IN SHEAR ISOLATION AND ALL-THREAD HANGING RODS.</p> <p>F. PROVIDE WITH MANUFACTURER'S FAN SPEED CONTROLLER FOR BALANCING PURPOSES.</p>														

UNIT HEATER SCHEDULE (ELECTRIC)												
MARK	AREA	MANUFACTURER	MODEL	MIN OUT (MBH)	MIN (KW)	MIN NO OF STAGES	CFM	MOTOR HP	THROW (FT)	V/PH	DISC TYPE	NOTES
UH 1	WATER ENTRY	QMARK	MUHO3-81	10.2	3.0	1	350	0.01	12	208/1	NON-FUSED	A-D
UH 2	ELECTRICAL	QMARK	MUHO3-81	10.2	3.0	1	350	0.01	12	208/1	NON-FUSED	A-D
UH 3	STORAGE	QMARK	MUHO5-81	17.0	5.0	1	350	0.01	12	208/1	NON-FUSED	A-D

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- A. MOUNT 10 FEET ABOVE FINISHED FLOOR WITHOUT OBSTRUCTING AIRFLOW.
- B. PROVIDE WITH WALL MOUNTED THERMOSTAT.
- C. PROVIDE NECESSARY MOUNTING BRACKET AND ACCESSORIES FOR HORIZONTAL DISCHARGE.
- D. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.

MARK	MANUFACTURER	MODEL	REFR TYPE	SUPPLY FAN				COOLING COIL				HUMIDIFIER		ELECTRICAL		WEIGHT (LBS)	NOTES		
				CFM	ESP (INCH)	HP	TC (°F)	SC (°F)	EAT		LAT (°F)	KW	LBS / H	V/PH	MCA			MOCP	
									(°F DB)	(°F WB)									(°F DB)
CRU 1	LIEBERT	VS042AD	R407C	8060	0.5	3.75	127.0	115.0	75.0	61.0	57.7	53.6	4.8	11	2083	96	110	1550	A-H
CRU 2	LIEBERT	VS042AD	R407C	8060	0.5	3.75	127.0	115.0	75.0	61.0	57.7	53.6	4.8	11	2083	96	110	1550	A-H

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- A. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.
- B. EQUIPMENT SIZED FOR 105°F AMBIENT TEMPERATURE.
- C. PROVIDE 2" MERV 8, EFFICIENT THROWAWAY AIR FILTERS.
- D. PROVIDE GRAVITY OPERATED BACKDRIFT DAMPER AT UNIT DISCHARGE.
- E. UNIT SHALL CONTAIN MINIMUM 2 SEMI-HERMETIC COMPRESSORS TO PROVIDE MINIMUM OF 2 STAGES OF COOLING.
- F. PROVIDE UNIT WITH INTEGRAL STARTER AND NON-FUSED DISCONNECT SWITCH.
- G. PROVIDE FRONT INLET WITH MANUFACTURER RETURN GRILLES.
- H. PROVIDE TOP DISCHARGE WITH DUCT CONNECTION.

COMPUTER ROOM CONDENSING UNIT										
MARK	SERVICE	MANUFACTURER	MODEL	AMBIENT (°F)	VOLTS	PH	MCA	MOCp	WEIGHT (LBS)	NOTES
CU 1	CRU 1	LIEBERT	MCM080E8	105	208	3	6	15	450	A,B,C
CU 2	CRU 2	LIEBERT	MCM080E8	105	208	3	6	15	450	A,B,C

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- A. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
- B. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
- C. PROVIDE 2-PAN DUAL CIRCUIT CONDENSER.
- D. UNIT SHALL OPERATE DOWN TO ZERO DEGREES FAHRENHEIT.

GRILLE, REGISTER AND DIFFUSER SCHEDULE										
CAT.	SERVICE	MANUFACTURER	MODEL	CONSTRUCTION	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN.)	MAX PRESS	DROP IN	NOTES
CEGK	EXHAUST	PRICE	90	ALUMINUM	EGGGRATE	CEILING	12"x12"	25	0.08	B.C.F.H
CD1	SUPPLY	PRICE	SCD	STEEL	SQUARE CONE	CEILING	12"x12"	25 <td>0.08</td> <td>A,B,C,F</td>	0.08	A,B,C,F
CGT	TRANSFER	PRICE	80	ALUMINUM	EGGGRATE	CEILING	12"x12"	25 <td>0.08</td> <td>B,C,F</td>	0.08	B,C,F
DS1	SUPPLY	PRICE	80	STEEL	EGGGRATE	DUCT	REFER TO PLANS	25 <td>0.08</td> <td>B,D,F,G</td>	0.08	B,D,F,G
DS2	SUPPLY	PRICE	610	STEEL	LOUVERED	DUCT	REFER TO PLANS	30 <td>0.08</td> <td>B,D,F,G</td>	0.08	B,D,F,G
WE1	EXHAUST	PRICE	530	ALUMINUM	LOUVERED	WALL	REFER TO PLANS	25 <td>0.08</td> <td>B,D,F,G</td>	0.08	B,D,F,G
WR1	RETURN/TRANSFER	PRICE	510	STEEL	WALL	REFER TO PLANS	25 <td>0.08</td> <td>B,D,F,G</td>	0.08	B,D,F,G	

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

- A. 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS.
- B. NECK SIZE TO MATCH DRAWINGS. PROVIDE BRASS DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
- C. ENAMEL FINISH, WHITE TO MATCH CEILING COLOR.
- D. FRONT BLADES PARALLEL TO LONG DIMENSION.
- E. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE.
- F. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN.
- G. ENAMEL FINISH, WHITE TO MATCH WALL/CEILING COLOR. COORDINATE WITH ARCHITECT FOR FINISH COLOR.
- H. PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE.

LOUVER SCHEDULE										
MARK	AREA SERVED	SERVICE	MANUFACTURER	MODEL	SIZE (W" x H")	CFM	MIN. FREE AREA (SF)	MAX. VEL. (FPM)	MAX. APD (IN. W.C.)	NOTES
LV-1	TRASH	EXHAUST	RUSKIN	ELF15J	22x12	500	0.72	750	0.09	A-D

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. PROVIDE 1/4" MESH ALUMINUM BIRD SCREEN.

