

# NCSU Apiculture Facility

Raleigh, NC

SCO ID: 22-24494-01A  
NCSU: 202220007

Code: 42124

Item: 315

## Bid Set

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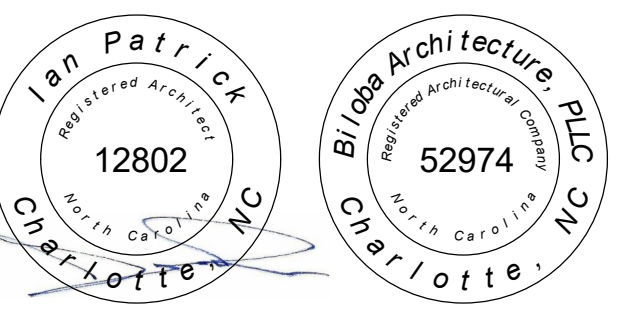
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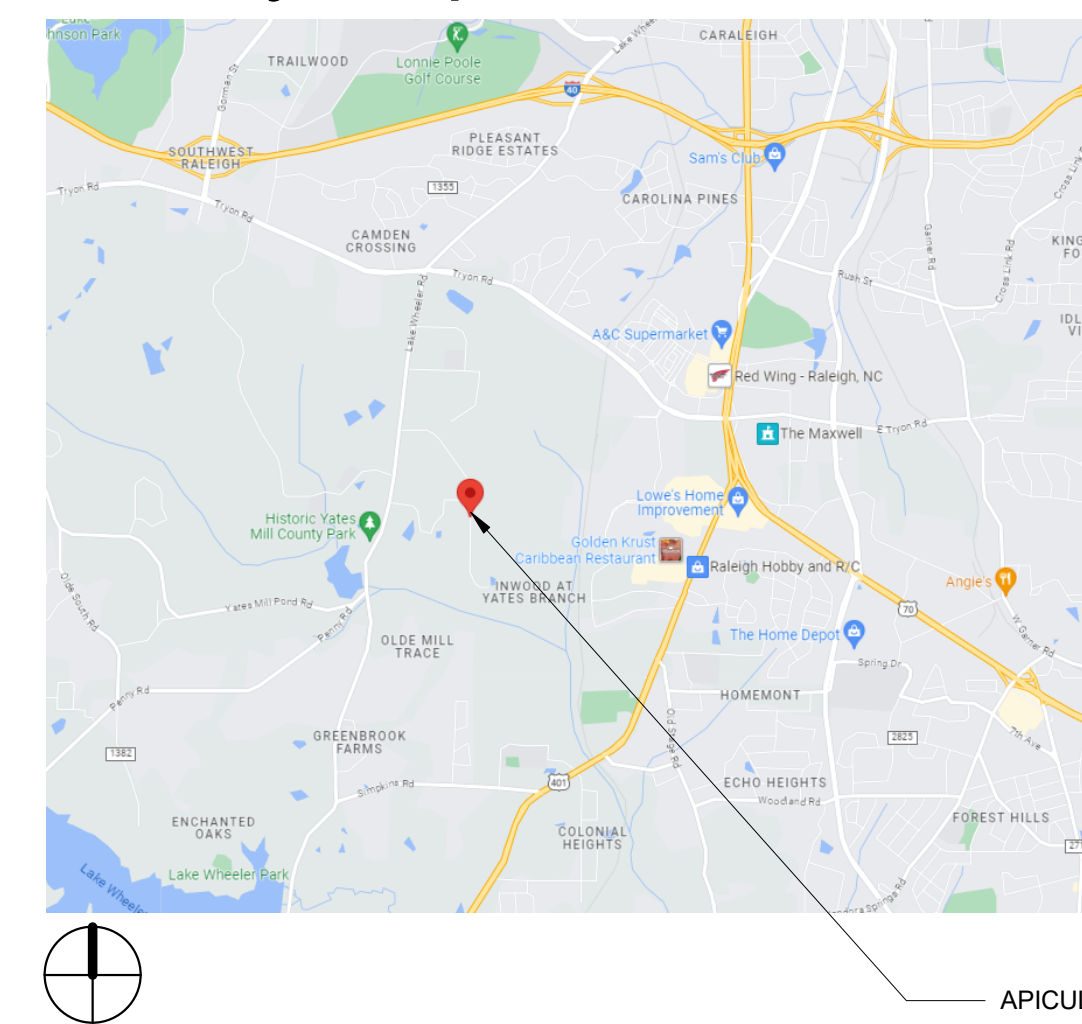
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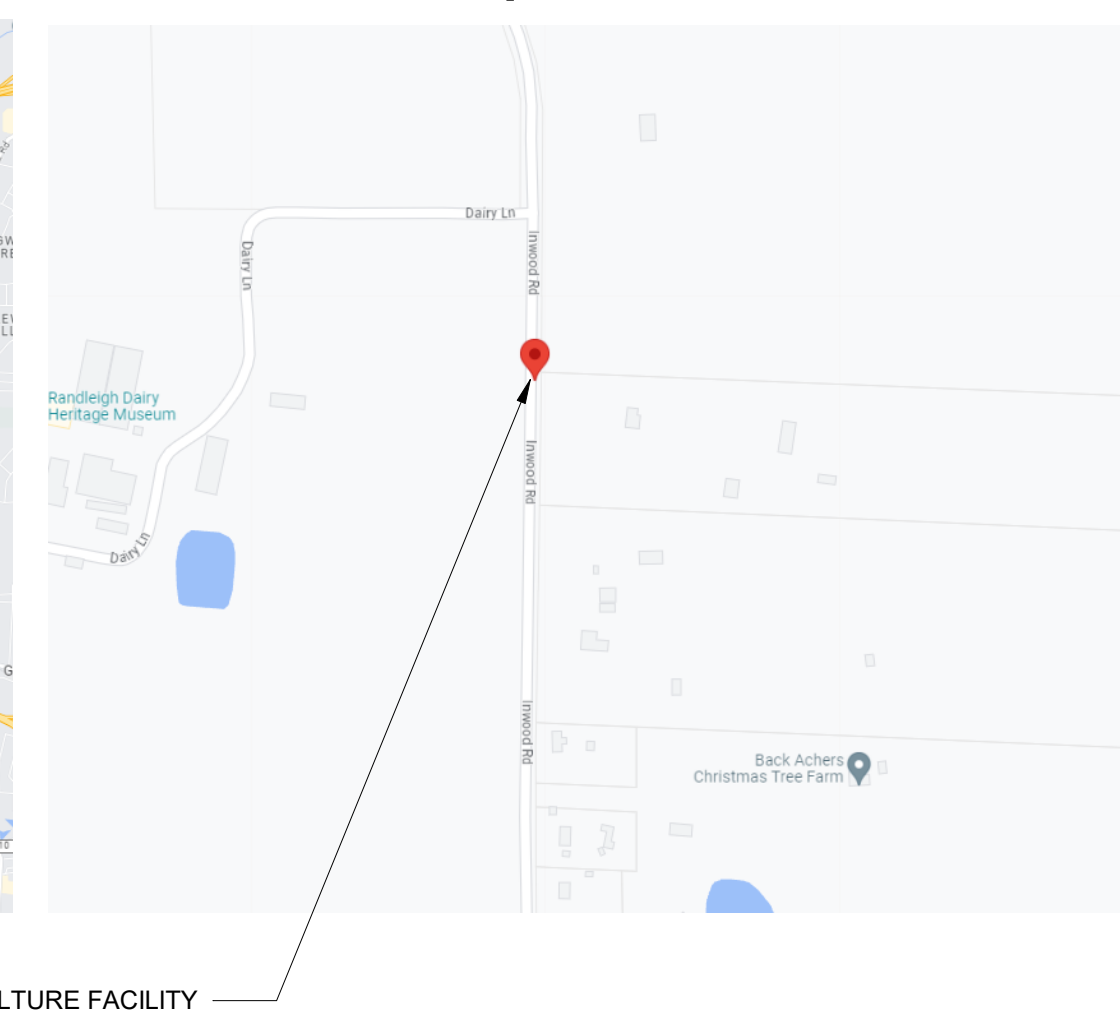
Revisions

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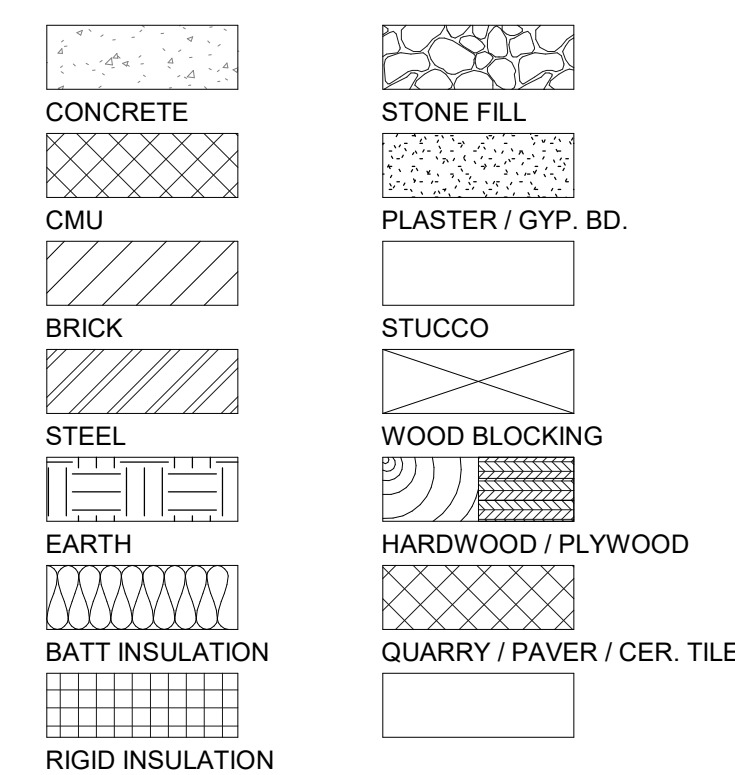
### Vicinity Map



### Location Map



### Legend



### Abbreviations

ACP	ACOUSTICAL CEILING PANEL	EQ.	EQUAL	N.T.S.	NOT TO SCALE
APS	ABOVE FINISH FLOOR	EXT.	EXTERIOR	O.C.	ON CENTER
A.F.F.	ALUMINUM BOARD	FIN. FL.	FINISH FLOOR	O.F.C.I.	OWNER FURNISHED, CONTRACTOR INSTALLED
ALLIM. BD.	ALUMINUM BOARD	F.D.	FLOOR DRAIN	O.H.	OPPOSITE HAND
BLDG.	BUILDING	F.E.(B)	FIRE EXTINGUISHER (BRACKET)	PTD.	PAINTED
E	CEILING	F.E.C.(R)	FIRE EXTINGUISHER CABINET (RECESSED)	PLAS.	PLASTIC LAMINATE
C.J.	CONTROL JOINT	F.E.C.(FR)	FIRE EXTINGUISHER CABINET (RATED & RECESSED)	RES.	RESILIENT
CEL.	CEILING	F.R.P.	FIBERGLASS REINFORCED PANEL	REQD.	REQUIRED
CER.	CERAMIC	F.S.	FLOOR SINK	R.D.	ROOF DRAIN
CMU	CONCRETE MASONRY UNIT	GALV.	GALVANIZED	R.L.	ROOF LADDER
COMP.	COMPOSITE	GA.	GAUGE	SCHED.	SCHEDULE
COL.	COLUMN	GYP.	GYPSUM	SHT.	SHEET
CONC.	CONCRETE	GW.	GRAYWATER	SIM.	SIMILAR
CONT.	CONTINUOUS	H.C.	HOLLOW CORE	S.C.	SOLID CORE
CPT.	CARPET	H.M.	HOLLOW METAL	S.S.	STAINLESS STEEL
DET.	DETAIL	INT.	INTERIOR	S.S.	STRUCTURE
DIA.	DIAMETER	JST. BRG.	JOIST BEARING	SUSP.	SUSPENDED
DMP.	DEMOUNTABLE PARTITION	JT.	JOINT	T.O. ( )	TOP OF (ITEM)
DN.	DOWN	M.O.	MASONRY OPENING	TYP.	TYPICAL
DWG.	DRAWING	MAX.	MAXIMUM	U.O.N.	UNLESS OTHERWISE NOTED
E.W.C.	ELECTRIC WATER COOLER	MECH.	MECHANICAL	VERT.	VERTICAL
EA.	EACH	MET.	METAL	V.C.T.	VINYL COMPOSITE TILE
ELEC.	ELECTRICAL	MIN.	MINIMUM	V.W.C.	VINYL WALL COVERING
ELEV.	ELEVATOR	N.I.C.	NOT IN CONTRACT	W.W.F.	WELDED WIRE FABRIC
				WD.	WOOD

### NCSU Apiculture Facility

Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132

Title  
**Title Sheet**

Sheet

# G001

Plate

2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

Name of Project: Agriculture Facility
Address: 4325 Inwood Road, Raleigh, NC
Zip Code: 27603
Owner/Authorized Agent: Melissa Diamond
Phone #: 919.513.0973
E-Mail: mtdiamond@ncsu.edu

City/County: Private
Code Enforcement Jurisdiction: City: County: State

Table with 5 columns: DESIGNER, FIRM, NAME, LIC# and TELEPHONE #. Lists various design firms and their contact information.

2018 NC CODE FOR: New Construction, Addition, Renovation
Time Interior Completion, Shell/Con, Sheel/Con - Shell/Con

2018 NC EXISTING BUILDING CODE: Prescriptive, Chapter 14, Alteration, Level I, Level II, Level III, Level IV, Historic Property

CONSTRUCTED: RENOVATED
CURRENT OCCUPANCY(Ch. 3):
RISK CATEGORY (Table 1604.5) Current: Proposed

BASIC BUILDING DATA
Construction Type: IA, IB, IIA, IIB, IIC, IVA, VB
Sprinklers: No, Partial, Yes
Standpipes: No, Yes (Class), Dry

Table with 4 columns: FLOOR, EXISTING (SQ FT), NEW (SQ FT), RENOVALTER (SQ FT), SUB-TOTAL. Lists floor areas for 6th, 5th, 4th, 3rd, 2nd, 1st, and Basement floors.

ALLOWABLE AREA
Primary Occupancy Classification: Assembly, Business, Educational, Factory, Hazardous, Institutional, I-3 Condition, Mercantile, Residential, Storage

Accessory Occupancy Classification(s): S-1
Incidental Uses (Table 509):
Special Uses (Chapter 4 - List Code Sections):
Special Provisions: (Chapter 5 - List Code Sections):

Mixed Occupancy: No, Yes, Separation: hr, Exception:
Non-Separated Use (508.3): The required type of construction for the entire building shall be determined by applying the height and area limitations for each of the applicable occupancies to the building building.
Separated use (508.4): See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable area for each use shall not exceed 1.

Table with 4 columns: Story No., Description and Use, (A) Bldg Area Per Story (Actual), (B) Table 506.2' Area, (C) Area for Frontage Increase '1', (D) Allowable Area Per Story or Unlimited '2'

(1) Frontage area increases from Section 506.3 are computed that:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = (F)
b. Total Building Perimeter = (P)
c. Ratio (F/P) = (F/P)
d. W = Minimum width of public way = (W)
e. Percent of frontage increase = 100 [(F/P) - 0.25] / (W/100) = (F/P)
(2) Unlimited area applicable under conditions of Section 507.

Table with 4 columns: Section/Title/Note, Title. Lists sections and titles for accessible dwelling units.

ACCESSIBLE DWELLING UNITS (SECTION 107)
TOTAL UNITS, ACCESSIBLE UNITS REQUIRED, ACCESSIBLE UNITS PROVIDED, TYPE A UNITS PROVIDED, TYPE B UNITS PROVIDED, TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING (SECTION 108)
LOT OR PARKING AREA, TOTAL # OF PARKING SPACES, # OF ACCESSIBLE SPACES PROVIDED, TOTAL # ACCESSIBLE PROVIDED

FIRE PROTECTION REQUIREMENTS THIS SECTION REQUIRED TO BE COMPLETED FOR ALL PROJECTS
Building Element, Fire Separation Element (feet), Rating (hr), Protect (w/ -reductor), Detail # and sheet #, Design # for Code Assembly, Design # for Code Penetration, Design # for Panel Joints

Table with 7 columns: Building Element, Fire Separation Element (feet), Rating (hr), Protect (w/ -reductor), Detail # and sheet #, Design # for Code Assembly, Design # for Code Penetration, Design # for Panel Joints. Lists fire protection requirements for various building elements.

Table with 4 columns: Fire Separation Distance (Feet from Property Line), Degree of Opening, Protection (Table 705.6), Allowable Area (%), Actual (Shown on Plans (%)).

LIFE SAFETY SYSTEM REQUIREMENTS
Emergency Lighting: No, Yes
Exit Signs: No, Yes
Fire Alarm: No, Yes
Smoke Detection Systems: No, Yes
Carbon Monoxide Detection: No, Yes

LIFE SAFETY PLAN CHECKLIST FOR COMPLIANCE
Life Safety Plan - Sheet # \_\_\_/\_\_\_
Fire and/or smoke rated wall locations (Chapter 7)
Assumed and real property line locations (if not on the site plan)

Table with 2 columns: Section/Title/Note, Title. Lists sections and titles for accessible dwelling units.

ACCESSIBLE DWELLING UNITS (SECTION 107)
TOTAL UNITS, ACCESSIBLE UNITS REQUIRED, ACCESSIBLE UNITS PROVIDED, TYPE A UNITS PROVIDED, TYPE B UNITS PROVIDED, TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING (SECTION 108)
LOT OR PARKING AREA, TOTAL # OF PARKING SPACES, # OF ACCESSIBLE SPACES PROVIDED, TOTAL # ACCESSIBLE PROVIDED

Table with 6 columns: USE, WATER CLOSETS, URINALS, LAVATORIES, SHOWERS/TUBS, DRINKING FOUNTAINS. Lists plumbing fixture requirements.

SPECIAL APPROVALS
Special approval: Local Jurisdiction, Department of Insurance, OSC, DPR, DHS, ICC, ETC., describe below
City of Raleigh (Stormwater Only)

2018 NC Administrative Code and Policies

SEE STRUCTURAL SHEETS FOR STRUCTURAL SUMMARY
SEE MECHANICAL SHEETS FOR ENERGY SUMMARIES

COMcheck Software Version 4.1.1.0 Envelope Compliance Certificate

Project Information
Energy Code: 90.1 (2010) Standard
Project Title: Agriculture Facility
Location: Raleigh, North Carolina
Climate Zone: 4a
Project Type: New Construction
Vertical Glazing / Wall Area: 13%

Construction Site: 4325 Inwood Road, Raleigh, NC 27605
Owner/Agent: NC State University
Designer/Contractor: Biloba Architecture, PLLC, 8801 JM Keynes Drive, Suite 365, Charlotte, NC 28262

Table with 2 columns: Building Area, Floor Area. Lists building and floor areas for School/University - Nonresidential.

Table with 6 columns: Assembly, Gross Area of Perimeter, Cavity R-Value, Cont. R-Value, Proposed U-Factor, Budget U-Factor. Lists envelope assemblies and their performance metrics.

Envelope PASSES: Design 10% better than code
Envelope Compliance Statement
Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application.

Project Title: Agriculture Facility
Date filename: P102\_Projects\01\_Active\132 - NCSU Apiculture Facility\04\_Drawings\Code\Exterior Envelope.c: Page 1 of 10
Project date: 07/16/23

Ian Patrick; Partner 09.27.2024

2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS STRUCTURAL DESIGN

DESIGN LOADS:
Importance Factors: Snow (Is) 1.00, Seismic (Is) 1.00
Live Loads: Roof 20 psf, Mezzanine N/A psf, Floor 100 psf
Ground Snow Load: 15 psf
Wind Load: Ultimate Wind Speed 115 mph (ASCE-7), Exposure Category C

SEISMIC DESIGN CATEGORY: A, B, C, D
Risk Category (Table 1604.5) I, II, III, IV
Spectral Response Acceleration Sa 15.8 %g, Sd 7.8 %g
Site Classification (ASCE 7) A, B, C, D, E, F
Data Source: Field Test, Presumptive, Historical Data

Basic structural system: Bearing Wall, Dual w/Intermediate R/C or Special Steel, Building Frame, Dual w/Intermediate R/C or Special Steel, Moment Frame, Inverted Pendulum
Analysis Procedure: Simplified, Equivalent Lateral Force, Dynamic
Architectural, Mechanical, Components anchored? Yes, No

LATERAL DESIGN CONTROL: Earthquake, Wind
SOIL BEARING CAPACITIES: Field Test (provide copy of test report) 2,000 psf, Presumptive Bearing capacity N/A psf, Pile size, type, and capacity N/A

Table with 6 columns: Assembly, Gross Area of Perimeter, Cavity R-Value, Cont. R-Value, Proposed U-Factor, Budget U-Factor. Lists envelope assemblies and their performance metrics.