B. PROVIDE STANDARD MILL FINISH.

C. FRAME TYPE SHALL MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECT.

D. PROVIDE WITH INTEGRAL LOW-LEAKAGE BACKDRAFT DAMPER.

M3 01

[illegible]

REGISTRATION



BRADLEY E. CHAM
LICENSE # 028603

PROJECT TEAM	
ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	G&A
LANDSCAPE	HOERR SCHAUDT LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



WWW.HENDERSONENGINEERS.COM
1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2022

SHEET TITLE

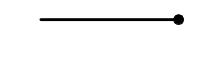
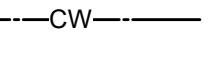
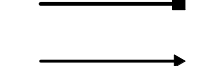
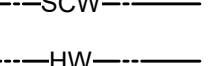
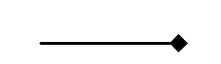
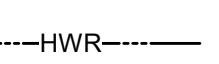
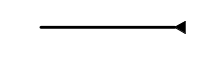
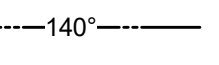

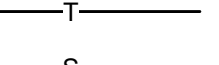


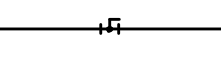
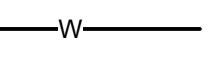
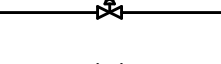
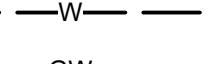
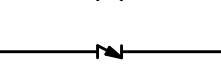
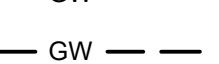

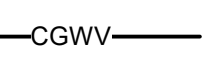
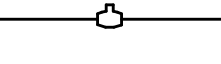
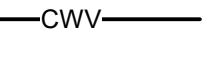

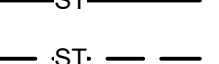

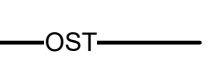
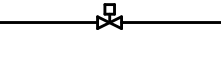
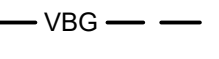
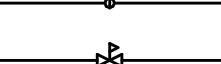
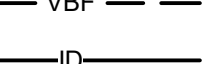
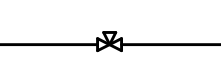
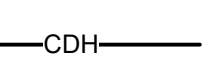
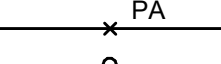
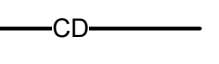
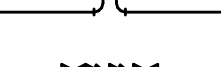
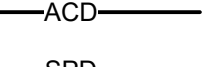
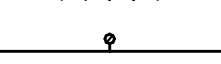
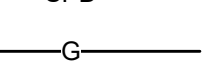
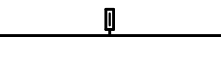
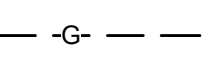
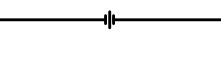
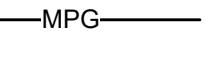

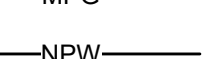
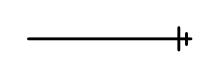
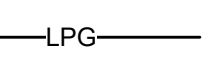
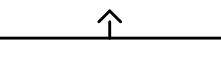
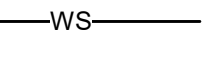
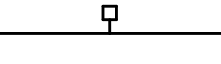
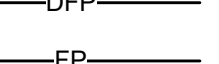
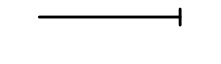
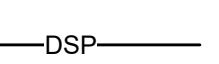
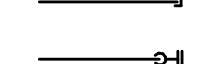
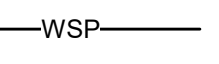

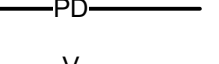

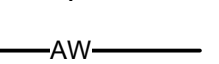

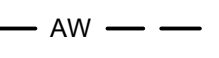
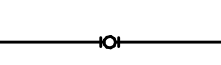
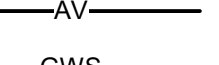
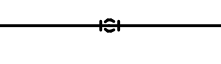
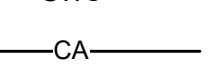
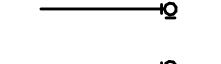
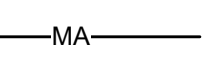
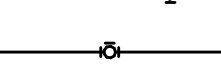
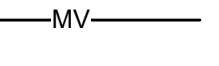
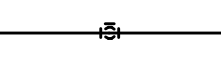

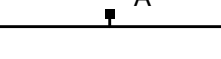
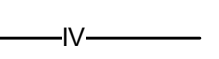

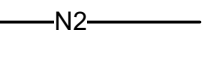

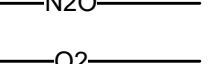
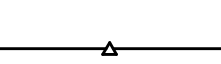
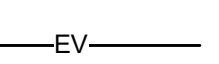
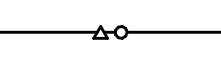
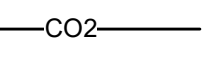

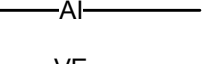

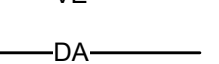

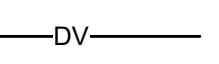

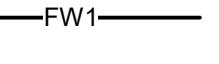

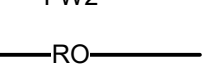

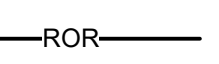




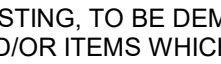

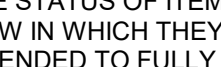

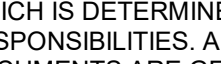
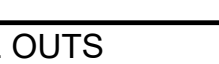

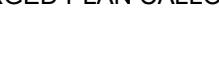

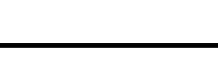





PLUMBING GENERAL NOTES AND LEGEND

SHEET NUMBER

P0.00

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED

V2.02

STANDARD MOUNTING HEIGHTS			PIPING SYMBOLS			PIPING LINETYPES		
CLINIC (SERVICE SINKS) (RIM)			30"		OXYGEN OUTLET		DOMESTIC COLD WATER (CW)	
HOSE BIBB (CENTER LINE)			36"		NITROGEN OXIDE OUTLET		SOFTENED COLD WATER (SCW)	
ICE MAKER OUTLET BOX (CENTER OF BOX)			24"		MEDICAL AIR OUTLET		DOMESTIC HOT WATER (HW)	
JANITOR'S SINK FAUCET FITTINGS (CENTERLINE)			42"		NITROGEN OUTLET		DOMESTIC HOT WATER RECIRC. (HWR)	
LAVATORY OR SINK					MEDICAL VACUUM INLET		DOMESTIC HOT WATER (140°)	
STANDARD HEIGHT (RIM)			31"		FLOOR SINK (FS), SIZE & TYPE		TRAP PRIMER LINE (T)	
ADA ACCESSIBLE (RIM)			34"		FLOOR DRAIN (FD), SIZE & TYPE		SOIL PIPING - ABOVE FLOOR (S)	
CHILD HEIGHT (RIM)			24"		ROOF DRAIN (RD), SIZE & TYPE		SOIL PIPING - BELOW FLOOR (S)	
NON FREEZE WALL HYDRANT (AFG TO CENTERLINE)			18"		BALL VALVE		WASTE PIPING - ABOVE FLOOR (W)	
SHOWER HEAD					CONTROL VALVE		WASTE PIPING - BELOW FLOOR (W)	
MEN (CENTERLINE)			76"		SHUTOFF VALVE		GREASE WASTE - ABOVE FLOOR (GW)	
WOMEN (CENTERLINE)			72"		CHECK VALVE		GREASE WASTE - BELOW FLOOR (GW)	
SHOWER VALVE					BALANCING VALVE WITH PRESSURE PORTS		COMBINATION GREASE WASTE AND VENT (CGWV)	
STANDARD HEIGHT - MEN (CENTERLINE)			48"		WATER METER		COMBINATION WASTE AND VENT (CWV)	
STANDARD HEIGHT - WOMEN (CENTERLINE)			42"		STRAINER		STORM DRAIN - ABOVE FLOOR (ST)	
ADA ACCESSIBLE (CENTERLINE)			38" TO 48"		STRAINER WITH BLOWOFF		OVERFLOW DRAIN - BELOW FLOOR (ST)	
SURGEON'S SCRUB-UP SINK (FRONT RIM)			35"		RELIEF/SAFETY VALVE		OVERFLOW STORM DRAIN - ABOVE FLOOR (OST)	
TUB VALVE					SOLENOID VALVE		VENT BELOW GRADE (VBG)	
STANDARD HEIGHT (CENTERLINE)			32"		PRESSURE REDUCING VALVE		VENT BELOW FLOOR (VBF)	
ADA ACCESSIBLE (CENTERLINE)			32"		GAS PRESSURE REGULATOR		INDIRECT DRAIN (ID)	
CENTER BETWEEN GRAB BAR AND TUB RIM			32"		THERMOSTATIC MIXING VALVE		CONDENSATE DRAIN - HIGH EFFICIENCY RTU (CDH)	
URINAL					PIPE ANCHOR		CONDENSATE DRAIN (CD)	
STANDARD HEIGHT (RIM)			24"		EXPANSION JOINT		AUXILIARY CONDENSATE DRAIN (ACD)	
ADA ACCESSIBLE (RIM)			17"		BACKFLOW PREVENTER		SUMP OR SEWAGE PUMP DISCHARGE (SPD)	
CHILD HEIGHT (RIM)			14"		PRESSURE GAUGE		NATURAL GAS (G)	
WASHING MACHINE OUTLET BOX (RIM)			42"		THERMOMETER		NATURAL GAS ON ROOF (G)	
WATER CLOSET					UNION		MEDIUM PRESSURE NATURAL GAS (MPG)	
STANDARD HEIGHT (RIM)			15"		FLANGE CONNECTION		MEDIUM PRESSURE NATURAL GAS ON ROOF (MPG)	
ADA ACCESSIBLE (TOP OF SEAT)			17" TO 19"		HOSE BIBB (HB)		NON-POTABLE WATER (NPW)	
CHILD HEIGHT (RIM)			10"		NON-FREEZING WALL HYDRANT (NW)		LIQUEFIED PETROLEUM GAS (LPG)	
WATER COOLER OR DRINKING FOUNTAIN					MANUAL / AUTOMATIC AIR VENT OR VACUUM RELIEF VALVE		WATER SERVICE (WS)	
STANDARD HEIGHT (SPOUT)			41"		PRESSURE / VACUUM SWITCH		FIRE PROTECTION SPRINKLER DRY (DPF)	
ADA ACCESSIBLE (SPOUT)			36"		CLEANOUT		FIRE PROTECTION SPRINKLER WET (FP)	
CHILD HEIGHT (SPOUT)			30"		CAP		FIRE PROTECTION STANDPIPE DRY (DSP)	
					WALL CLEANOUT (WCO)		FIRE PROTECTION STANDPIPE WET (WSP)	
					FLOOR CLEANOUT (FCO)		CONDENSATE PUMP DISCHARGE (PD)	
					EXTERIOR CLEANOUT (ECO)		VENT PIPING (V)	
					ELBOW UP		ACID WASTE - ABOVE FLOOR (AW)	
					ELBOW DOWN		ACID WASTE - BELOW FLOOR (AW)	
					TEE UP		ACID VENT (AV)	
					TEE DOWN		GRAY WATER (GWS)	
					ELBOW UP WITH SHUT-OFF VALVE (SOV)		COMPRESSED AIR (CA)	
					ELBOW DOWN WITH SHUT-OFF VALVE (SOV)		MEDICAL AIR (MA)	
					TEE UP WITH SHUT-OFF VALVE (SOV)		MEDICAL VACUUM (VE)	
					TEE DOWN WITH SHUT OFF VALVE (SOV)		HELIUM (HE)	
					WATER HAMMER ARRESTER (WHA) WITH PDI SIZES, (A, B, C, D, & E)		INSTRUMENT AIR (IA)	
					RECIRCULATION PUMP		INSTRUMENT VACUUM (IV)	
					P-TRAP		NITROGEN (N2)	
					GAS COCK		NITROGEN OXIDE (N2O)	
					TRAP PRIMER		OXYGEN (O2)	
					TRAP PRIMER WITH DISTRIBUTION UNIT		EVAC/WAGO (EV)	
							CARBON DIOXIDE (CO2)	
							MEDICAL AIR INTAKE (AI)	
							MEDICAL VACUUM EXHAUST (VE)	
							DENTAL AIR (DA)	
							DENTAL VACUUM (DV)	
							FILTERED WATER (FW1)	
							FILTERED WATER W/ SCALE INHIBITOR (FW2)	
							REVERSE OSMOSIS (RO)	
							REVERSE OSMOSIS REMINERALIZATION (ROR)	

GENERAL NOTES

1. PROVIDE A CONSTRUCTION RECORD SET OF "AS-BUILT" DOCUMENTS TO THE ARCHITECT REFLECTING ANY VARIANCES COORDINATED BY THE ARCHITECT. DISCREPANCIES CONTRARY TO THE CONSTRUCTION DOCUMENTS, REFER TO SPECIFICATIONS.
2. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL CONSTRUCTION DETAILS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. ADVISE THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO SUBMISSION OF BID.
3. PROVIDE TO THE ARCHITECT A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS, REFER TO SPECIFICATIONS.
4. INSTALLATION SHALL COMPLY WITH LEGALLY CONSTITUTED CODES AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
6. VERIFY LOCATION AND DEPTH OF UTILITIES AT POINTS OF CONNECTION BEFORE START OF PIPING INSTALLATION.

REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
8. DO NOT SCALE FLOOR PLANS FOR EXACT HORIZONTAL LOCATION OF PIPE ROUTING.
9. INSTALL CONCEALED PIPING TIGHT TO THE STRUCTURE AND AS HIGH AS POSSIBLE.
10. PIPING SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
11. INSTALL EXPOSED PIPING, WHERE NECESSARY, IN FINISHED AREA TIGHT TO THE STRUCTURE, WALL OR CEILING, AND AS HIGH AS POSSIBLE. INSTALL PIPING PARALLEL AND /OR PERPENDICULAR TO WALLS.
12. INSTALL VALVES AND APPURTENANCES A MAXIMUM OF 24" ABOVE CEILING IN ACCESSIBLE LOCATION WITHIN 24" OF ACCESSIBLE WALLS OR ACCESSIBLE CEILING TIES. PROVIDE PIPE AND FITTINGS TO INSTALL VALVES AND APPURTENANCES AT REQUIRED HEIGHT AND WITHIN 24" OF ACCESS DOORS OR ACCESSIBLE CEILING.
13. INSTALL NO PLASTIC PIPE IN THE CEILING RETURN AIR PLENUM.
14. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
15. COORDINATE PIPING INSTALLATION WITH STRUCTURAL GRADE BEAMS, FOOTINGS, COLUMN PIERES, ETC. SLEEVE PIPING THROUGH GRADE BEAMS, FOOTING, ETC. WHERE REQUIRED AND AS NOTED ON THE COORDINATE SLEEVE.
16. COORDINATE ALL PIPING WITH THE ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR AND GENERAL CONTRACTOR BEFORE CONCRETE IS INSTALLED.
16. CLEAN FAULT AIRERATORS AND PIPE STRAINERS PRIOR TO TURNING DRAWDING OVER TO THE OWNER.
17. PROVIDE TRAP PRIMERS WHERE REQUIRED BY LOCAL AUTHORITIES.
18. COORDINATE PIPE ROUTING AWAY FROM ELECTRICAL PANELS. DO NOT INSTALL PIPING OVER ELECTRICAL PANELS.
19. PAINT ALL EXPOSED GAS AND WATER PIPING USING RUST PREVENTATIVE PAINT. PAINT COORDINATION SHALL BE COORDINATED WITH THE ARCHITECT AND /OR OWNER.
20. COORDINATE ALL ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 1" MINIMUM CLEARANCE FROM ALL AIR INTAKES. MAINTAIN 2" CLEARANCE FROM ALL OTHER EQUIPMENT.
21. INSULATE PIPING ROUTED IN EXTERIOR BUILDING WALLS WITH MINIMUM 2" BATT INSULATION TO PREVENT FREEZING.
22. PROVIDE "HEAVY-DUTY" NO-HUB COUPLINGS ON STORM PIPING, INCLUDING CONNECTIONS TO DRAIN ROADS AND DRAINAGE PIPING AT ALL JOINTS. SEE DIVISION 22 SPECIFICATIONS FOR MORE INFORMATION.
23. PROVIDE "HEAVY-DUTY" NO-HUB COUPLINGS ON SANITARY PIPING 3" & LARGER. SEE DIVISION 22 SPECIFICATIONS FOR MORE INFORMATION.
24. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC-DWV TO CAST IRON AT SLAB ON GRADE. SEE DIVISION 22 SPECIFICATIONS FOR MORE INFORMATION.
25. LOW CONTROL VALVES SHALL BE SIZE 1/2" AND SET AT 0.5 fpm UNLESS NOTED OTHERWISE.
26. WATER HAMMER ARRESTORS SHALL BE SIZE "A" UNLESS NOTED OTHERWISE.
27. PROVIDE VERTICAL LIFT SPRING LOADED CHECK VALVES IN HOT AND COLD WATER SUPPLIES FOR MOP SINK FAUCETS DOWNSTREAM OF SHUTOFF VALVES.
28. PROVIDE SIZE AND LENGTH OF HOT WATER FIXTURE SUPPLY PIPE FROM CIRCULATED HOT WATER BRANCH OR MAIN TO EACH FIXTURE PER 2015 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C404.3.1, FOR 1/2" HOT WATER FIXTURE SUPPLY PIPE TO INDIVIDUAL LAVATORIES. PROVIDE MAXIMUM LENGTH OF TWO FEET. FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS. PROVIDE MAXIMUM LENGTH OF TWO FEET FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS. PROVIDE MAXIMUM LENGTH OF TWO FEET FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS. PROVIDE MAXIMUM LENGTH OF 21 FEET.

CALL OUTS

ENLARGED PLAN CALLOUT

NOT IN SCOPE

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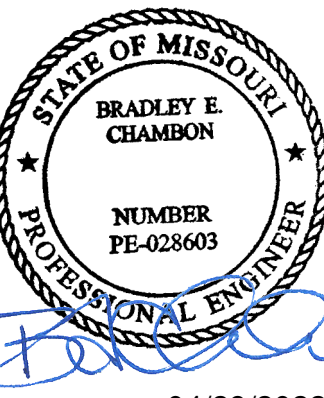


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EE'S SUMMIT, MO 64081

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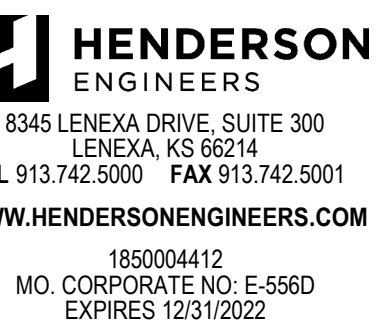
REGISTRATION



OLEY E. CHAMBON
NSE # 028603

PROJECT TEAM

TECT	FINKLE-WILLIAM ARCHITECTURE	GBA
SCAPE	HOERR SCHAUDT LAND3	
NDATIONS	BSE STRUCTURAL ENGINEERS	
CTURAL	BSE STRUCTURAL ENGINEERS	
ING	HENDERSON ENGINEERS	
ANICAL	HENDERSON ENGINEERS	
IRICAL	HENDERSON ENGINEERS	
ROTECTION	HENDERSON ENGINEERS	
RACTOR	FOGEL ANDERSON	