Envelope PASSES: Design 10% better than code
Envelope Compliance Statement
Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application.

Project Title: Agriculture Facility
Date filename: P102\_Projects\01\_Active\132 - NCSU Apiculture Facility\04\_Drawings\Code\Exterior Envelope.c: Page 1 of 10
Project date: 07/16/23

Ian Patrick; Partner 09.27.2024



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Plumbing, Mechanical, and Electrical Engineer: RMP Engineering, 5520 Research Park Drive, Ste 300, Baltimore, MD 21228

Professional seals for Ian Patrick and Biloba Architecture, PLLC.

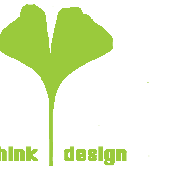
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Checked: IWP
Date: 01/10/2025
Revisions:

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NCSU Apiculture Facility
Raleigh, NC
SCO ID No.: 22-24494-01A
Code: 42124 Item: 315
NCSU: 202220007

Project Number: 132
Title: Appendix B and Energy Summary

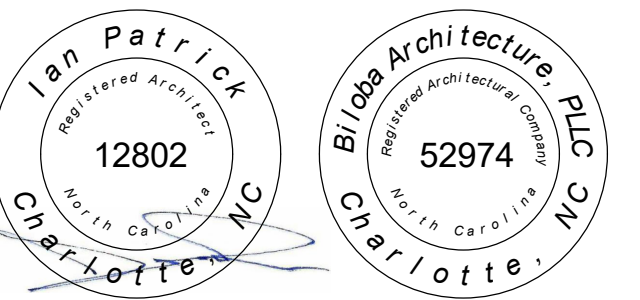
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NC Certificate of Licensure: C-1125



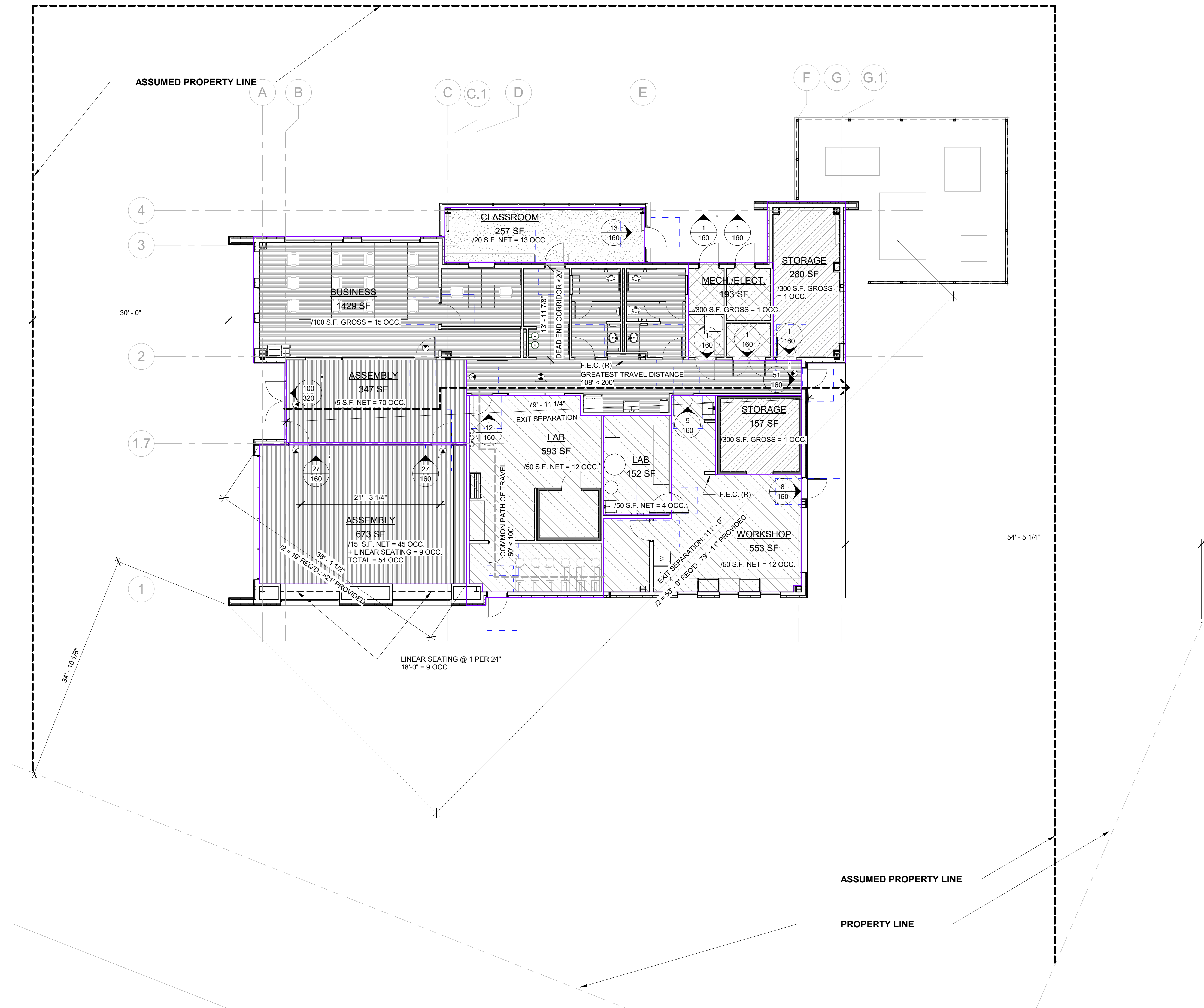
01.10.2025

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Checked IWP

Date 01/10/2025

Revisions



**LIFE SAFETY PLAN LEGEND**

- COMMON PATH OF TRAVEL
- > GREATEST EXIT ACCESS TRAVEL DISTANCE
- OCCUPANCY CATEGORY (SEE LEGEND FOR DESIGNATION)
- EXIT SIGN
- INDICATES PANIC HARDWARE
- ACTUAL NUMBER OF OCCUPANTS
- DIRECTION OF TRAVEL
- NUMBER OF OCCUPANTS THE EXIT CAN ACCOMMODATE
- DOOR APPROACH CLEARANCES (ADA/ANSI 117.1)

**OCCUPANCY CATEGORY**

- ACCESSORY
- ASSEMBLY
- BUSINESS
- CLASSROOM
- STORAGE
- VOCATIONAL

**GENERAL LIFE SAFETY FLOOR PLAN NOTES**

- FURNITURE AND EQUIPMENT IS SHOWN FOR REFERENCE ONLY (SEE FLOOR PLANS).
- EGRESS DOOR WIDTH IS SHOWN AS CLEAR WIDTH. 32" SHOWN ON PLANS EQUATES TO A 36" DOOR.
- SEE PLANS FOR LOCATION OF ALL FIRE EXTINGUISHER DEVICES.

1 LIFE SAFETY PLAN  
G101 1/8" = 1'-0"

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NCSU Apiculture Facility  
Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 20222007

Project Number 132  
Title  
**Life Safety Plan**

Sheet  
**G101**  
Plate



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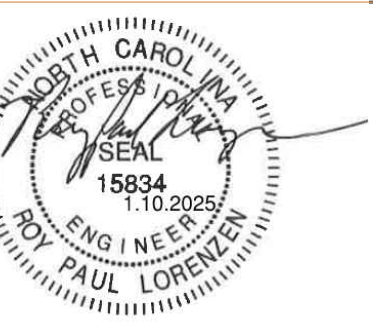


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Raleigh, NC  
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NCSU: 202220007

Project Number 132

GENERAL NOTES

Sheet

CO.10

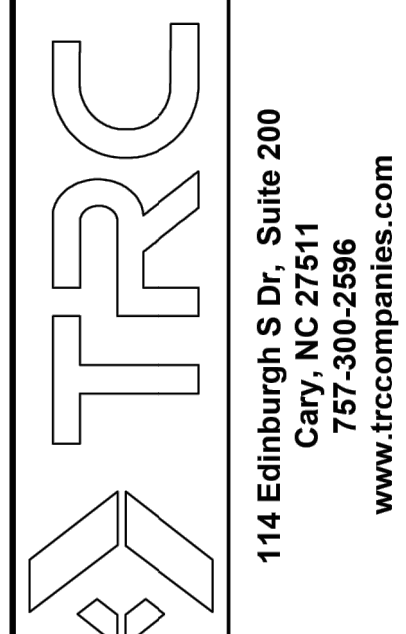
Plate

Main table with 4 columns: GENERAL NOTES, SITE NOTES, UTILITY NOTES, MATERIALS AND FURNISHINGS NOTES. Contains detailed construction specifications, site requirements, utility separation rules, and material standards.



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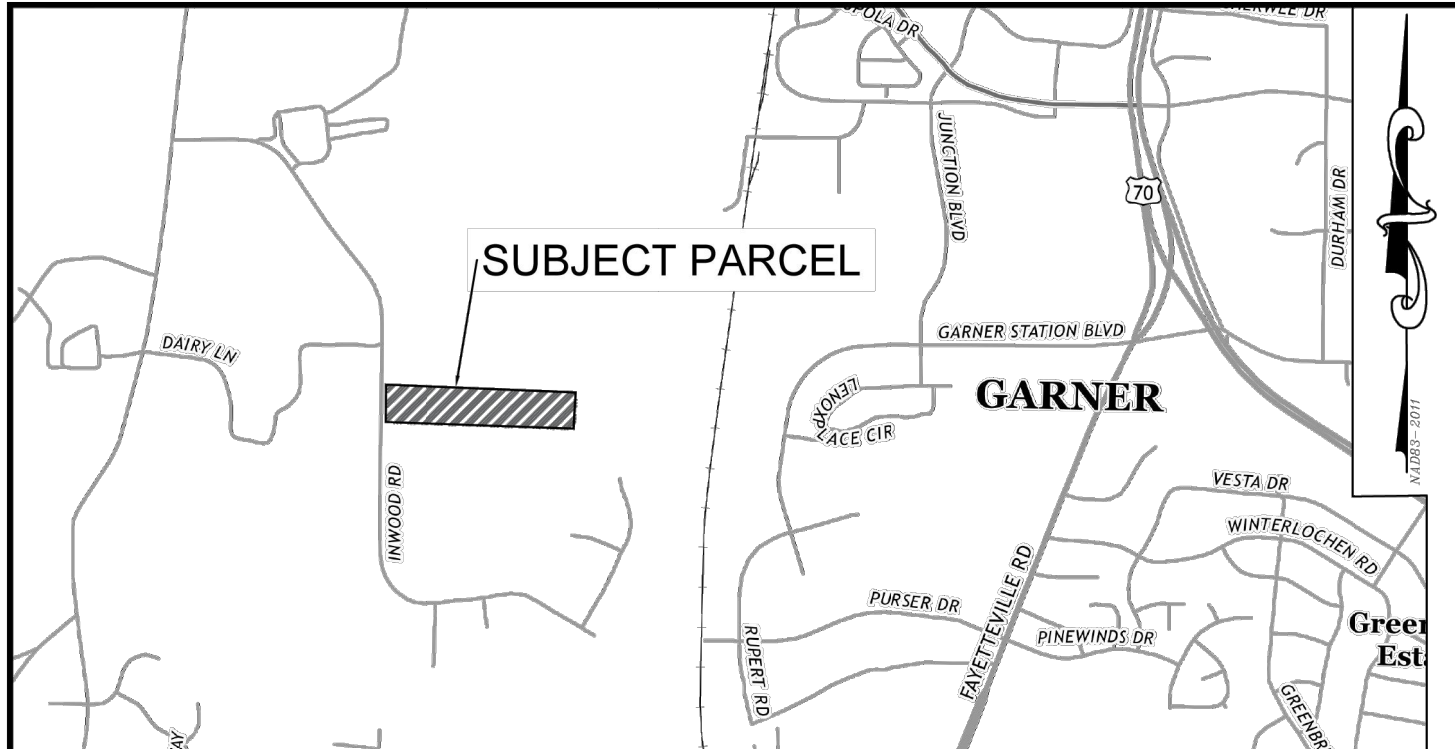
REVISIONS	
DESIGNED BY:	N/A
DRAWN BY:	PMP
CHECKED BY:	BMB
SCALE:	1"=30'
DATE:	04/14/2023
PROJECT NUMBER:	531155
<b>1 OF 1</b>	

Project Number 132  
 Title

**SURVEY**

Sheet  
**C1.00**

Plate



VICINITY MAP  
 SCALE: 1" = 2000'

**SURVEY CONTROL / GRID TIE NOTES**  
 Class of Survey: Class A  
 Positional Accuracy: 0.10'  
 Type of GNSS Field Procedure: Network RTK  
 Date of GNSS Survey: 01/26/2023  
 Horizontal Datum/EPOCH: NAD83 (2011) 2010.00  
 Vertical Datum: NAVD88  
 Published/Fixed Control Used: NC VRS CORS- NCRD  
 GEOID Model: Geoid18  
 Combined Grid Factor: 0.99990429 (Not Applied)  
 Units: US Survey Foot  
 GNSS Antenna: Trimble R10-2

**GENERAL NOTES:**

- The property shown hereon is subject to easements of record identified by a completed title report. This survey has been prepared without the benefit of a title report, as such, this survey may not represent a complete record of all encumbrances affecting this property. A completed title report may identify additional easements affecting this property.
- Property lines shown are based upon field monumentation and compiled property records: DB 8489 PG 2023, DB 8489 PG 2026, DB2877 PG 458, BM 2022 PG 1988, BM1980 PG 935. A boundary survey was not performed and was not requested.
- A QL-B Underground Utility Survey was conducted to show detectable utilities in accordance with ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.
- Upon examination of Flood Insurance Rate Map, Panel Number 0791 of Community Number 370243, bearing Map # 3720079100K, revised date of July 19, 2022. The subject property lies in Zone X, and Panel Number 0791 of Community Number 370243, bearing Map # 3720079100K, revised date of July 19, 2022. The subject property lies in Zone X. This flood determination is not a recommendation by Draper Aden Associates to not purchase or purchase flood insurance coverage and does not imply that the referenced property will or will not be free from flood damage.
- Area(s) calculated by computer

I, Barry M. Brown, certify that this plat was drawn from an actual survey made under my supervision from deeds referenced hereon; that the boundaries not surveyed are clearly indicated as such; that the Grid Tie shown hereon was from an actual GNSS survey made under my supervision; that this is a Class A Horizontal and Class C Vertical Topographic Survey; That the survey is of an existing parcel or parcels of land or one or more existing easements and does not create a new street or change an existing street; that this plat was prepared in accordance with 21 NCAC 56.1600. Witness my original signature, license number and seal.



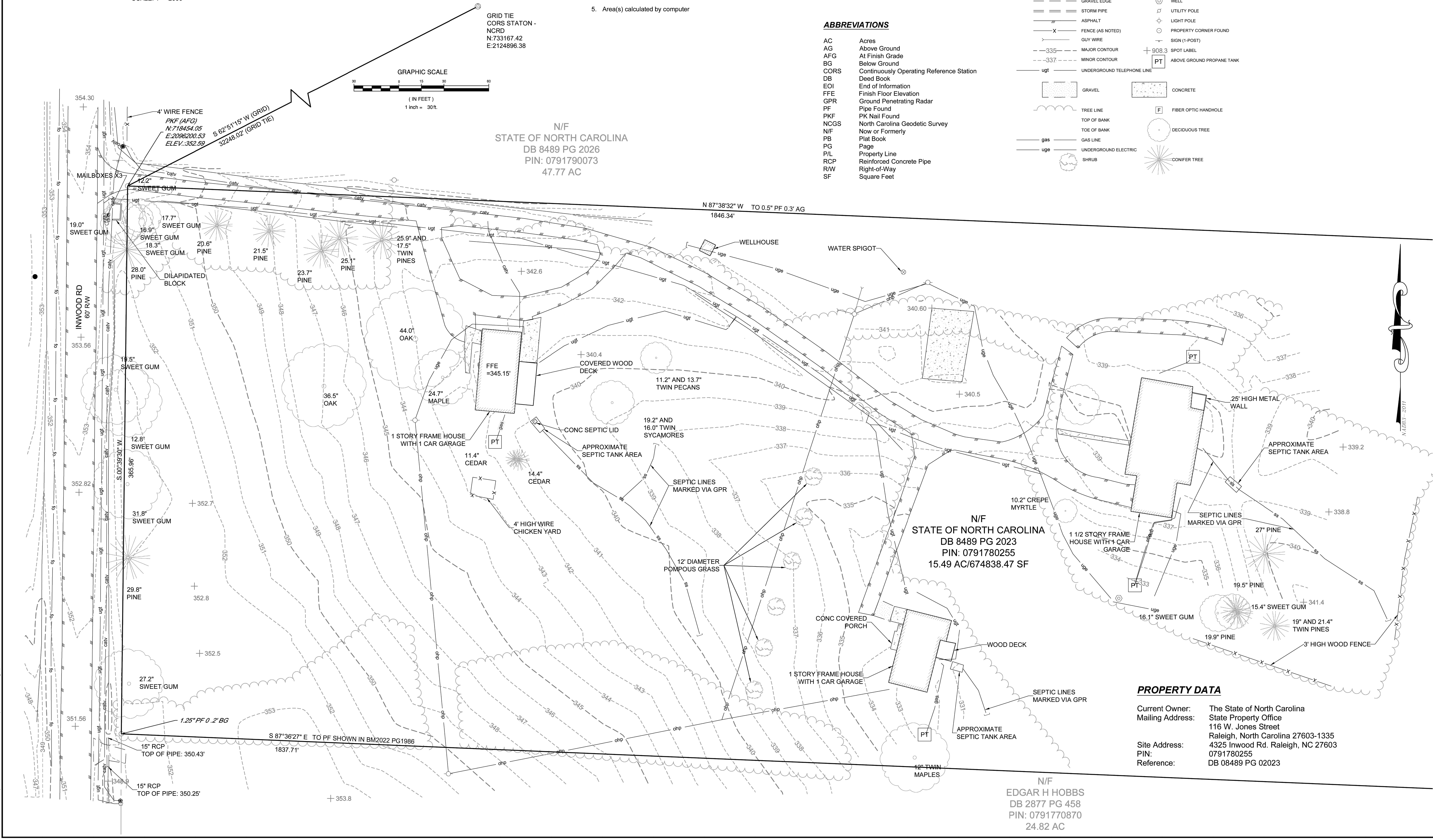
*Barry M. Brown*  
 Barry M. Brown, PLS  
 04/14/2023  
 NC License No.: L-4453

**LEGEND**

ohp	OVERHEAD POWER	TV LINE PEDESTAL
---	GRAVEL EDGE	WELL
---	STORM PIPE	UTILITY POLE
---	ASPHALT	LIGHT POLE
X	FENCE (AS NOTED)	PROPERTY CORNER FOUND
---	GUY WIRE	SIEN (I-POST)
---	MAJOR CONTOUR	SPOT LABEL
---	MINOR CONTOUR	ABOVE GROUND PROPANE TANK
ugt	UNDERGROUND TELEPHONE LINE	CONCRETE
---	GRAVEL	FIBER OPTIC HANDHOLE
---	TREE LINE	DECIDUOUS TREE
---	TOP OF BANK	CONIFER TREE
---	TOE OF BANK	
---	GAS LINE	
---	UNDERGROUND ELECTRIC	
---	SHRUB	

**ABBREVIATIONS**

AC	Acres
AG	Above Ground
AFG	At Finish Grade
BG	Below Ground
CORS	Continuously Operating Reference Station
DB	Deed Book
EOI	End of Information
FFE	Finish Floor Elevation
GPR	Ground Penetrating Radar
PF	Pipe Found
PK	PK Nail Found
NCGS	North Carolina Geodetic Survey
N/F	Now or Formerly
PB	Plat Book
PG	Page
PIL	Property Line
RCP	Reinforced Concrete Pipe
R/W	Right-of-Way
SF	Square Foot