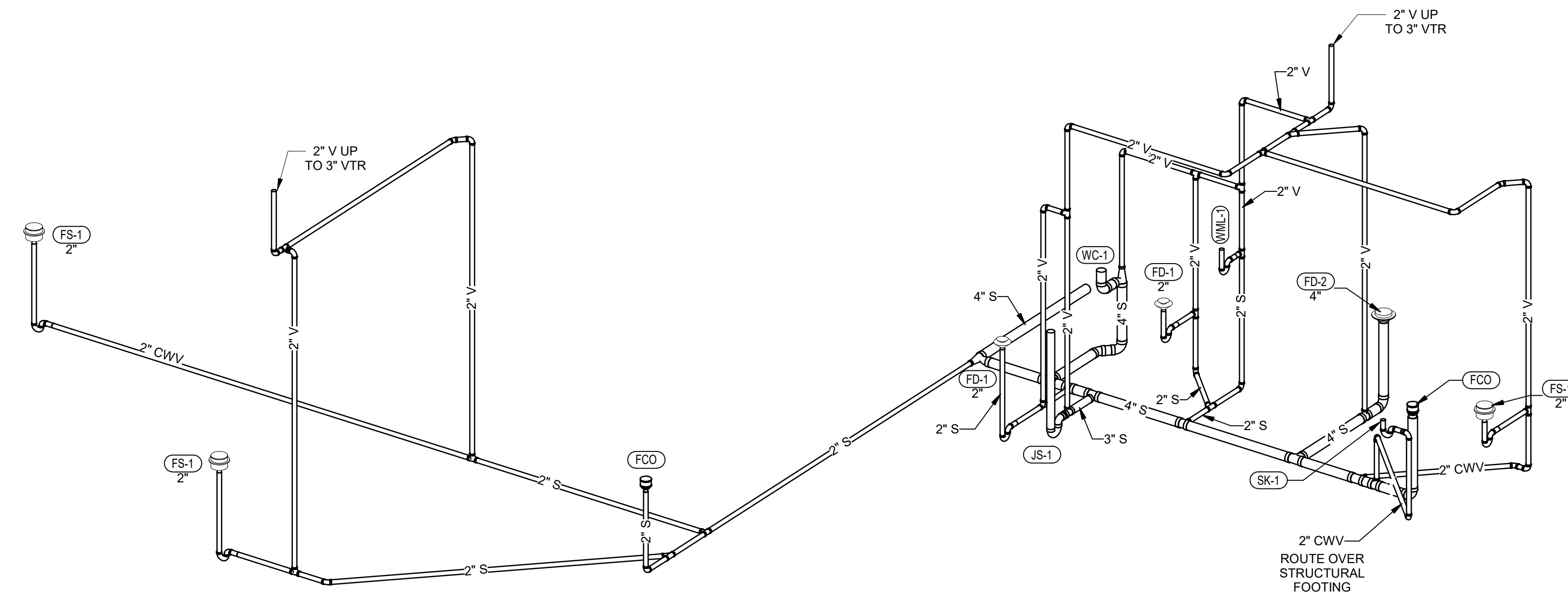


SHEET TITLE

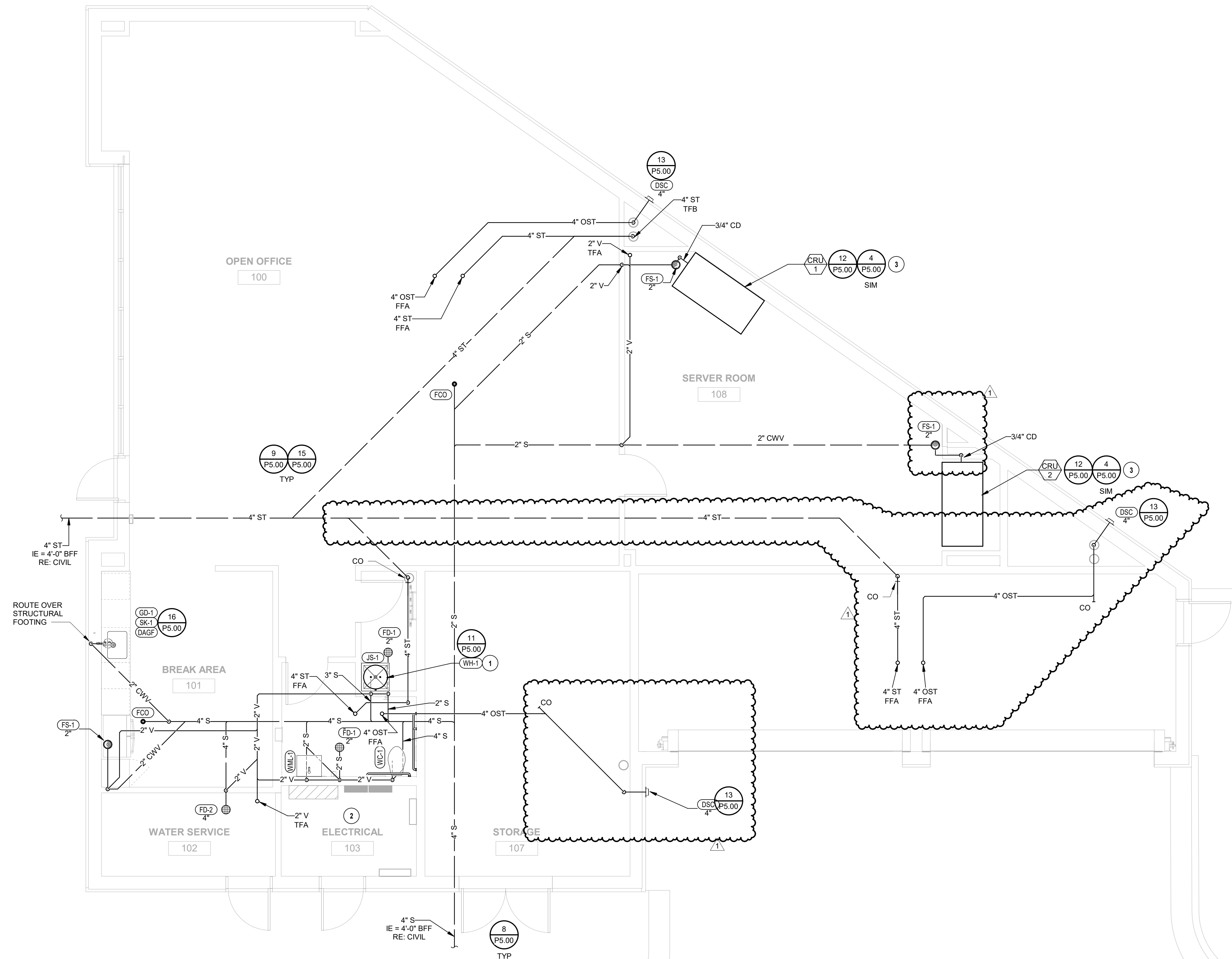
PLUMBING WASTE & VENT FIRST FLOOR PLAN

EET NUMBER

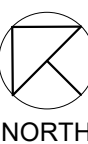
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② Plumbing Waste & Vent Riser Diagram



① PLUMBING WASTE & VENT FIRST FLOOR PLAN
1/4" = 1'-0"



Division 22: PLUMBING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, and transportation, services and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and equipment specified.

The specifications and drawings for the Project are complementary, and any portion of work specified in one shall be construed as described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the system and showing all of the details of the system, including all control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per requirements' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Division 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

1. Division 21 – Fire Suppression	Division 15
2. Division 22 – Plumbing	Division 15
3. Division 23 – HVAC	Division 16
4. Division 25 – Communications	Division 16
5. Division 26 – Electrical	Division 16
6. Division 28 – Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar activities as described in both."

Install: "to perform all operations at the project site including, but not limited to, the actual installation, erecting, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install, complete and ready for the intended use."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the same intent.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

The term lead free refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content of less than and equal to 0.25% per safe drinking water act as amended January 4, 2011 Section 1417.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Install material in accordance with the manufacturer's instructions and applicable code instructions. Model numbers listed in specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Engineer. Workmanship shall be the best attainable, as evidenced by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial grade and shall be installed in a light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of his work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of the Engineer. Workmanship shall be the best attainable, as evidenced by experienced mechanics. Installations shall comply with applicable codes and laws.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is preferred, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for not less than 5 years.

F. COORDINATION

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the owner.

Unless otherwise indicated, General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings when required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute his work in such a manner as not to interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scaled dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors which could have been avoided by proper checking and verification.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current editions of the codes and standards as published by the local AHJ, including any amendments and standards as set forth by the following:

- National Fire Protection Association (NFPA)
- Underwriters Laboratories (UL)
- Occupational Safety and Health Administration (OSHA)
- American Society of Mechanical Engineers (ASME)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- American National Standards Institute (ANSI)
- American Society of Testing Materials (ASTM)
- Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, or codes, the contract documents shall take precedence. Where there are conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

H. PROTECTION OF EQUIPMENT AND MATERIAL

Store and protect from damage equipment and material delivery to job site. For materials and equipment susceptible to changing weather conditions, damage, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under the contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of each system as implied by the design and equipment specified.

Plug or cap open ends of piping systems before and installed during construction when not in use to prevent debris from entering into the systems.