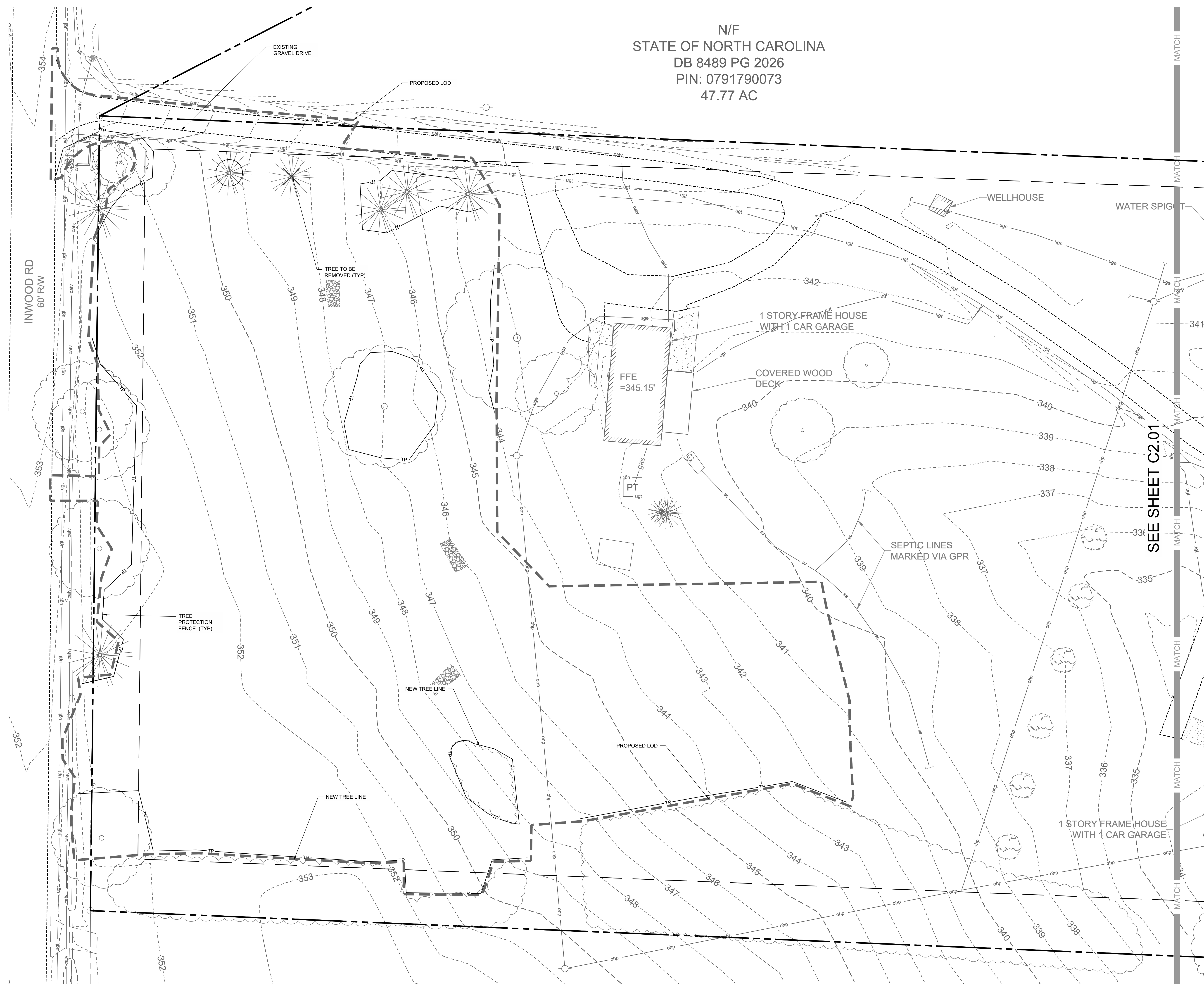
**PROPERTY DATA**

Current Owner: The State of North Carolina  
 Mailing Address: State Property Office  
 116 W. Jones Street  
 Raleigh, North Carolina 27603-1335  
 Site Address: 4325 Inwood Rd. Raleigh, NC 27603  
 PIN: 0791780255  
 Reference: DB 08489 PG 02023

N/F  
 EDGAR H HOBBS  
 DB 2877 PG 458  
 PIN: 0791770870  
 24.82 AC

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L:\Projects\2022\C22002 - NCSU Apiculture Facility\DWGS\2-PERMITTING\3-Sheets\C22002-C2.00 Demolition Plan.dwg Jan 06, 2025 - 3:12pm



N/F  
STATE OF NORTH CAROLINA  
DB 8489 PG 2026  
PIN: 0791790073  
47.77 AC

SEE SHEET C2.01

LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
	LIMITS OF DISTURBANCE
	PROPERTY LINE
	EASEMENT
	SETBACK
	RIPARIAN BUFFER (50')
	TREE PROTECTION FENCE
	ACCESSIBLE ROUTE

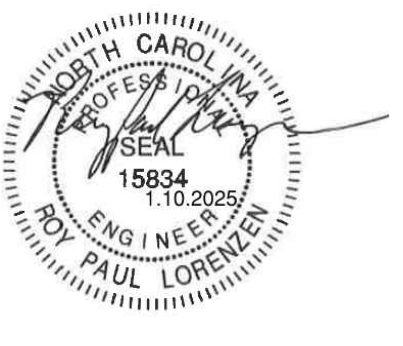
DEMOLITION LEGEND:	
SYMBOL	DESCRIPTION
	REMOVE BUILDING
	REMOVE ASPHALT
	REMOVE GRAVEL
	REMOVE BRICK
	REMOVE CONCRETE
	REMOVE RIPRAP
	REMOVE VEGETATION
	REMOVE TREE
	REMOVE SIGN
	COORDINATE LIGHT POLE REMOVAL
	REMOVE CURB & GUTTER
	REMOVE WATER LINE
	REMOVE SANITARY SEWER LINE
	REMOVE STORM DRAINAGE
	REMOVE FENCE

NOTES:  
1. SEE SHEET C0.10 FOR GENERAL AND DEMOLITION NOTES.  
2. FINE GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

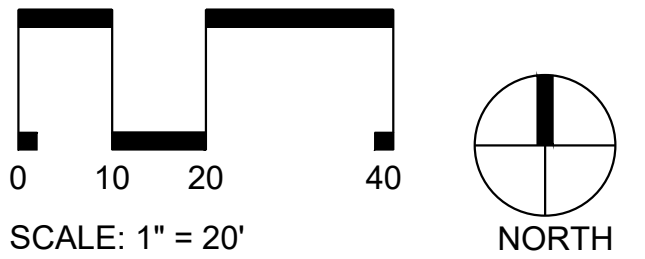
**biloba Architecture, PLLC**  
  
8801 JM Keynes Drive  
Suite 365  
Charlotte, NC 28262  
704.248.2922  
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**STEWART**  
Civil, Landscape Architecture and Structural Engineer  
Stewart Inc.  
Raleigh 223 S. West Street, Suite 1100  
Raleigh, NC 27603  
NC Certificate of Licensure: F-1536  
NC LA Corporate License: C-303

Plumbing, Mechanical, and Electrical Engineer:  
RMF Engineering  
8081 Arco Corporate Dr Suite 300  
Raleigh, NC 27617  
NC Certificate of Licensure: C-1125



Drawn	CO
Checked	BAH
Date	01.10.2025
Revisions	



SCALE: 1" = 20'  
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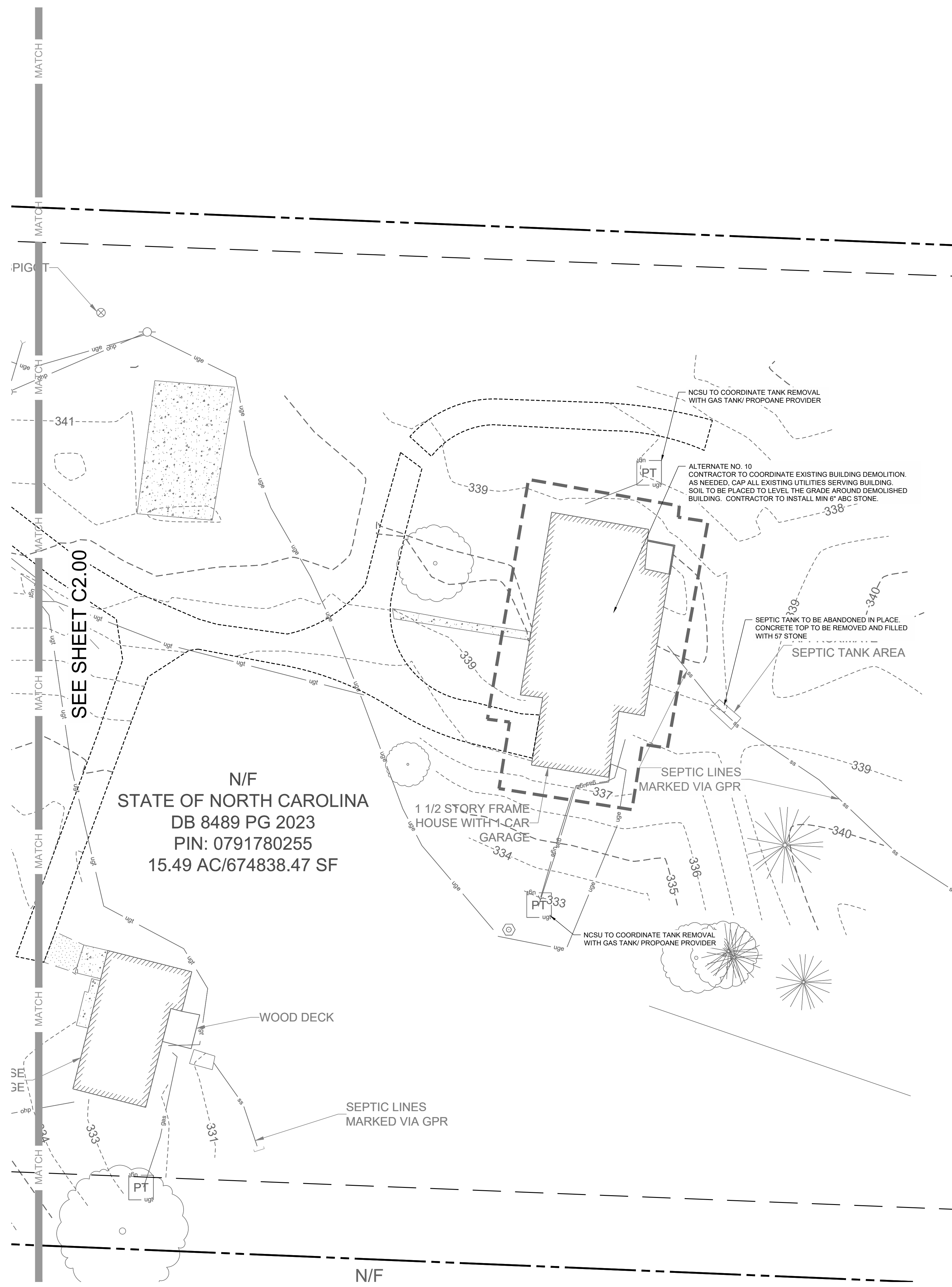
**NCSU Apiculture Facility**  
Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title  
**DEMOLITION PLAN**

Sheet  
**C2.00**

Plate  
of

L:\Projects\2022\C22062 - NCSU Apiculture Facility\DWGS\2-FERMITTING\3-Sheets\C22062-C2.01 Demolition Plan.dwg Jan 06, 2025 - 3:12pm



SEE SHEET C2.00

N/F  
STATE OF NORTH CAROLINA  
DB 8489 PG 2023  
PIN: 0791780255  
15.49 AC/674838.47 SF

N/F

LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
---	RIPARIAN BUFFER (50')
---	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

DEMOLITION LEGEND:	
SYMBOL	DESCRIPTION
[Solid Black]	REMOVE BUILDING
[Diagonal Hatching]	REMOVE ASPHALT
[Dotted Pattern]	REMOVE GRAVEL
[Cross-hatching]	REMOVE BRICK
[Stippled Pattern]	REMOVE CONCRETE
[Grid Pattern]	REMOVE RIPRAP
[Dotted Pattern]	REMOVE VEGETATION
[X Pattern]	REMOVE TREE
[X Pattern]	REMOVE SIGN
[X Pattern]	COORDINATE LIGHT POLE REMOVAL
[Curved Line]	REMOVE CURB & GUTTER
W	REMOVE WATER LINE
SS	REMOVE SANITARY SEWER LINE
S	REMOVE STORM DRAINAGE
X	REMOVE FENCE

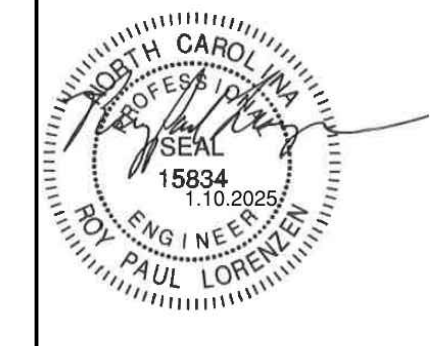
**NOTES:**

- SEE SHEET C0.10 FOR GENERAL AND DEMOLITION NOTES.
- FINE GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

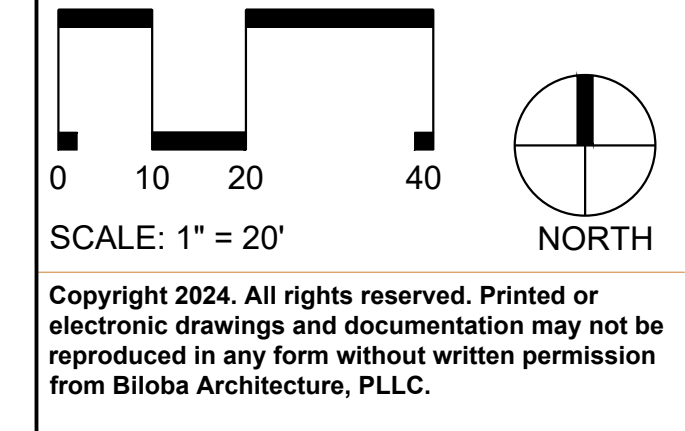
**biloba Architecture, PLLC**  
  
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 Suite 365  
 Charlotte, NC 28262  
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**STEWART**  
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 NC Certificate of Licensure: F-1536  
 NC LA Corporate License: C-303

**Plumbing, Mechanical, and Electrical Engineer:**  
 RMF Engineering  
 8081 Arco Corporate Dr Suite 300  
 Raleigh, NC 27617  
 NC Certificate of Licensure: C-1125



Drawn: CO  
 Checked: RPL  
 Date: 01.10.2025  
 Revisions:

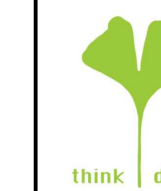


**NCSU Apiculture Facility**  
 Raleigh, NC  
 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number: 132  
 Title: **DEMOLITION PLAN II**

Sheet: **C2.01**

Plate of

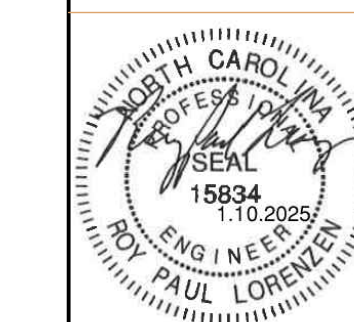


8601 JM Keynes Drive  
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RMF Engineering  
8081 Arco Corporate Dr Suite 300  
Raleigh, NC 27617  
NC Certificate of Licensure: C-1125



Drawn CO  
Checked BAH  
Date 01.10.2025  
Revisions

**LINETYPE LEGEND:**

SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
---	RIPARIAN BUFFER (50')
---	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

**SITE LEGEND:**

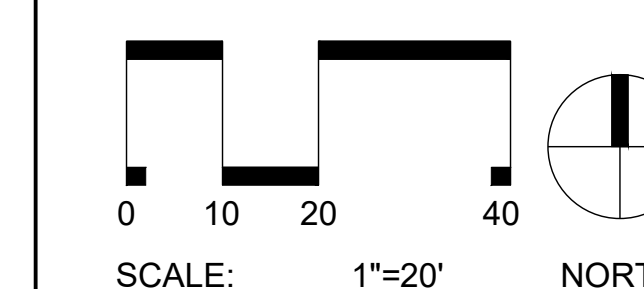
SYMBOL	DESCRIPTION
[Pattern]	PROPOSED BUILDING
[Pattern]	PROPOSED CONCRETE SIDEWALK
[Pattern]	PROPOSED BRICK SIDEWALK
[Pattern]	PROPOSED HEAVY DUTY PAVEMENT
[Pattern]	PROPOSED CONCRETE PAVERS
[Pattern]	PROPOSED GRAVEL
[Pattern]	PROPOSED CURB & GUTTER
[Pattern]	PROPOSED STOP BAR
[Pattern]	PROPOSED CROSSWALK
[Pattern]	PROPOSED 6' WIDE STANDARD CROSSWALK
[Pattern]	PROPOSED 10' WIDE HIGH VISIBILITY CROSSWALK
[Symbol]	PROPOSED SIGN
[Symbol]	PROPOSED ADA PARKING SPACE
[Symbol]	PROPOSED KEYSTONE WALL
[Symbol]	PROPOSED CIP WALL
[Symbol]	PROPOSED WHEEL STOP
[Symbol]	PROPOSED GRAVEL TRAIL
[Symbol]	PROPOSED ASPHALT TRAIL
[Symbol]	PROPOSED TREELINE
[Symbol]	PROPOSED FENCE
[Symbol]	PROPOSED VEHICLE GATE (X' WIDE)
[Symbol]	PROPOSED LIGHT
[Symbol]	PROPOSED BIKE RACK
[Symbol]	PROPOSED BENCH
[Symbol]	PROPOSED BOLLARD
[Symbol]	PROPOSED PEDESTRIAN STEEL PLATE
[Pattern]	LIMITS OF DISTURBANCE

**NOTES:**

- SEE SHEET C0.10 FOR GENERAL AND SITE NOTES.
- FINE GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

**SITE DATA**

PROJECT NAME:	NCSU APICULTURE FACILITY
COUNTY:	WAKE
PARCEL PIN #:	0791780255
PARCEL OWNER:	STATE OF NORTH CAROLINA
PARCEL AREA:	15.70 AC
CURRENT ZONING:	R-1
FLOOD PLAIN DATA:	ZONE X
RIVER BASIN:	SWIFT CREEK TRIBUTARY
PLANNING JURISDICTION:	CITY OF RALEIGH
PROPOSED BUILDING:	1 STORY FRAME HOUSE WITH 1 CAR



SCALE: 1"=20' NORTH  
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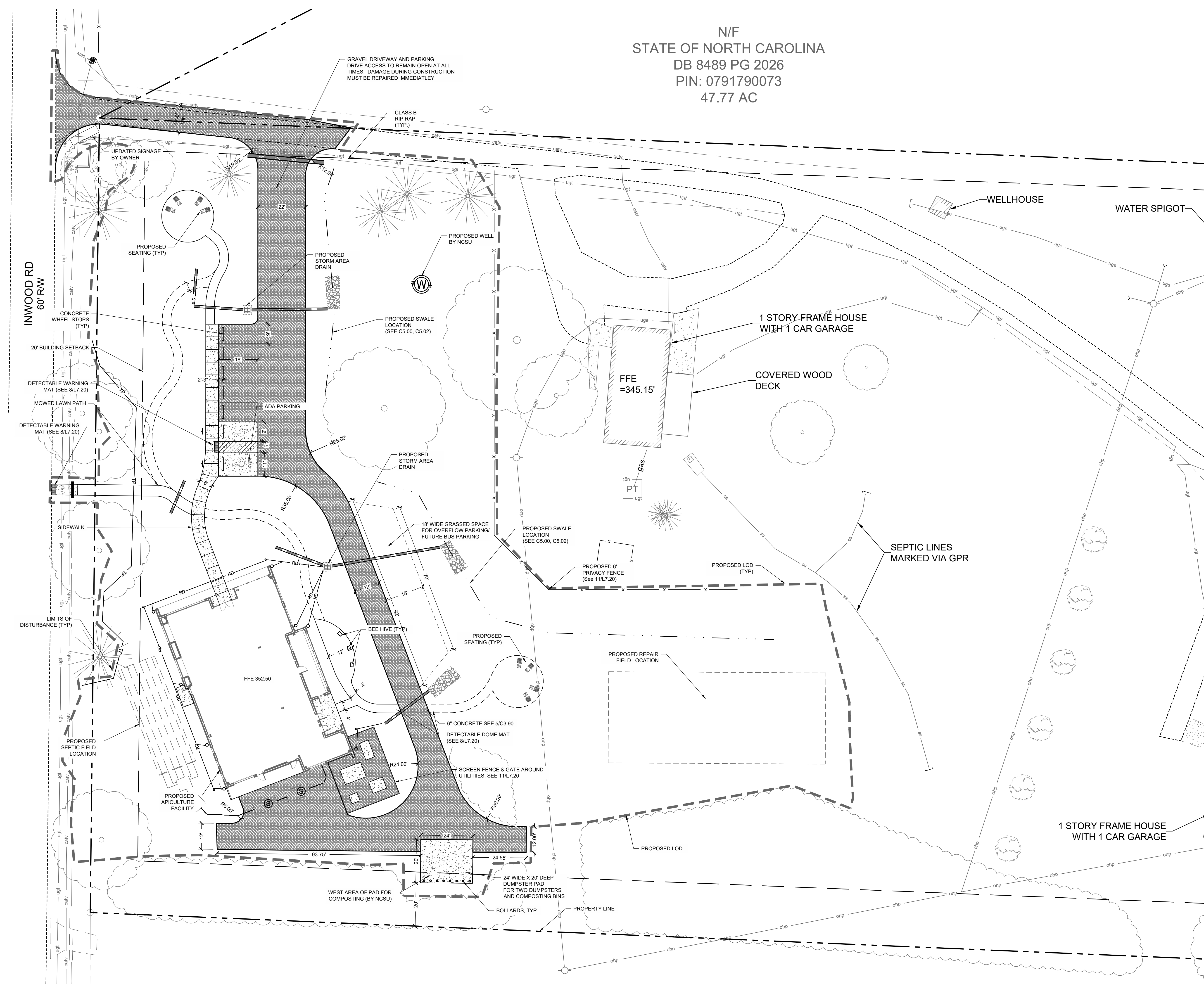
**NCSU Apiculture Facility**  
Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title **SITE PLAN**

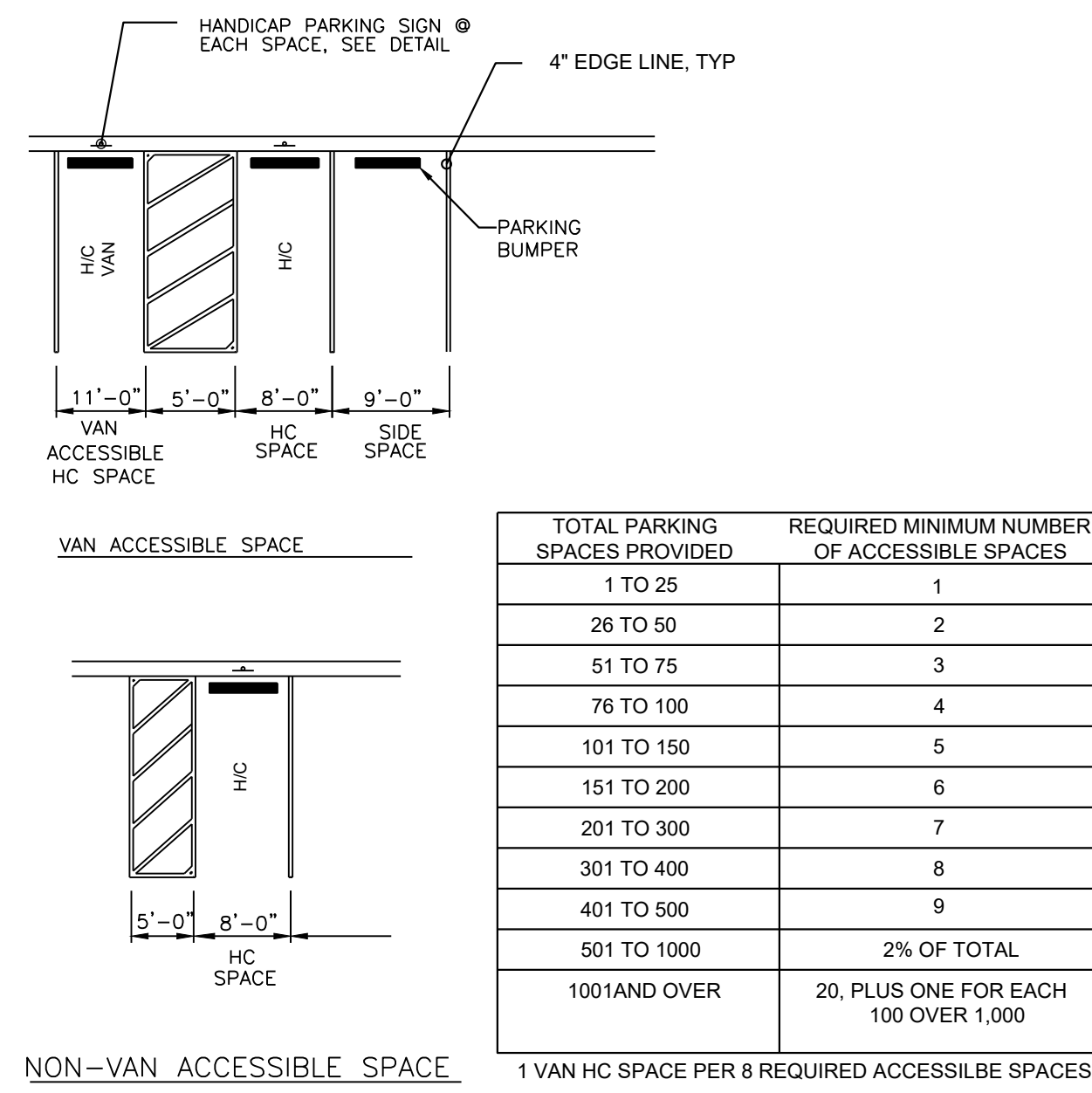
Sheet **C3.00**

Plate

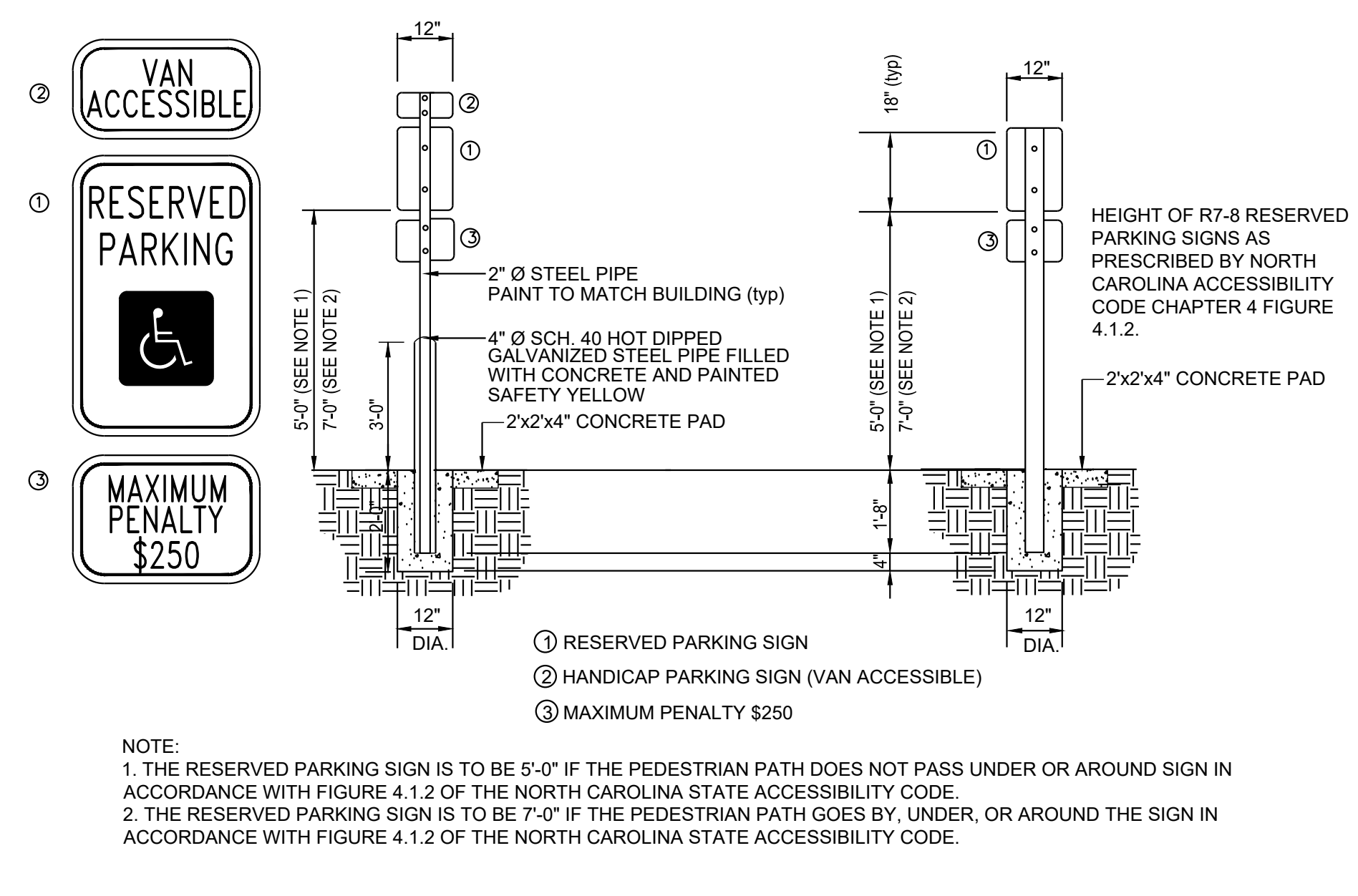
N/F  
STATE OF NORTH CAROLINA  
DB 8489 PG 2026  
PIN: 0791790073  
47.77 AC