Keep the manufacturer-provided protective coverings on floor drains, floor sinks and trench drains during construction. Remove coverings at the termination of the work and patch exposed surfaces.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

- Contractor has investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
- Proposed substitution to be consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
- Proposed substitution has received necessary approvals of authorities having jurisdiction.
- Same warranty will be furnished for proposed substitution as for specified Work.
- If accepted substitution fails to perform as required, Contractor shall replace substitute or system with that originally specified and bear all costs incurred thereby.
- Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least 10 (ten) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided for in the contract documents.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittal, verify that the equipment submitted is mutually compatible and suitable for the intended use, will be available space, and maintain manufacturer recommended service clearances.

Transmit submittals as early as possible to support the project schedule. Allow for two weeks Engineer review time, plus follow mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. Submittal with catalog data not specifically noted to be part of the item specified and/or not stated without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals are required to individual specifications. Illegible submittals will be rejected and resubmitted within 10 business days. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out illegible items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for that Project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall submit the documents and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities, omissions of components or fittings, coordination of electrical requirements, and not coordinating items with actual building conditions.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

K. ELECTRONIC DRAWINGS

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD, or hard drive, or direct download, as desired, from the Engineer for a shipping and handling fee of \$200 for a drawing set up to 12 sheets and \$15 per sheet for each additional sheet. Contact the Architect for written authorization and Enter for the necessary release agreement for electronic delivery shipping method and drawing format. In addition to payment, written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to the final set of drawings of the approved shop drawings. Insert one set into each copy of the manual described below.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment literature is received and deemed complete by the Architect and Engineer.

Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

N. SPARE PARTS

Include record drawings as described above.

Refer to Division 01 for acceptance of electronic materials for this project. For electronic materials, refer to paragraph "Submittals" for requirements.

O. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility and/or machine; operation and maintenance; safety and safety related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include the name, attendance and subject of the training. The Contractor's representative shall sign the certification letter and the administrative authority and/or the Owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the Architect and Engineer, make general operating tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

P. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranty shall include a guarantee of free circulation of liquids throughout the system as intended without leaks, excessive noise, or water hammer.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, in accordance with the terms of the warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be set of sufficient width, with crib or brace trenches to prevent caving or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill in maximum 8 inch layers of well-graded dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill and surplus of excavated material which is not required for backfill to the satisfaction of the Architect.

B. EXTERIOR UTILITY CONNECTIONS

Terminate domestic water, storm, and sewer lines at a point approximately five feet from the building wall, or as shown on the drawings. Make connection to the various services provided by others and coordinate connection requirements with civil engineer. Verify that installation will tie into the existing system. The Contractor shall be responsible for the installation and tie-in of the building shall be push-on joints. Joints shall conform to the requirements of ANSI A21.1.

Interior Waste And Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB I & H Foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. If hubless waste and vent pipe is not permitted below base slab, PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, "solid wall" cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints as permitted where approved by code. (Note: PVC piping is not allowed in ceiling return air plenums).

C. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect.

D. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match original material and construction including the ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces to a manner satisfactory to the Architect.

E. ROUGH-IN

Coordinate without delay all rough-in with all other divisions. Conceal piping, conduit, and rough in except in unfinished areas and where otherwise shown.

F. SUPPORT SYSTEMS

Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.

Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements.

G. ACCESS DOORS

Provide access doors for all concealed equipment where indicated or as required, except where doors are required for access to equipment. Access doors shall be of the proper construction for type of construction in which it is installed. Obtain Architect's approval of type, size, location, and finish before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and the necessary hardware for installation, concealed hinges, flush swinging, and without lock, and anchor straps. Provide access doors manufactured by Milcor, Titus, Zurn, or equal.

H. PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6 inches and larger. Provide 12 inch thick cellular foam insulation around perimeter of non-pressure pipe passing through concrete slab on grade. Insulation shall extend to 2 inches above and below the concrete slab.

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2 inch of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product listing for UL listing, location, wall or floor rating and installation details for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeves for a minimum of 1 inch annular clear space between inside of sleeve and outside of insulation.

Seal elevated concrete walls with water proof membrane penetrations with "wall pipes" and water proof sealant. Seal joints between "wall pipes" and concrete walls with neoprene gasket and clamping ring. Provide cast iron "wall pipes" with integral water-ring manufactured by Josam, Jay R. Smith, Wade, Watts, or Zurn.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 12 inch thick cellular foam insulation around perimeter of non-pressure pipe passing through concrete slab on grade. Insulation shall extend to 2 inches above and below the concrete slab.

I. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule. Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping testing agency and accepted by the Architect and Engineer judgment or equivalent fire-resistance-rated assembly, include qualifications data for testing agency.

J. ELECTRICAL WIRING

Line voltage wiring shall be provided by Division 16. Line voltage control and interlock wiring for plumbing systems shall also be provided by Division 16. Low voltage control wiring shall be provided by Division 23. Furnish wiring diagrams to Division 26 as required for proper equipment installation. Coordinate with Division 26 the actual wire sizing maps for plumbing equipment (from the equipment manufacturer) to ensure proper installation.

K. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Furnish and install rough-in-wastes, vents and water services. Provide final connection to kitchen equipment, furnished by others, in locations as specified on the drawings. Provide factory-fabricated and assembled units, complete with attachment devices and the necessary hardware for installation, concealed hinges, flush swinging, and without lock, and anchor straps. Provide access doors manufactured by Milcor, Titus, Zurn, or equal.

Contractor shall be responsible for correct rough-in dimensions and shall verify same with Architect and/or equipment supplier prior to service installation.

L. SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system and maintain the equipment provided for this project. Make tests in the presence of the administrative authority and/or the Owner's authorized representative.

Notify the Architect and the AHJ, three (3) working days prior to making plumbing system tests. Leave concealed work uncovered until the required tests have been completed, but if necessary due to construction procedure, tests on portions of the work may be made, and when satisfactory, the work may be concealed. Test piping before insulation is installed, and before backfill. Pipes, joints, flanges, valve stems, etc., shall be leak tight. Repair or replace system defects with new materials. Caulking of defective joints, cracks or holes will not be permitted.

Test the Contractor's representative of the Owner's authorized representative shall sign the administrative authority and/or the Owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the Architect and Engineer, make general operating tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

Test the drainage and vent system by plugging openings with test plugs, except those at the top of the stacks. Fill the system with water, test residual air of the water level remains stationary for not less than one (1) hour. Subject the drainage and vent system to a pressure of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

Test the domestic water system by filling it and then isolating the system from its source. Keep the system closed for a period of twenty-four hours with no fixture being used. The pressure drop for this test period shall not exceed 10 psi. Test water piping to a 125 PSI hydrostatic pressure.

3. PLUMBING PIPING

A. PIPING MATERIALS

Materials specified or noted on the drawings are subject to the approval of local code authorities. Verify approval before installing any material or joining method.

Domestic Water (Cold, Hot and Hot Water Recirculation): Domestic water piping installed above the floor shall be set of sufficient width, with crib or brace trenches to prevent caving or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill in maximum 8 inch layers of well-graded dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill and surplus of excavated material which is not required for backfill to the satisfaction of the Architect.

Interior Waste And Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB I & H Foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. If hubless waste and vent pipe is not permitted below base slab, PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, "solid wall" cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints as permitted where approved by code. (Note: PVC piping is not allowed in ceiling return air plenums).

Underground domestic water piping 3 inch and larger shall be class 52 ductile iron meeting the requirements of ANSI / AWWA Standard C151/A21.5.1. Piping shall be double cement lined in accordance with ANSI / AWWA Standard C104/A21.4. Fittings shall have mechanical joints. In the Contractor's option, pipe joints may be welded or NSF. 1/2 inch wrought copper fittings and soldered connections made with 95/5 solder. Brazed mechanically formed tee connections (T-drill) may be used in copper lines where approved by code; connection shall be brazed joints with AWS A5.8, BAg Silver filler metal.

Underground domestic water piping 2 inch and smaller shall be Type "K" soft temper copper tubing with flared copper alloy fittings and connections. Use Type "K" hard temper copper tubing with conventional wrought copper fittings and brazed joints made with AWS A5.8, BAg Silver filler metal. Install as low underground copper piping joints as possible. At building service entrance, no joints shall be installed under or within 5 feet of the building. Install underground piping below grade outside building at adequate depth to prevent freezing.

Underground domestic water piping 3 inch and larger shall be class 52 ductile iron meeting the requirements of ANSI / AWWA Standard C151/A21.5.1. Piping shall be double cement lined in accordance with ANSI / AWWA Standard C104/A21.4. Fittings shall have mechanical joints. In the Contractor's option, pipe joints may be welded or NSF. 1/2 inch wrought copper fittings and soldered connections made with 95/5 solder. Brazed mechanically formed tee connections (T-drill) may be used in copper lines where approved by code; connection shall be brazed joints with AWS A5.8, BAg Silver filler metal.

Interior Waste And Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB I & H Foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. If hubless waste and vent pipe is not permitted below base slab, PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, "solid wall" cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints as permitted where approved by code. (Note: PVC piping is not allowed in ceiling return air plenums).

Interior Waste And Vent Above Slab: Waste and vent pipe above slab inside building shall be hubless cast iron soil pipe and fittings, meeting ASTM A888 and CISPI 301, manufactured by AB I & H Foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. If hubless waste and vent pipe is not permitted above base slab, PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, "solid wall" cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints is

2151 NW PARAGON PKWY
LEE'S SUMMIT, MO 64081

Project No.: 19050.02

Date: 04.29.22

Issued For: PERMIT

[illegible]

REGISTRATION



04/29/2022

CHRISTOPHER J. CULP
LICENSE # PE-2013037646

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT / LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.CO

1850004412
MO. CORPORATE NO: E-5561
EXPIRES 12/31/2022

SHEET TITLE

FIRE ALARM GENERAL NOTES AND LEGEND

SHEET NUMBER

FA0.00

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED

V2.02

ABBREVIATIONS

AFF

ABOVE FINISHED FLOOR

AFG

ABOVE FINISHED GRADE

CD

CANDELA

DI

DUCTILE IRON

ESFR

EARLY SUPPRESSION
FAST RESPONSE

ETR

EXISTING TO REMAIN

FHC

FIRE HOSE CABINET

FP

FIRE PROTECTION
CONTRACTOR

GPM

GALLONS PER MINUTE

JB/J-BOX

JUNCTION BOX

MAX

MAXIMUM

MIN

MINIMUM

N/A

NOT APPLICABLE

NIC

NOT IN CONTRACT

OC

ON CENTER

PV

POST INDICATOR VALVE

PRV

PROVIDE FURNISH AND INSTALL
PRESSURE REDUCING
VALVE

RD

RETURN DUCT

REV

REVISION

SD

SUPPLY DUCT

SF

SQUARE FEET

TYP

TYPICAL

UNO

UNLESS NOTES OTHERWISE

V

VOL(TS)

W

WATTS

WP

WEATHERPROOF

ANNOTATION

1

FIRE PROTECTION PLAN NOTE CALLOUT

1

2

CONNECTION POINT OF NEW WORK TO EXISTING

1

F1

DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL
NUMBER LOWER NUMBER INDICATES SHEET NUMBER

1

F1

SECTION CUT DESIGNATION

1

F1

DEDICATED EQUIPMENT ACCESS TILE

1

F1

ACCESS PANEL

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCE (TOP OF APPLIANCE)

90"

FIRE ALARM ANNUNCIATOR PANEL (TOP OF DISPLAY)

60"

FIRE ALARM BELL (EXTERIOR) (CENTERLINE)

120"

FIRE ALARM CONTROL PANEL/UNIT (TOP OF DISPLAY)

60"

PULL STATION (TOP OF DEVICE)

48"

VISIBLE APPLIANCE (CENTERLINE)

84"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE
CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR
ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG, UNO.
ALL DEVICES MUST BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND
LOCAL REQUIREMENTS.

FACP

FIRE ALARM CONTROL PANEL/UNIT

FACV

RECESSED FIRE ALARM CONTROL PANEL/UNIT

FAAP

FIRE ALARM ANNUNCIATOR PANEL

FAAP

RECESSED FIRE ALARM ANNUNCIATOR PANEL

AMP

AMPLIFIER PANEL

RPS

REMOTE POWER SUPPLY

RT

REMOTE TEST STATION WITH INDICATING LIGHT

RL

REMOTE INDICATING LIGHT

PS

PRESSURE SWITCH LOW/HIGH

FS

WATERFLOW ALARM SWITCH

VT

CONTROL VALVE TAMPER SWITCH

DH

MAGNETIC DOOR HOLD OPEN DEVICE

CM

CONTROL MODULE

MM

MONITOR MODULE

K

FIRE DEPARTMENT KEY BOX

PULL STATION

F

FIREFIGHTER'S PHONE JACK

E

HEAT DETECTOR (E INDICATES ELEVATOR RECALL)

S

SMOKE DETECTOR (E INDICATES ELEVATOR RECALL)

1

SINGLE STATION SMOKE DETECTOR

1

PROJECTED BEAM SMOKE DETECTOR

RD

DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY;RD=RETURN)

CO

CARBON MONOXIDE DETECTOR

AREA OF REFUGE 2-WAY COMMUNICATION SYSTEM

W

WALL MOUNTED AUDIBLE NOTIFICATION APPLIANCE
#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)

V

WALL MOUNTED VISIBLE NOTIFICATION APPLIANCE
INDICATES CANDELA

WV

WALL MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE
INDICATES CANDELA
#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)

C

CEILING MOUNTED VISIBLE NOTIFICATION APPLIANCE
#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)

CV

CEILING MOUNTED VISIBLE NOTIFICATION APPLIANCE
INDICATES CANDELA

CV

CEILING MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE
INDICATES CANDELA
#W INDICATES WATTAGE (VOICE EVACUATION SYSTEMS ONLY)