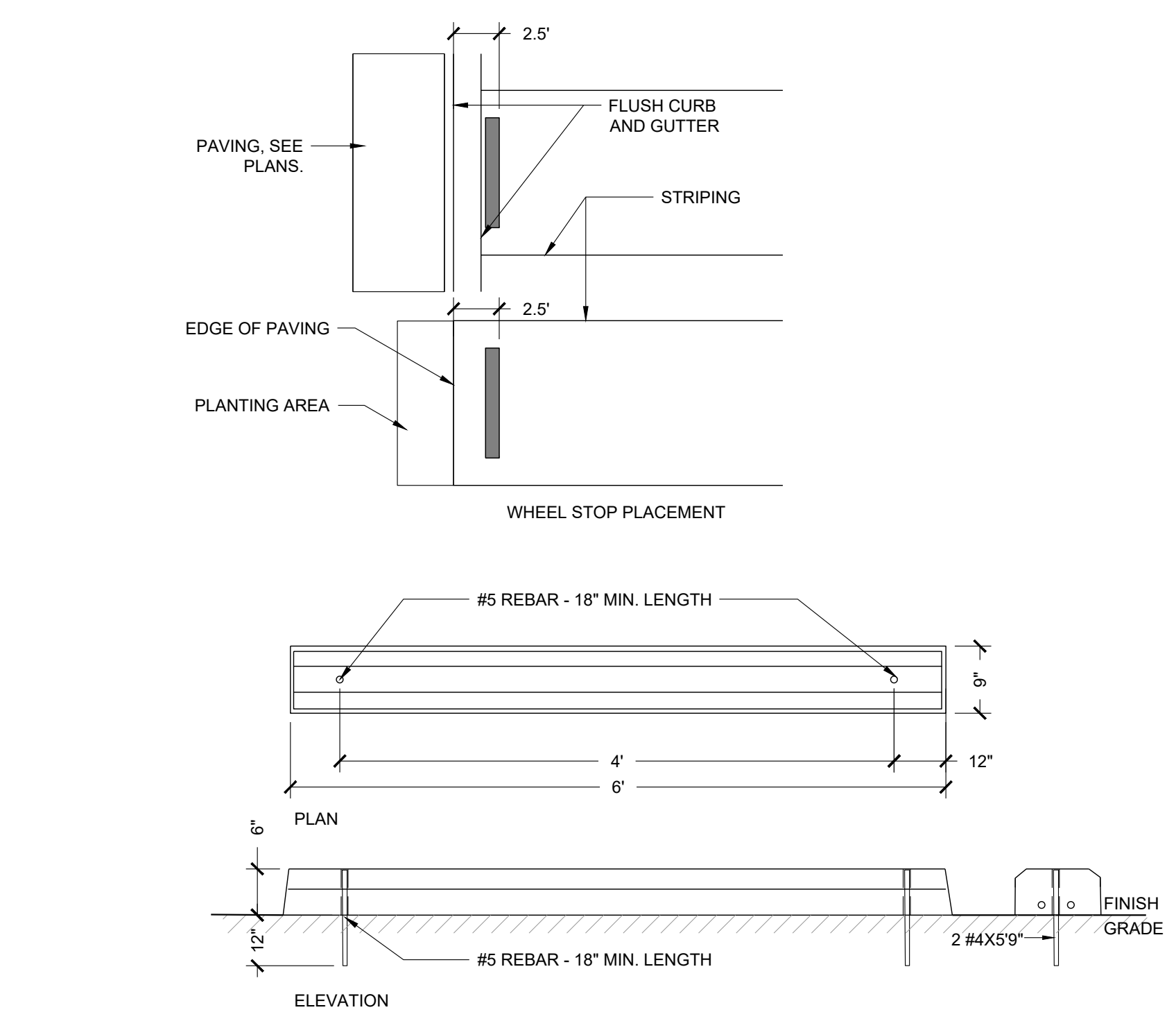




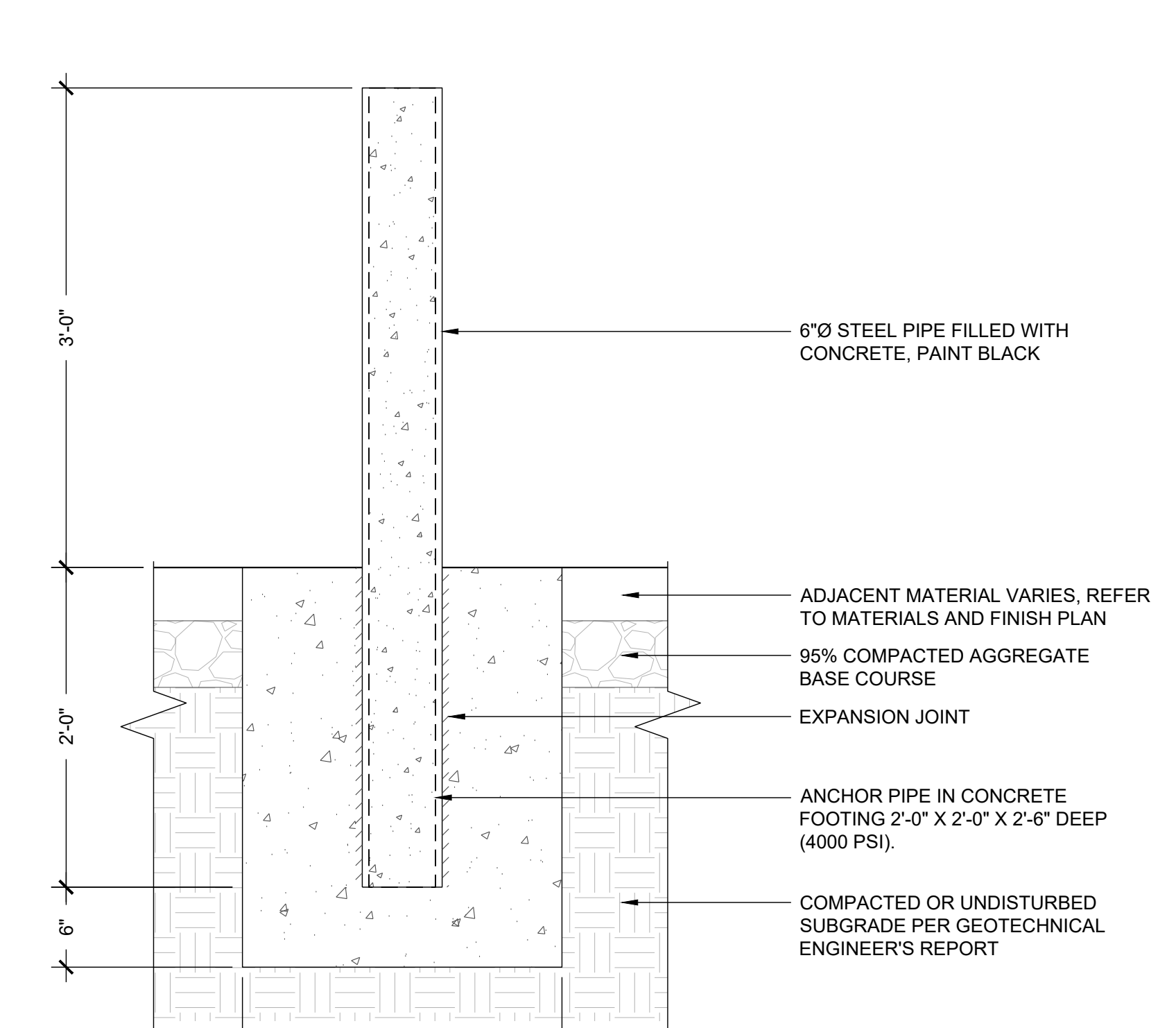
1 ADA PARKING SPACE NTS



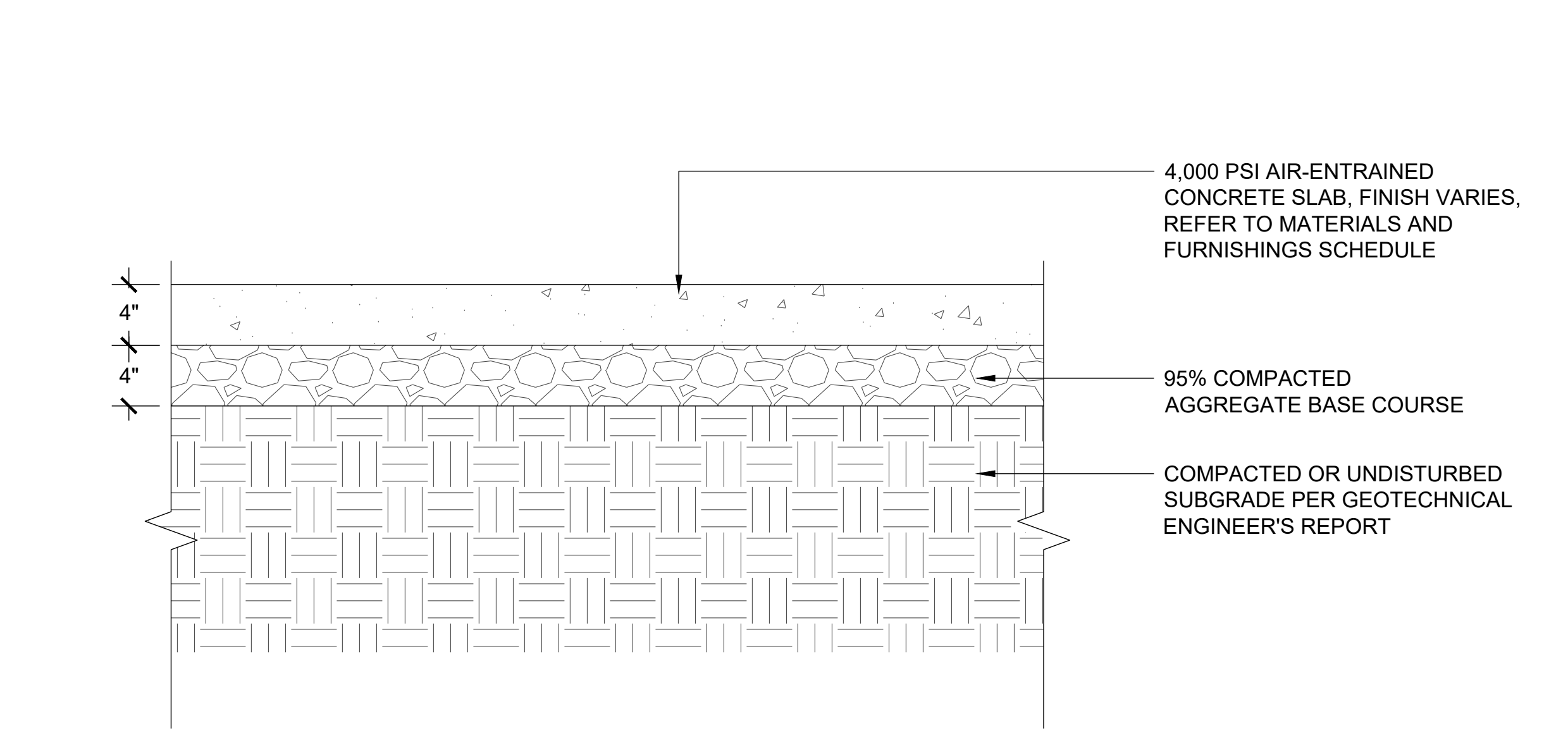
2 ADA PARKING SIGN NTS



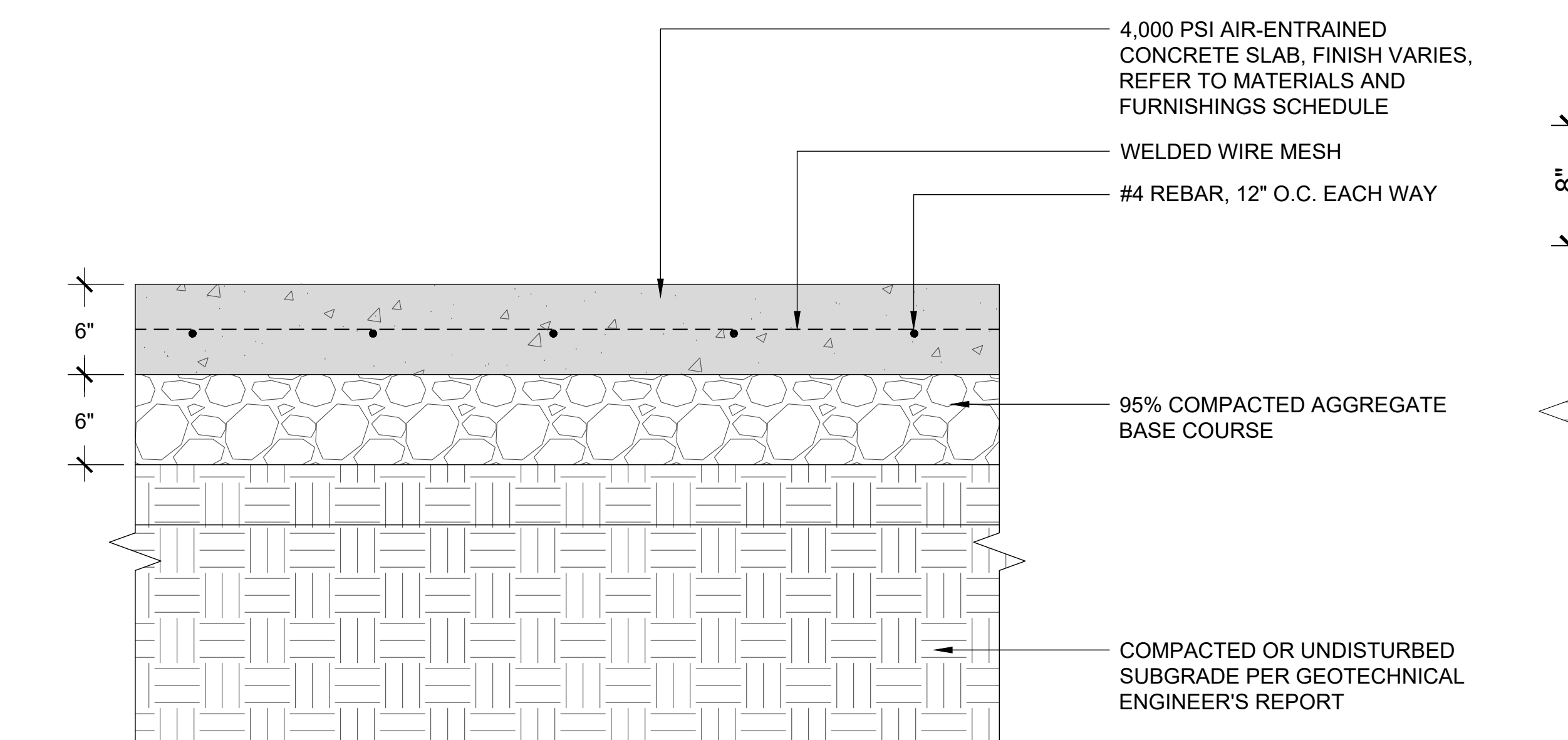
3 WHEEL STOP NTS



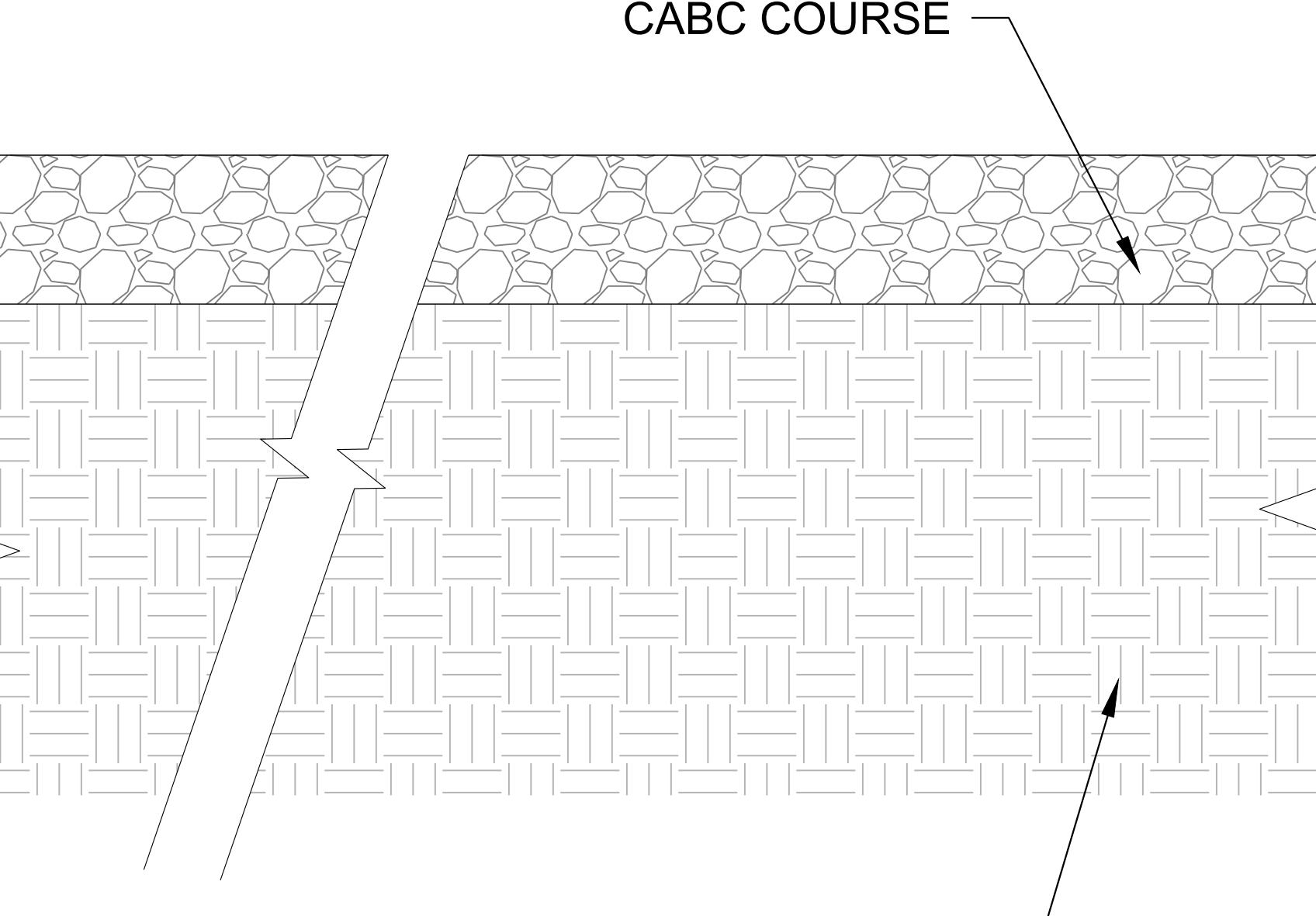
5 BOLLARD NTS



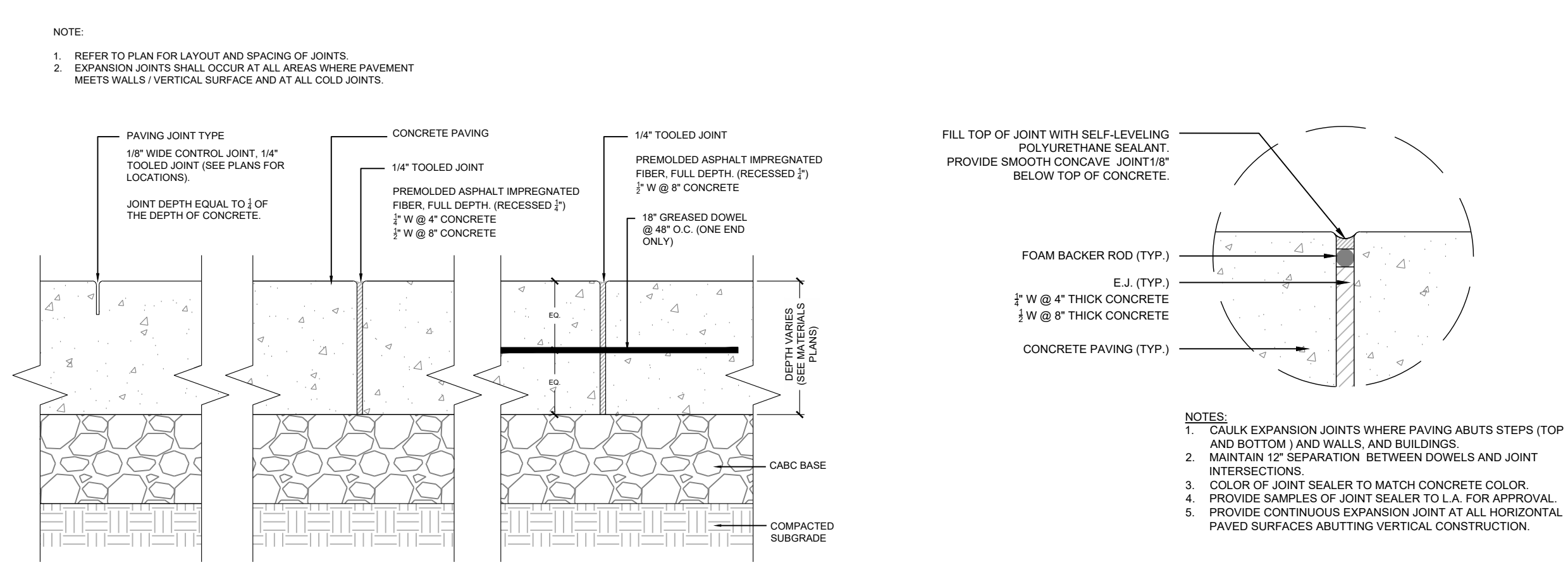
4 CONCRETE PAVEMENT - PEDESTRIAN NTS



5 CONCRETE PAVEMENT - DUMPSTER PAD NTS

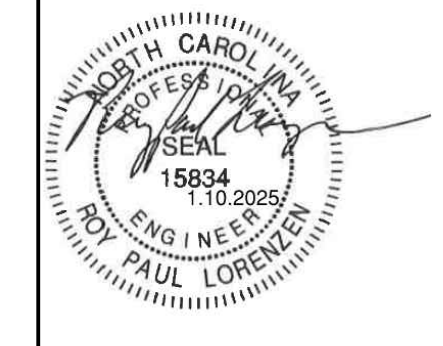


6 GRAVEL DRIVE NTS



7 CONCRETE PAVING JOINT NTS

8 EXPANSION JOINT WITH SEALANT NTS



Drawn	CO
Checked	BAH
Date	01.10.2025
Revisions	

L:\Projects\2022\C22002 - NCSU Apiculture Facility\DWGS\2-FERMITTING\3-Sheets\C22002-C3.90 Site Details.dwg Jan 06, 2025 - 3:12pm

L:\Projects\2022\C22062 - NCSU Apiculture Facility\DWGS\PERMITTING\3-Sheets\C22062-C4.00 Erosion Control Plan.dwg, Jan 06, 2025, - 3:13pm

**SEEDING PREPARATION:**

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONED, IF AVAILABLE.
- RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
- REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY ALL AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW).
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM 4 TO 6 INCHES DEEP SEEDBED IS PREPARED.
- SEED ON A FRESHLY PREPARED SEED BED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDING WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDING WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- SEE LANDSCAPING PLANS FOR PERMANENT SEEDING, MULCHING, AND FERTILIZING RATES. ALL AREAS NOT DESIGNATED TO RECEIVE PLANTS SHALL BE SEEDED PER THE LANDSCAPING PLANS.

**TEMPORARY SEEDING PREPARATION:**

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO SIX INCHES DEEP.
- REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE ADMIXTURE BELOW).
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
- SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RE-SEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- CONSULT S&C ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

**SEEDING SCHEDULE**

SHOULDERS, SIDE DITCHES, SLOPES (MAX 3:1)

DATE	TYPE	PLANTING RATE
AUG 15 - NOV 1	TALL FESCUE	300 LBS/ACRE
NOV 1 - MAR 1	TALL FESCUE & ABRUZZI RYE	25 LBS/ACRE
MAR 1 - APR 15	TALL FESCUE	300 LBS/ACRE
APR 15 - JUN 30	HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
JUL 1 - AUG 15	TALL FESCUE ***BROWNTOP MILLET ***OR SORGHUM-SUDAN HYBRIDS	120 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE

SLOPES (3:1 TO 2:1)

DATE	TYPE	PLANTING RATE
MAR 1 - JUN 1	***BROWNTOP MILLET	50 LBS/ACRE
(MAR 1 - APR 15)	ADD TALL FESCUE OR ADD HULLED COMMON BERMUDAGRASS	120 LBS/ACRE (MAR 1 - JUN 30) 25 LBS/ACRE
JUN 1 - SEP 1	***TALL FESCUE AND ***BROWNTOP MILLET ***OR SORGHUM-SUDAN HYBRIDS	120 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE
SEP 1 - MAR 1	ANNUAL RYE AND TALL FESCUE ADD ABRUZZI RYE	70 LBS/ACRE 120 LBS/ACRE (NOV 1 - MAR 1) 25 LBS/ACRE

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS. OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

\*\*\*TEMPORARY - RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING. OTHERWISE FESCUE MAY BE SHADED OUT.

**ADMIXTURES:**

AGRICULTURAL LIMESTONE: 2 TONS/ACRE  
 FERTILIZER: 1,000 LBS/ACRE - 10-10-10  
 SUPERPHOSPHATE: 500 LBS/ACRE - 20% ANALYSIS  
 MULCH: 2 TONS/ACRE - SMALL GRAIN STRAW  
 ANCHOR: ASPHALT EMULSION AT 300 GALS/ACRE

**EROSION CONTROL NOTES:**

- REFER TO C3.00 FOR GENERAL NOTES.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN BEST LOCATION BASED ON FIELD CONDITIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONSTRUCTION ENTRANCES AS NECESSARY TO PREVENT THE TRACKING OF SEDIMENT OFF-SITE. THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT EROSION CONTROL METHODS AFTER CONSTRUCTION IS COMPLETE. IF ANY PERMANENT METHODS ARE REQUIRED.
- APPROVAL OF THIS EROSION AND SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
- THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR AND ESC SUPERVISOR UNTIL ALL CONSTRUCTION IS APPROVED.
- DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE LIMITS OF DISTURBANCE (L.O.D.) SHALL BE PERMITTED. THE L.O.D. SHALL BE MAINTAINED BY THE ESC SUPERVISOR FOR THE DURATION OF CONSTRUCTION.
- THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEANING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.
- THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., ADDITIONAL SUMP PUMPS, RELOCATION OF DITCHES AND SILT FENCES, ETC.).
- THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE ESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT. COPIES OF THE WRITTEN INSPECTION REPORTS SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE TWICE PER WEEK AND AFTER RAINS OF GREATER THAN 0.1" RAIN GAUGE REQUIRED ON SITE.
- ANY AREAS OF EXPOSED SOILS THAT WILL NOT BE DISTURBED FOR FOURTEEN DAYS SHALL BE IMMEDIATELY STABILIZED WITH THE APPROVED ESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERINGS, ETC.).
- THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN FORTY EIGHT (48) HOURS FOLLOWING A STORM EVENT.
- AT NO TIME SHALL MORE THAN ONE (1) FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.
- STABILIZED CONSTRUCTION ENTRANCES AND ROADS SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES, SUCH AS WASH PADS, MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
- WHERE STRAW MULCH FOR TEMPORARY EROSION CONTROL IS REQUIRED, IT SHALL BE A MINIMUM THICKNESS OF 2 TO 3 INCHES.
- INTERM SLOPES MAY BE GRADED TO A MAXIMUM SLOPE OF 2:1 (HORIZONTAL:VERTICAL); CUT SLOPES SHALL BE LIMITED TO A MAXIMUM SLOPE OF 1.5:1.
- THE SURFACE OF AREAS SLOPES STEEPER THAN 1 VERTICAL TO 4 HORIZONTAL THAT ARE TO RECEIVE INTERIM FILL SHALL BE PLOWED, FURROWED, TILLED OR BROKEN UP PRIOR TO PLACING FILL SO THAT FILL MATERIAL WILL BOND WITH EXISTING SURFACE. INTERIM FILL SHALL BE PLACED AS SPECIFIED FOR PERMANENT FILLS AND IN LIFTS NOT GREATER THAN 6".
- PROVIDE DUST CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, WETTING DOWN TO CONTROL DUST ON SITE, IN ORDER TO PREVENT ANNOYANCE/AND OR DAMAGE TO ADJACENT SITES. CALCIUM CHLORIDE OR ANY OTHER CHEMICAL MATERIAL MAY NOT BE USED ON SUBGRADES TO BE SEEDED OR PLANTED.
- SEDIMENT LADEN RUNOFF FROM EXCAVATIONS SHALL NOT BE PUMPED DIRECTLY TO STORM DRAINAGE.
- INSPECTOR REFERS TO LOCAL JURISDICTIONAL (CNDENR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
- CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
- NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM: THE PERSON RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES IS REQUIRED TO INSPECT THE PROJECT AFTER EACH PHASE OF THE PROJECT AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131 TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. THE SELF-INSPECTION REPORT FORM IS AVAILABLE AS AN EXCEL SPREADSHEET FORM [HTTP://WWW.DLR.ENR.STATE.NC.US/PAGES/SEDIMENTATION\\_NEW.HTML](http://www.dlr.enr.state.nc.us/PAGES/SEDIMENTATION_NEW.HTML)

**SEQUENCE OF CONSTRUCTION ACTIVITIES:**

- OBTAIN GRADING PERMIT.
- DETERMINE AND MARK LIMITS OF DISTURBANCE.
- A PRE-CONSTRUCTION CONFERENCE MUST BE HELD 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES. THE EROSION CONTROL INSPECTOR, ARCHITECT, ENGINEER, AND CONTRACTOR SHALL BE PRESENT TO SATISFY REQUIREMENTS.
- INSTALL CONSTRUCTION ENTRANCE, TREE PROTECTION FENCING, SILT FENCE, PERIMETER EROSION CONTROL DEVICES AND ALL REQUIRED BASINS AND TRAPS.
- SCHEDULE SITE INSPECTION.
- UPON APPROVAL TO PROCEED BY THE EROSION CONTROL INSPECTOR, HARVEST ANY TIMBER.
- CONSTRUCT REMAINING EROSION CONTROL MEASURES AS REQUIRED.
- REMOVE AND/OR STORE TOPSOIL.
- BEGIN GRADING OPERATIONS.
- CLEAN SEDIMENT BASINS/TRAPS WHEN ONE-HALF FULL.
- ALL STREETS SURROUNDING THE PROJECT SHALL BE KEPT CLEAN AT ALL TIMES.
- PLACE TEMPORARY SEEDING ON ALL DISTURBED AREAS THAT WILL BE IDLE 14 DAYS OR LONGER.
- PERMANENT SURFACE STABILIZATION SHALL BE INSTALLED FOR ALL AREAS WITHIN 14 DAYS AFTER FINAL GRADE HAS BEEN REACHED. AS NECESSARY, FERTILIZE, WATER AND RESEED AS REQUIRED TO ESTABLISH AND MAINTAIN A VIGOROUS STAND OF GRASS.
- AFTER COMPLETION OF CONSTRUCTION AND THE SITE IS STABILIZED, REMOVE ALL ACCUMULATED SEDIMENT FROM SEDIMENT TRAPPING MEASURES AND DISPOSE BY MEANS DEEMED ACCEPTABLE BY THE ENGINEER. SCHEDULE SITE INSPECTION. UPON APPROVAL BY THE EROSION CONTROL INSPECTOR, REMOVE TEMPORARY EROSION CONTROL MEASURES, SMOOTH AREA AND APPLY APPROPRIATE STABILIZATION.
- STORMWATER PERMIT INSPECTION REPORTS SHALL BE PERFORMED BY THE CONTRACTOR UNTIL NOTIFIED OTHERWISE BY THE EROSION CONTROL INSPECTOR.