—

END OF LINE RESISTOR

—

ABORT SWITCH

B

BELL

CALL OUTS

ENLARGED PLAN CALLOUT

NOT IN SCOPE

LINETYPE LEGEND

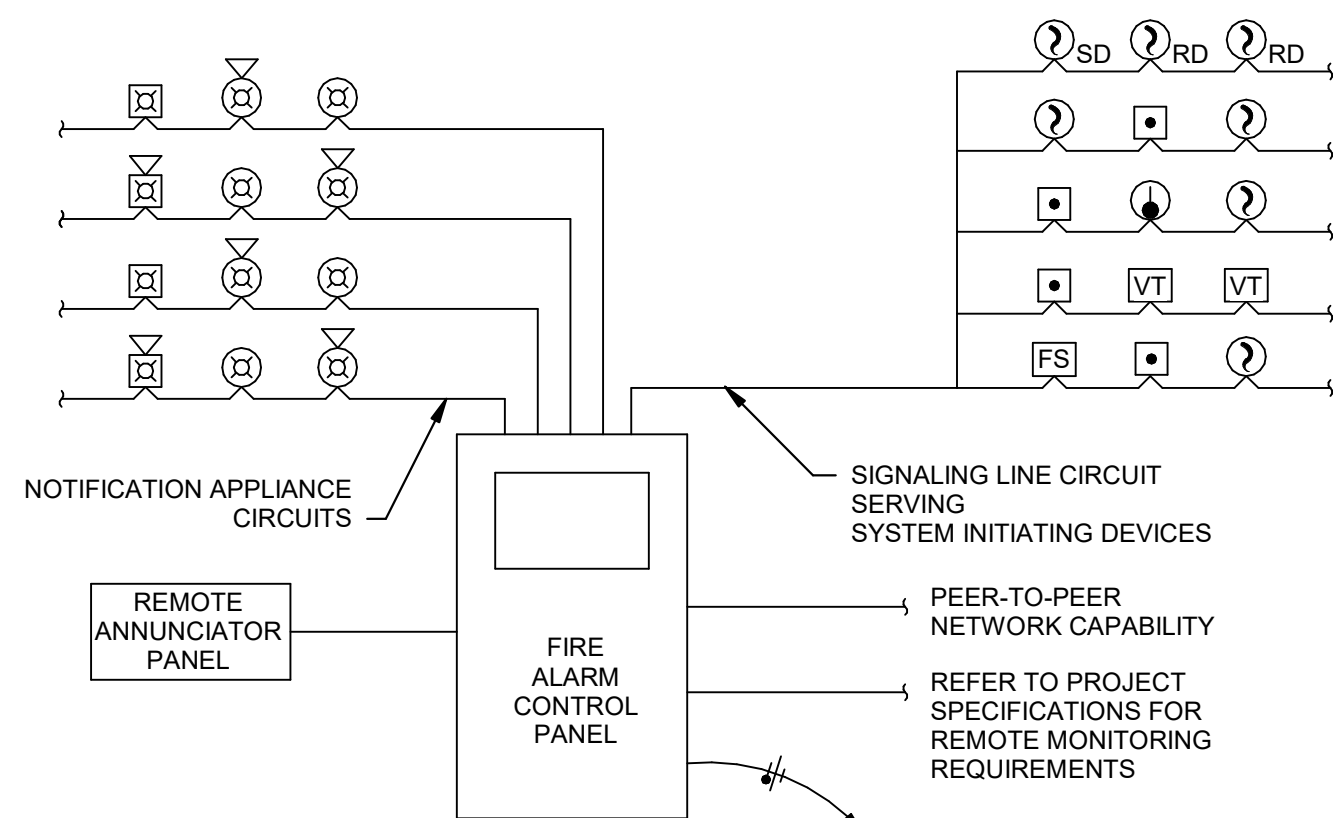
THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN
COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS
EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK
AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE.
THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE
VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT
INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING,
WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR
RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION
DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD
ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING
LINETYPE MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE,
ETC.

EXISTING

NEW

DEMOLISH

FUTURE



RISER DIAGRAM IS SCHEMATIC IN NATURE. NOT ALL DEVICES ARE SHOWN. REFER TO PLANS FOR EQUIPMENT QUANTITIES AND LOCATIONS.

DUCT DETECTORS MAY HAVE INTEGRAL RELAYS FOR AIR HANDLING UNIT SHUT-DOWN AND FIRE/SMOKE DAMPER CONTROL. WIRING FOR THIS FUNCTION HAS NOT BEEN SHOWN. COORDINATE WITH MECHANICAL SYSTEM INSTALLER.

REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION

③ FIRE ALARM RISER DIAGRAM - ADDRESSABLE SYSTEM (NON-VOICE)
NTS

NTS

[illegible]

CONTRACTOR TO PROVIDE ALL NECESSARY EQUIPMENT AND CONNECTIONS REQUIRED TO ACCOMPLISH THE FUNCTIONS INDICATED, AT MINIMUM.

SEQUENCE OF OPERATIONS INDICATED IS SCHEMATIC. MODIFY TO SUIT CONDITIONS AND MEET APPLICABLE CODE REQUIREMENTS

FIRE ALARM SEQUENCE OF OPERATIONS

④

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04/29/2022

CHRISTOPHER J. CULP
LICENSE # PE-2013037646

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	HOERR SCHAUDT / LAND3
FOUNDATIONS	BSE STRUCTURAL ENGINEERS
STRUCTURAL	BSE STRUCTURAL ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL ANDERSON



SHEET TITLE

FIRE ALARM PLAN

SHEET NUMBER

FA1.01

 FIRE ALARM PLAN NOTES:

1. PROVIDE NEW FIRE ALARM CONTROL PANEL. THE PANEL SHALL BE CAPABLE OF CONNECTING TO A PEER-TO-PEER COMMUNICATIONS SYSTEM FOR COMMUNICATION WITH OTHER FIRE ALARM PANELS AT THE DEVELOPMENT.
2. PROVIDE DUCT MOUNTED SMOKE DETECTOR FOR FAN EXHAUST SYSTEM. INSTALL DETECTOR PER MANUFACTURER'S RECOMMENDATIONS. REFER TO MECHANICAL SHEETS FOR DETECTOR LOCATION AND DUCT DETECTOR WIRING.
3. PROVIDE LOW VOLTAGE WIRING FROM DUCT DETECTOR TO REMOTE TEST STATION. MOUNT REMOTE TEST STATION IN CEILING.
4. PROVIDE EQUIPMENT AND CONNECTIONS REQUIRED TO UNLOCK ACCESS CONTROL LOGS UPON SIGNAL FROM FIRE ALARM CONTROL PANEL.
5. PROVIDE FIRE DEPARTMENT KEY BOX FOR FIRE DEPARTMENT ACCESS. PROVIDE EQUIPMENT AND CONNECTIONS NECESSARY TO MONITOR KEY BOX. PROVIDE ANNUAL SUPERVISOR INSPECTION AS REQUIRED.
6. PROVIDE NEW NETWORK ANNUNCIATOR PANEL. THE ANNUNCIATOR SHALL BE NETWORKED WITH THE CAMPUS FIRE ALARM SYSTEM. A MICROPHONE SHALL BE PROVIDED FOR REMOTE PAGING.



① FIRE ALARM FIRST FLOOR RCP
1/4" = 1'-0"