**NOTES:**

- INSPECTOR REFERS TO LOCAL JURISDICTIONAL (CNDENR OR LOCAL) LAND QUALITY INSPECTOR OR HIS REPRESENTATIVE. FIELD INSPECTIONS MAY REQUIRE ADDITIONAL SEDIMENTATION AND EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE INSPECTOR.
- CONSTRUCTION AND MAINTENANCE OF ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH AND NATURAL RESOURCES LAND QUALITY SECTION EROSION AND SEDIMENT CONTROL PLANNING LAND DESIGN MANUAL.
- NOTIFICATION OF LAND RESOURCES SEDIMENT AND EROSION CONTROL SELF-INSPECTION PROGRAM: THE PERSON RESPONSIBLE FOR LAND-DISTURBING ACTIVITIES IS REQUIRED TO INSPECT THE PROJECT AFTER EACH PHASE OF THE PROJECT AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED. IN ACCORDANCE WITH NCGS 113A-54.1 AND 15A NCAC 4B.0131 TO MAKE SURE THAT THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS BEING FOLLOWED. THE SELF-INSPECTION REPORT FORM IS AVAILABLE AS AN EXCEL SPREADSHEET FORM [HTTP://WWW.DLR.ENR.STATE.NC.US/PAGES/SEDIMENTATION\\_NEW.HTML](http://www.dlr.enr.state.nc.us/PAGES/SEDIMENTATION_NEW.HTML)


**TREE PROTECTION NOTES:**

- TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO ANY DEMOLITION, LAND DISTURBANCE OR ISSUANCE OF A GRADING PERMIT. OR OBTAIN A GRADING PERMIT THEN TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO ANY DEMOLITION, LAND DISTURBANCE.
- TREE PROTECTION FENCING SHALL INCLUDE WARNING SIGNS POSTED IN BOTH ENGLISH AND SPANISH, AS FOLLOWS: "NO TRESPASSING/TREE PROTECTION AREA/PROHIBIDO ENTRAR / ZONA PROTECTORA PARA LOS ARBOLES."
- PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE LOWERING OF EXISTING GRADE AROUND A TREE OR STRIPPING OF TOPSOIL, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE ON THE TREE ROOTS OUTSIDE OF THE TREE SAVE AREA. THIS SHALL OCCUR AT THE SAME TIME THAT OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREES IS COMPLETE.
- NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED TREE AREA.
- TREE PROTECTION AREA: EQUALS ONE FOOT OF RADIUS FOR EVERY INCH OF DIAMETER OF EXISTING TREES, OR SIX FOOT RADIUS, WHICHEVER IS GREATER. NO DISTURBANCE ALLOWED WITHIN THIS AREA.

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Revisions	

**TOTAL AREA OF DISTURBANCE**  
**1.859 AC / 80,977 SF**

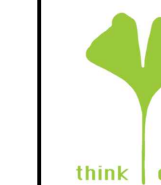
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 Raleigh, NC  
 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132  
 Title  
**EROSION CONTROL NOTES**

Sheet  
**C4.00**

Plate

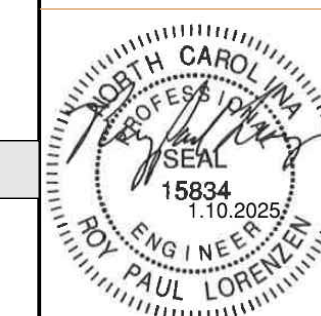


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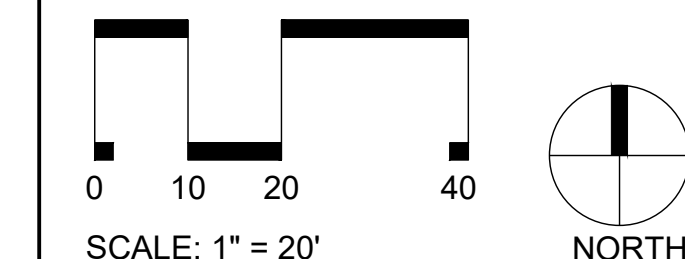
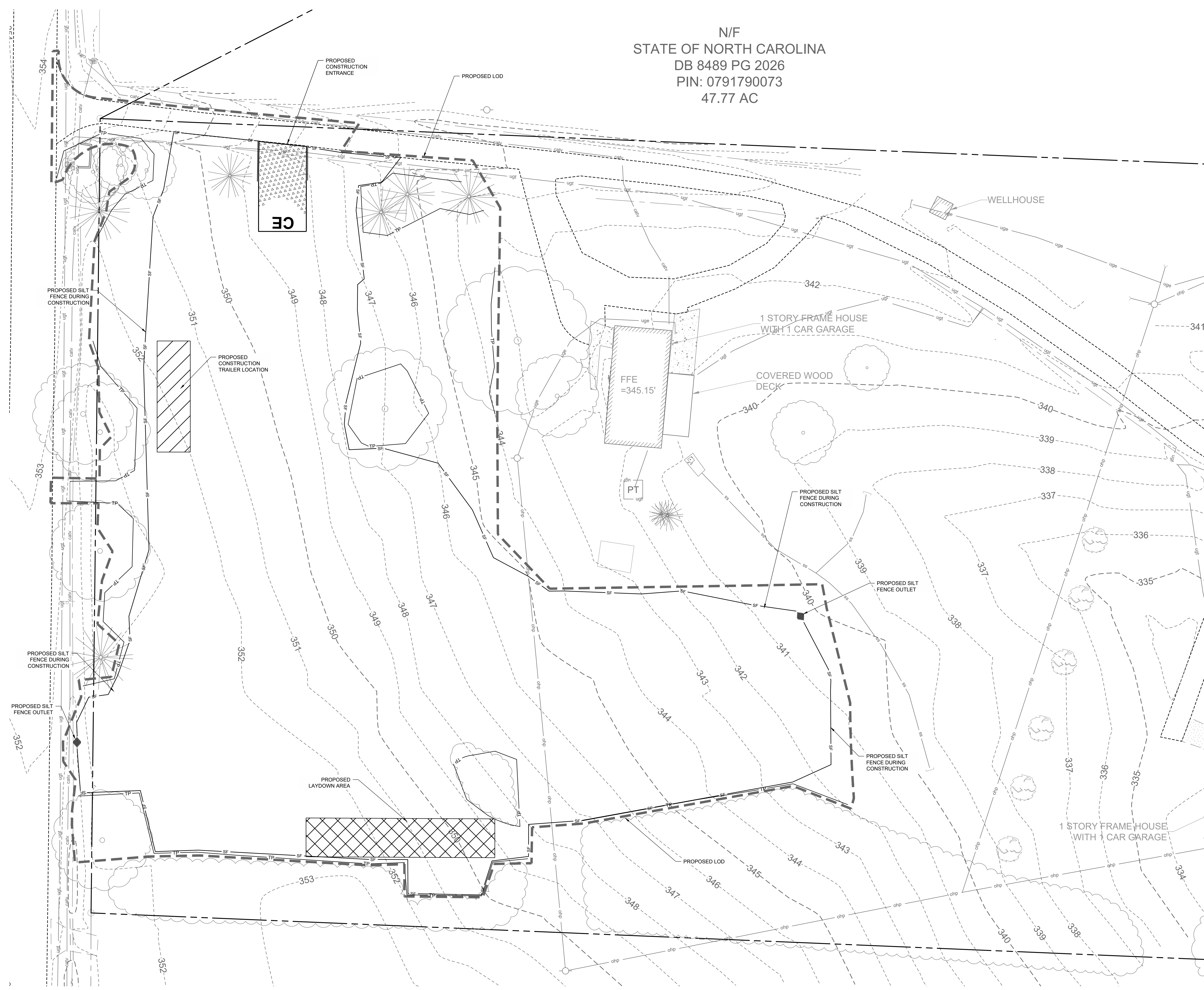


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Checked RPL  
Date 01.10.2025  
Revisions

LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
BZ	RIPARIAN BUFFER (50')
TP	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

EROSION CONTROL LEGEND:	
SYMBOL	DESCRIPTION
[Symbol]	BLOCK & GRAVEL INLET PROTECTION
[Symbol]	SILT FENCE & WIRE INLET PROTECTION
[Symbol]	HORSESHOE INLET PROTECTION
[Symbol]	SILT FENCE OUTLET
[Symbol]	CHECK DAM
[Symbol]	FLARED END SECTION
[Symbol]	SEDIMENT TRAP
[Symbol]	RIP RAP DISSIPATER
[Symbol]	TEMPORARY CONSTRUCTION ENTRANCE
SF	SILT FENCE
DD	DIVERSION DITCH
---	100 YEAR FLOOD ELEVATION

- NOTES:**
- SEE SHEET C0.10 FOR GENERAL AND SITE NOTES.
  - SEE SHEET C4.00 FOR EROSION CONTROL NOTES.
  - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NORTH CAROLINA EROSION CONTROL SPECIFICATIONS.
  - ALL GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.



SCALE: 1" = 20'  
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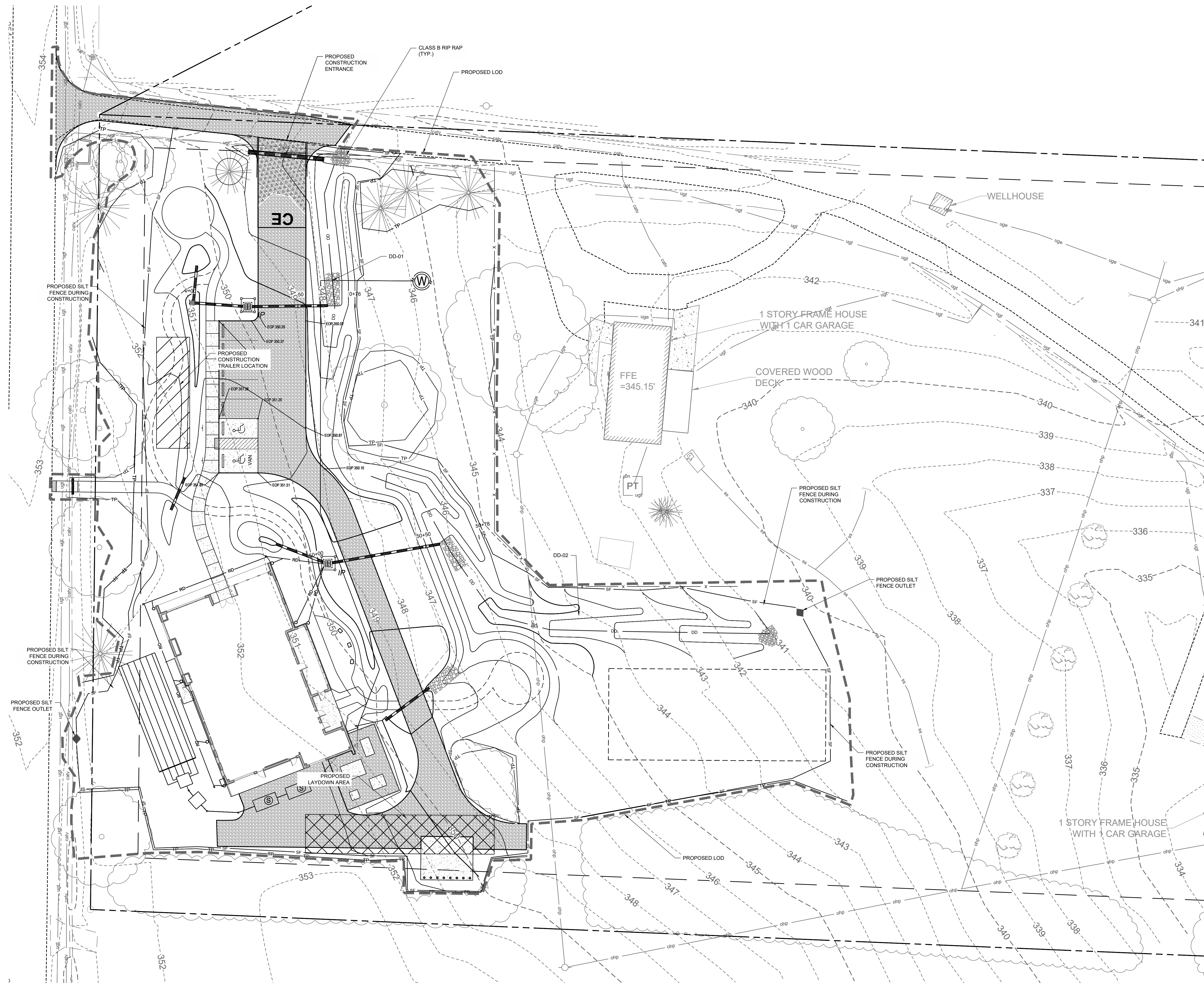
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Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title  
**EROSION CONTROL PLAN (PHASE I)**

Sheet  
**C4.01**

Plate

L:\Projects\2022\C22062 - NCSU Apiculture Facility\DWGS\2-PERMITTING\3-Sheets\C22062-C4.00 Erosion Control Plan.dwg Jan 06, 2025 - 3:13pm



LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
---	RIPIARIAN BUFFER (50')
---	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

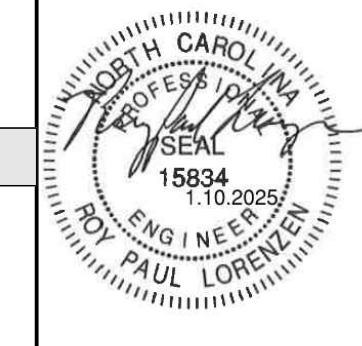
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SYMBOL	DESCRIPTION
[Symbol]	BLOCK & GRAVEL INLET PROTECTION
[Symbol]	SILT FENCE & WIRE INLET PROTECTION
[Symbol]	HORSESHOE INLET PROTECTION
[Symbol]	SILT FENCE OUTLET
[Symbol]	CHECK DAM
[Symbol]	FLARED END SECTION
[Symbol]	SEDIMENT TRAP
[Symbol]	RIP RAP DISSIPATER
[Symbol]	TEMPORARY CONSTRUCTION ENTRANCE
---	SILT FENCE
---	DIVERSION DITCH
---	100 YEAR FLOOD ELEVATION

- NOTES:**
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  - SEE SHEET C4.00 FOR EROSION CONTROL NOTES.
  - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NORTH CAROLINA EROSION CONTROL SPECIFICATIONS.
  - ALL GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

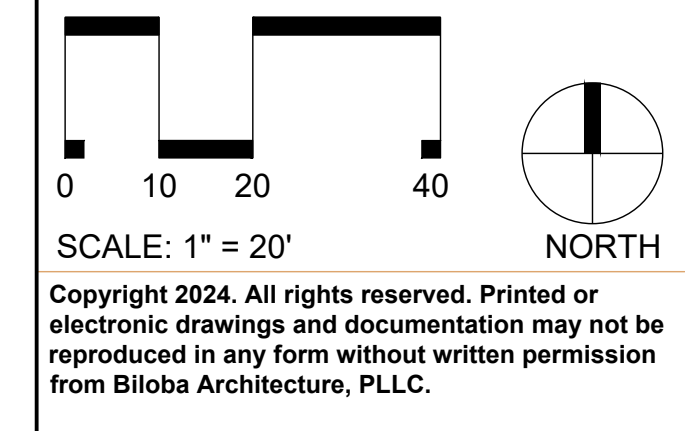
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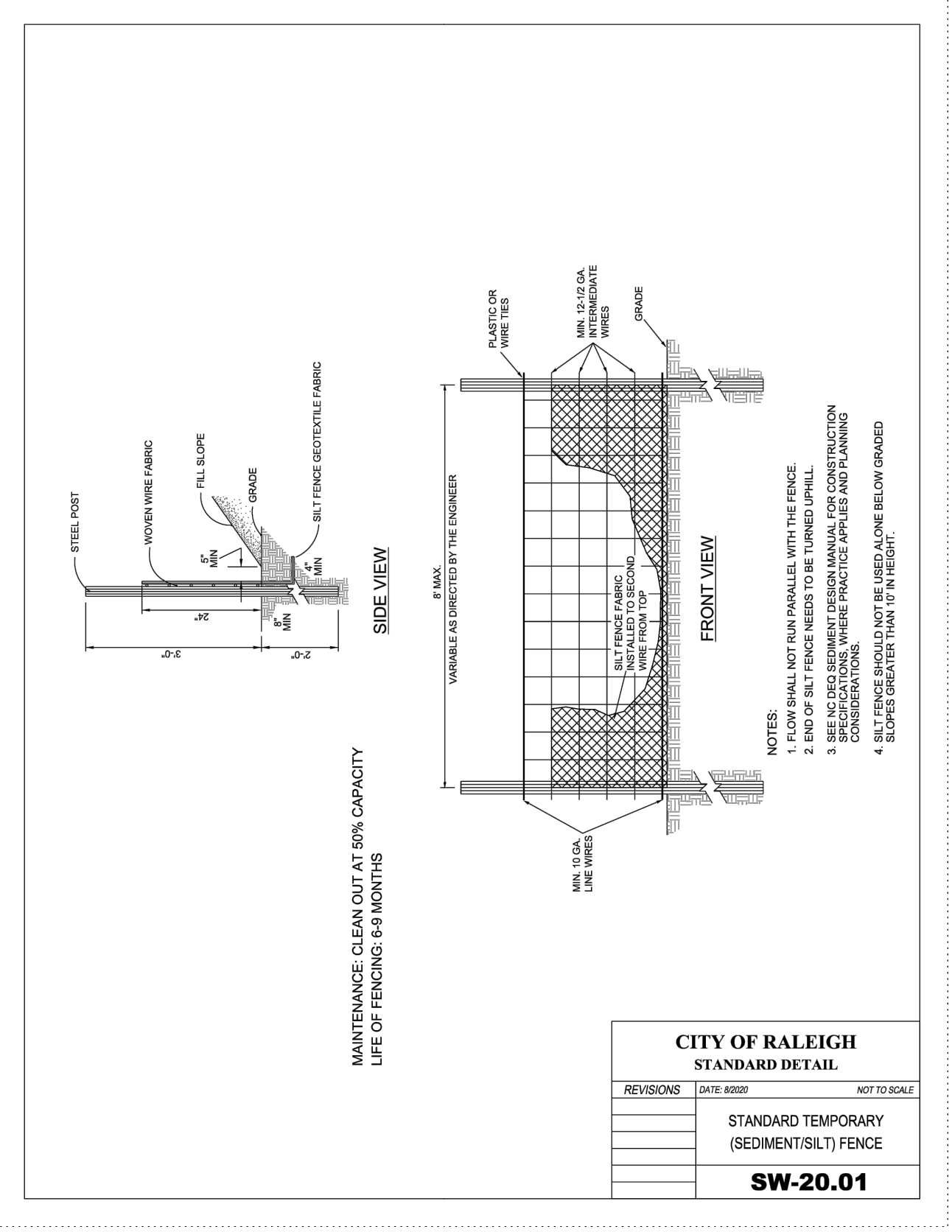


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 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

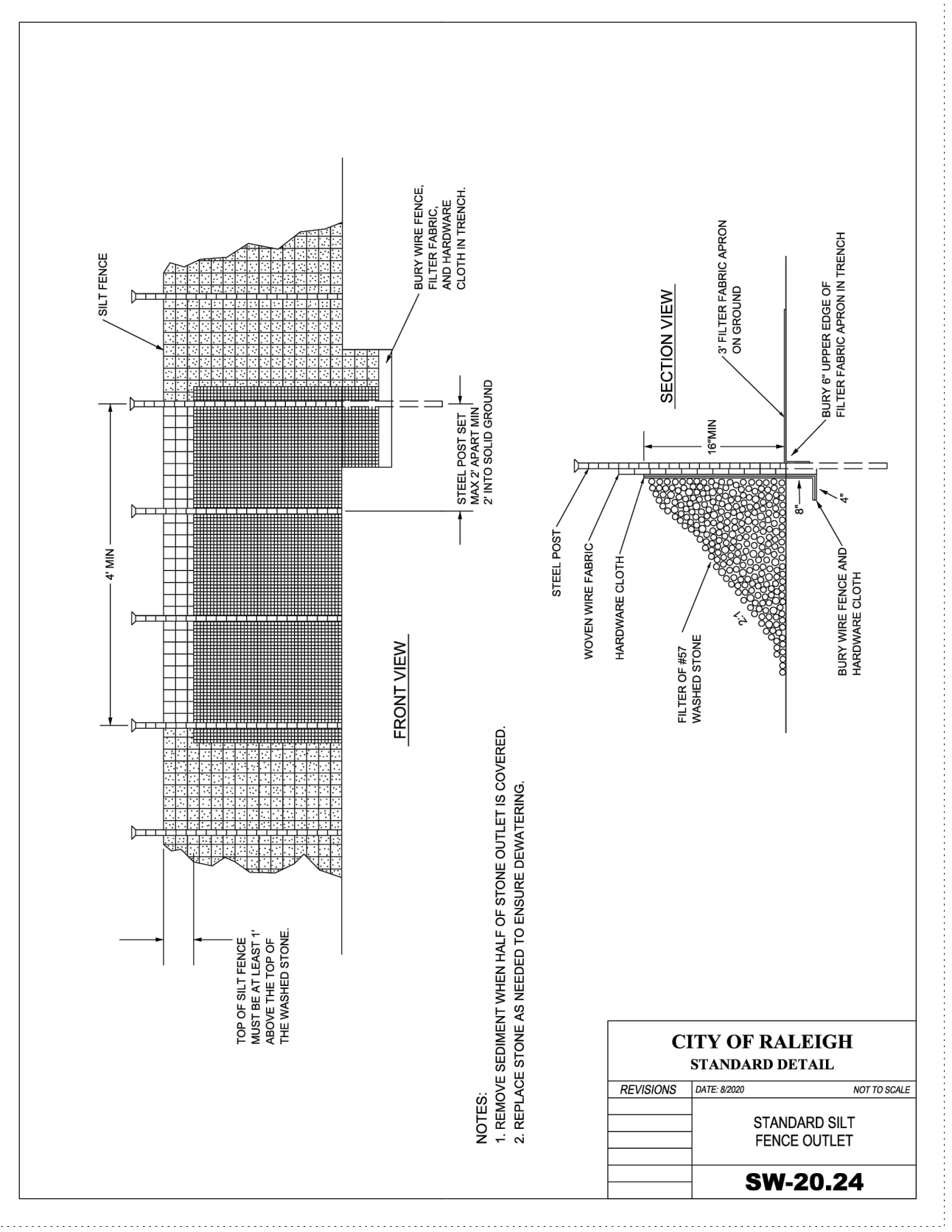
Project Number 132  
 Title  
**EROSION CONTROL PLAN (PHASE II)**

Sheet  
**C4.02**

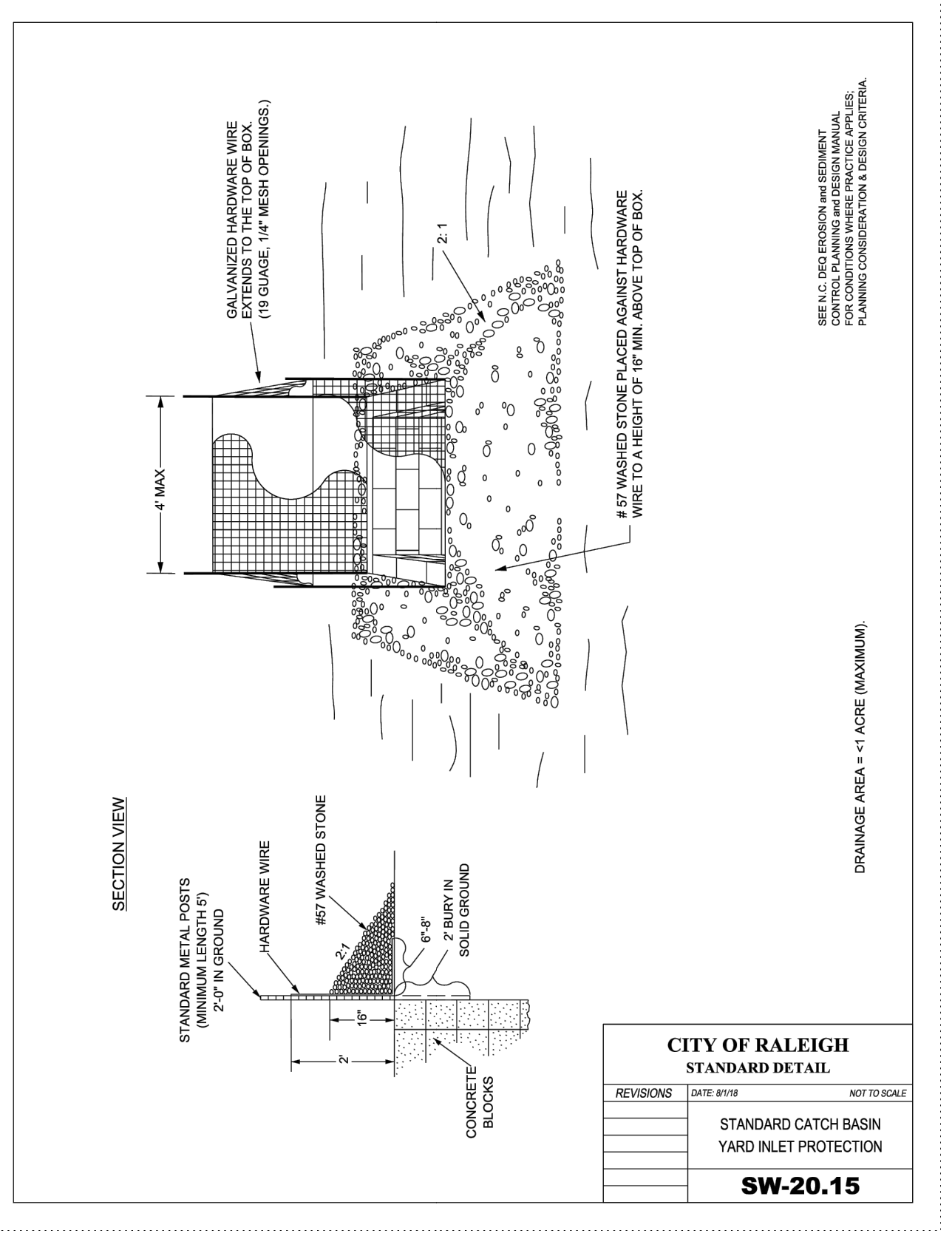
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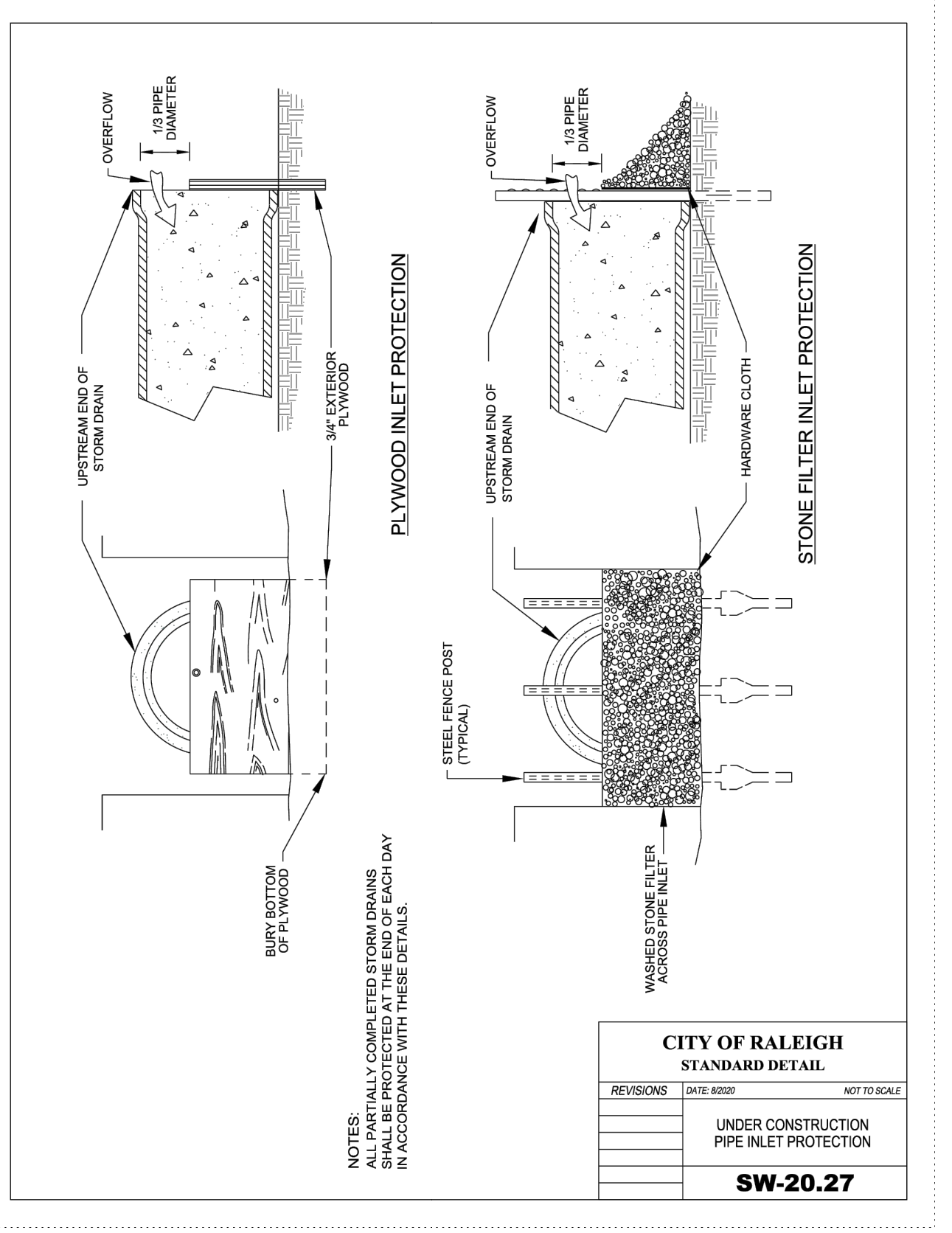
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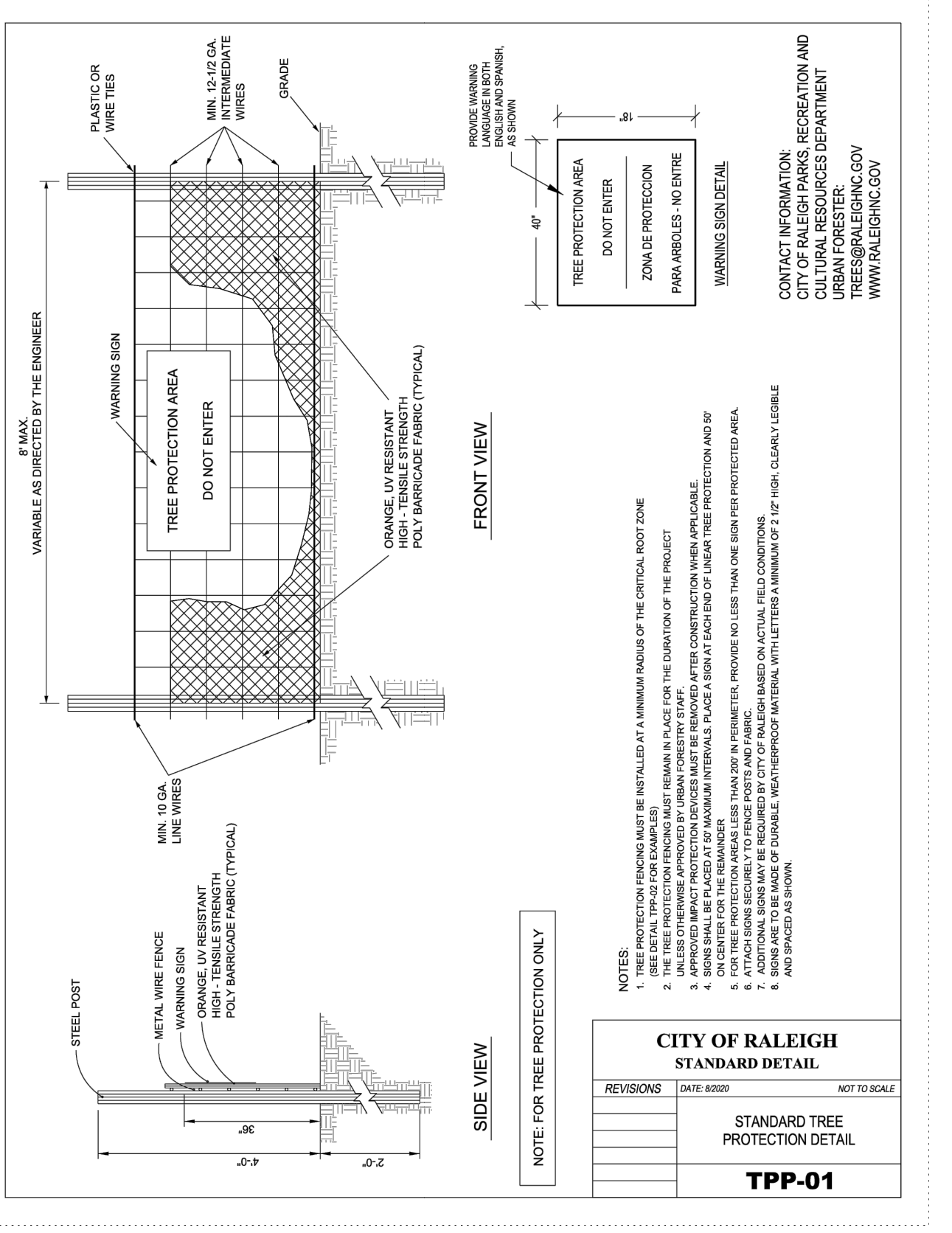
2 STANDARD SILT FENCE OUTLET NTS



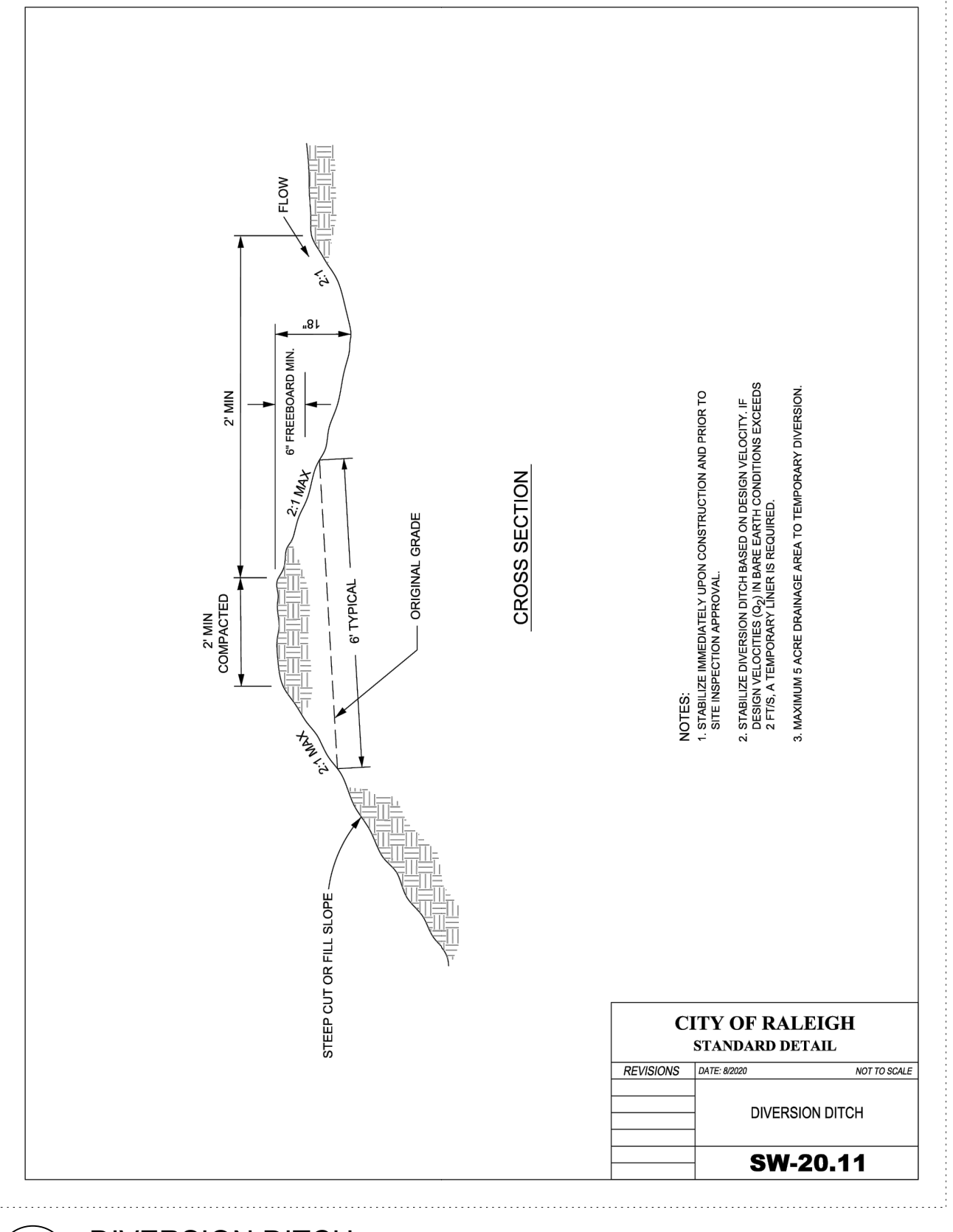
3 STANDARD CATCH BASIN YARD INLET PROTECTION NTS



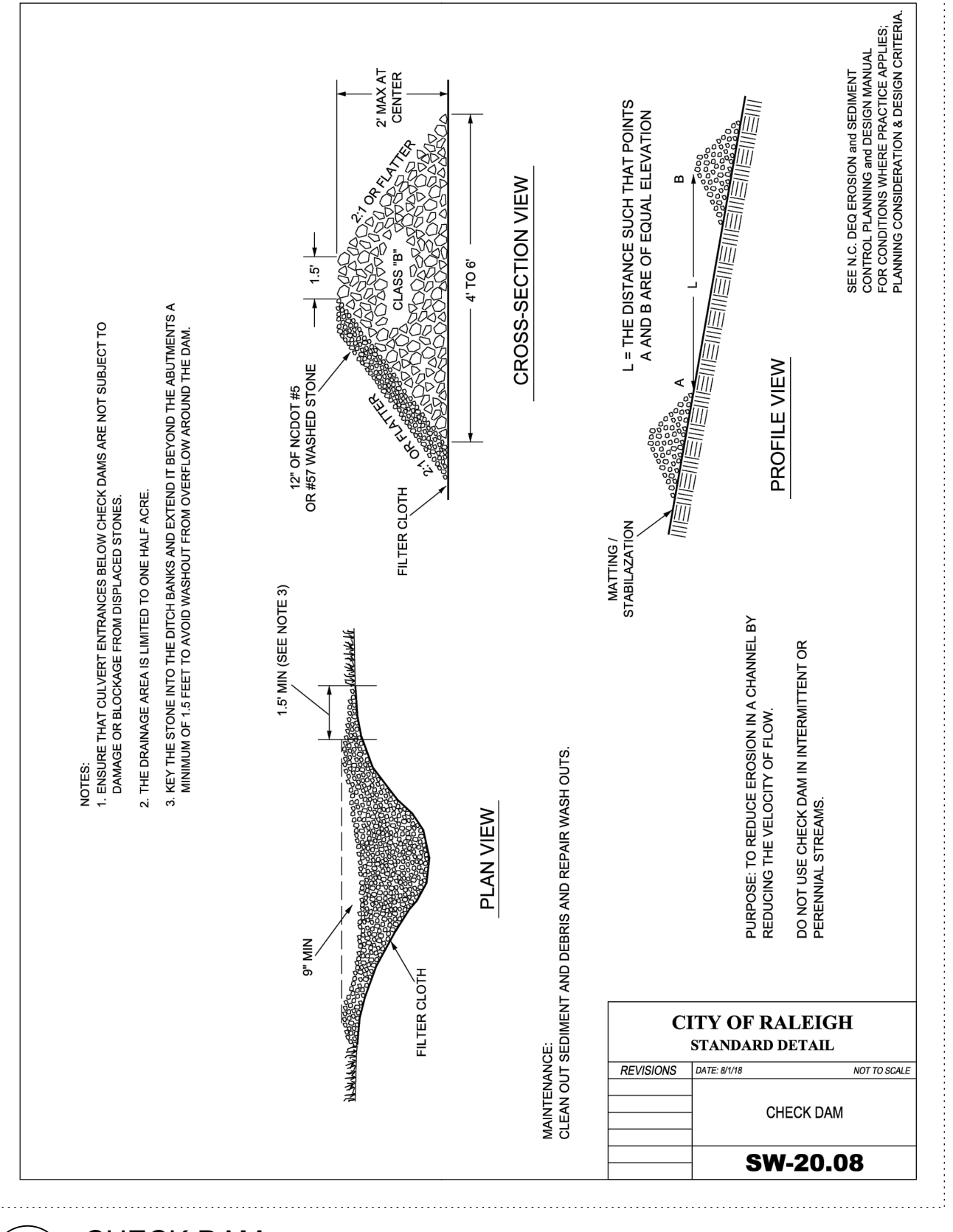
4 UNDER CONSTRUCTION PIPE INLET PROTECTION NTS



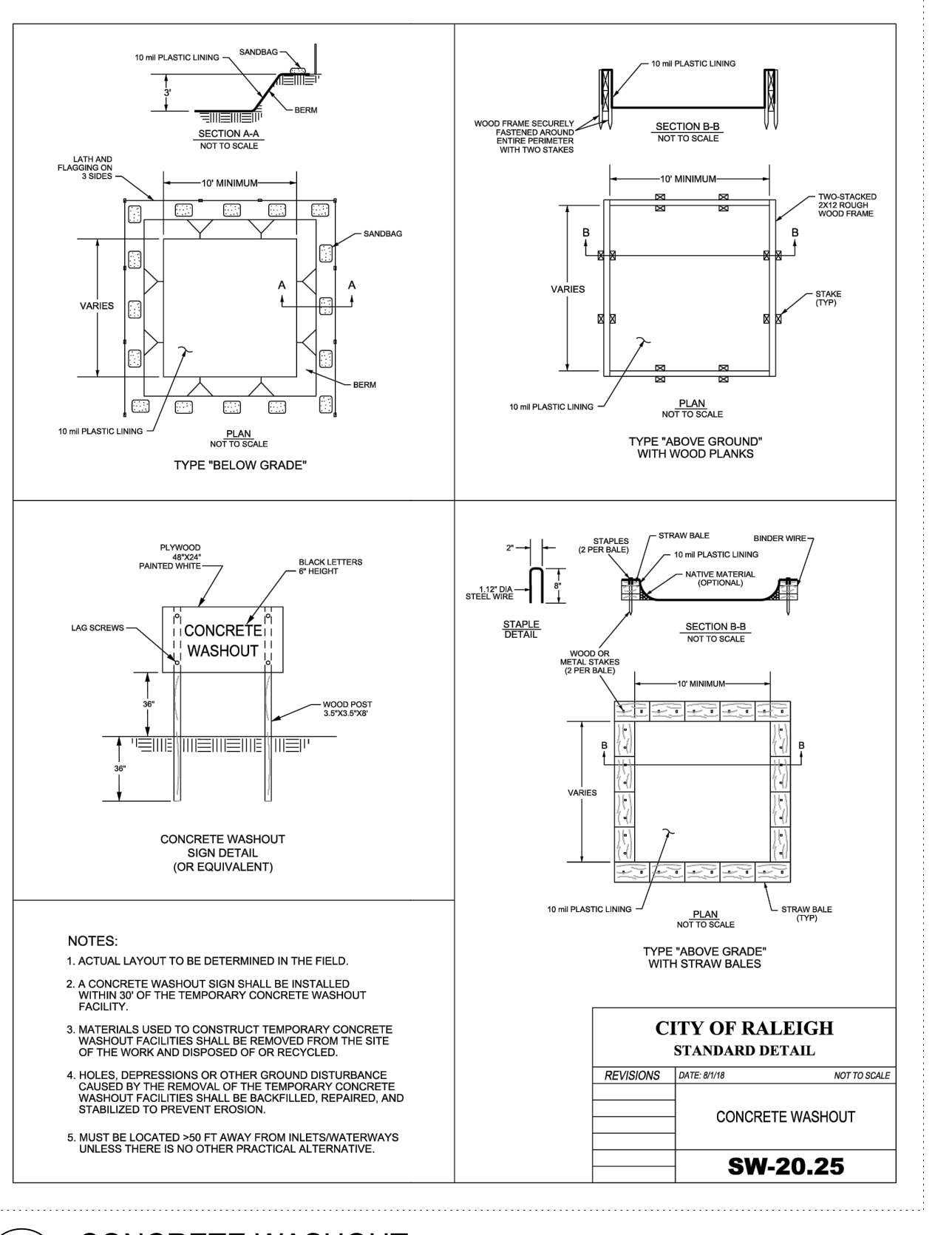
5 STANDARD TREE PROTECTION DETAIL NTS



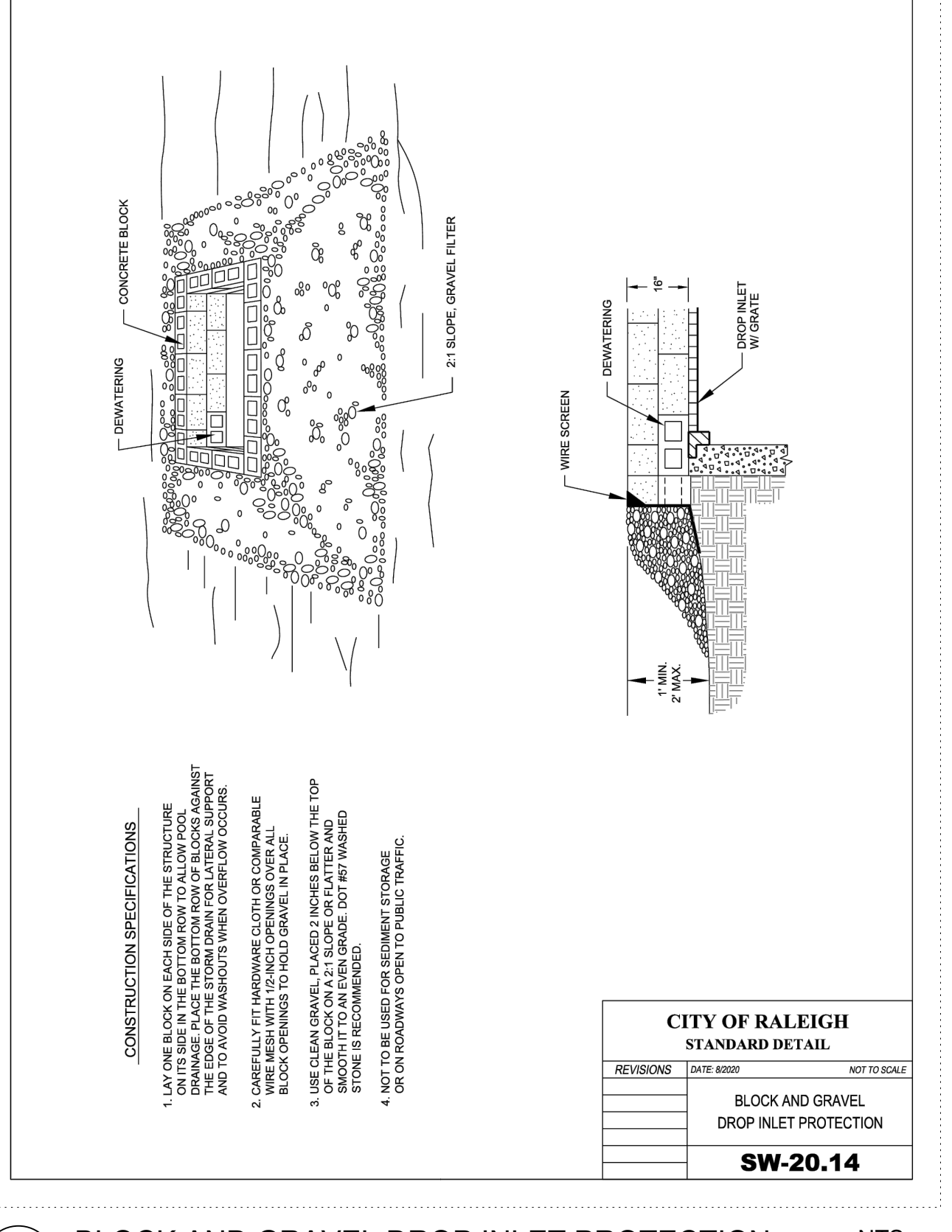
6 DIVERSION DITCH NTS



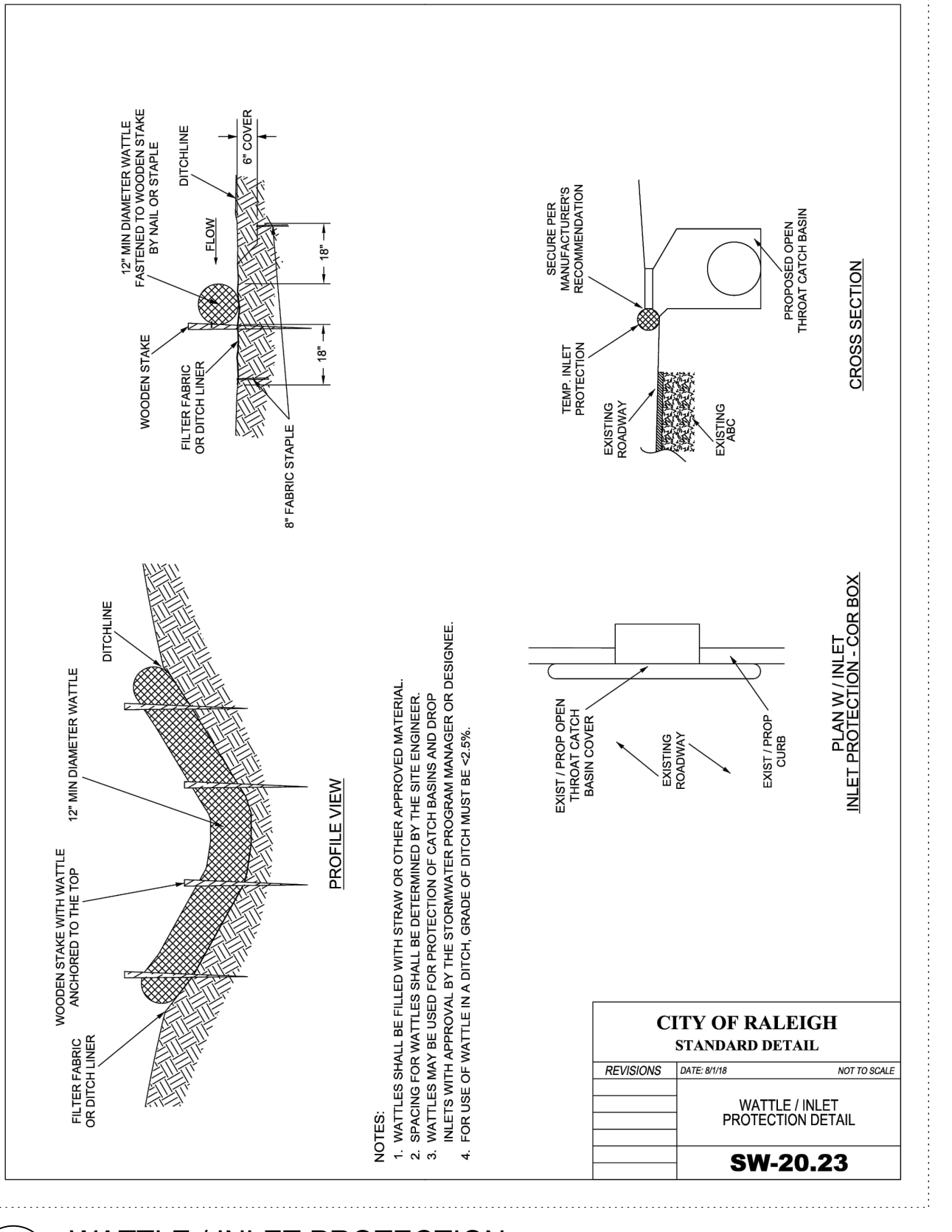
7 CHECK DAM NTS



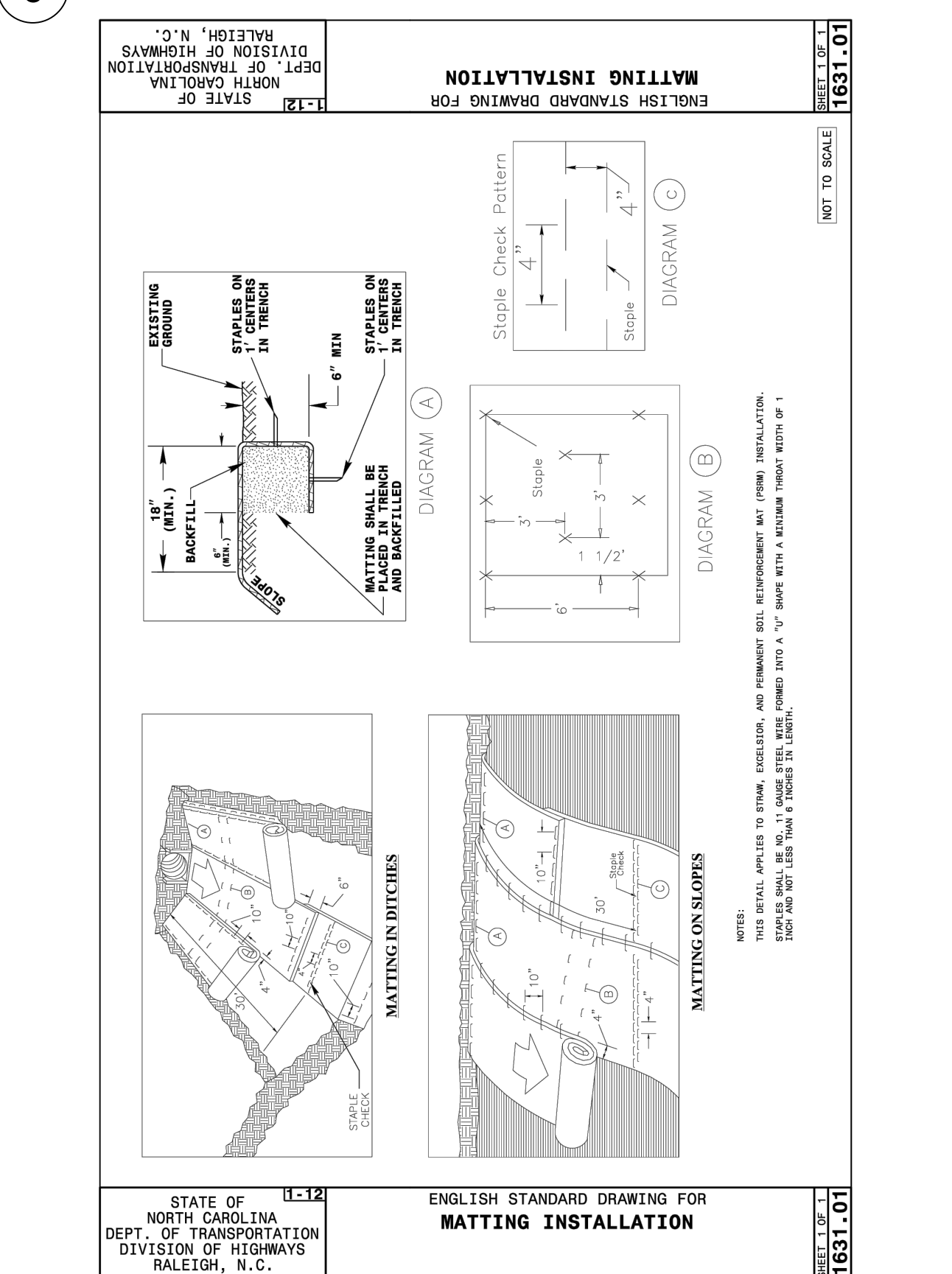
8 CONCRETE WASHOUT NTS



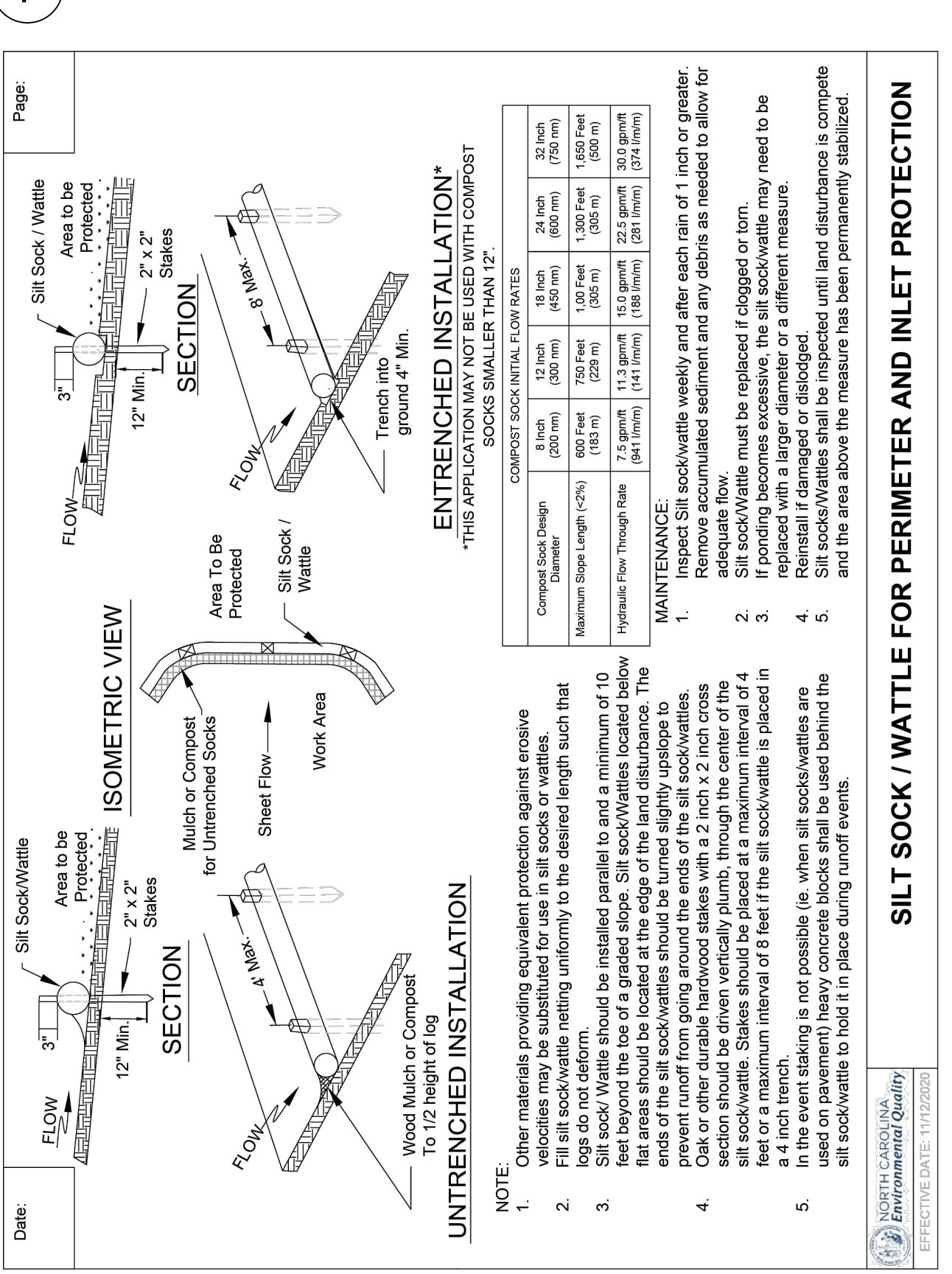
9 BLOCK AND GRAVEL DROP INLET PROTECTION NTS



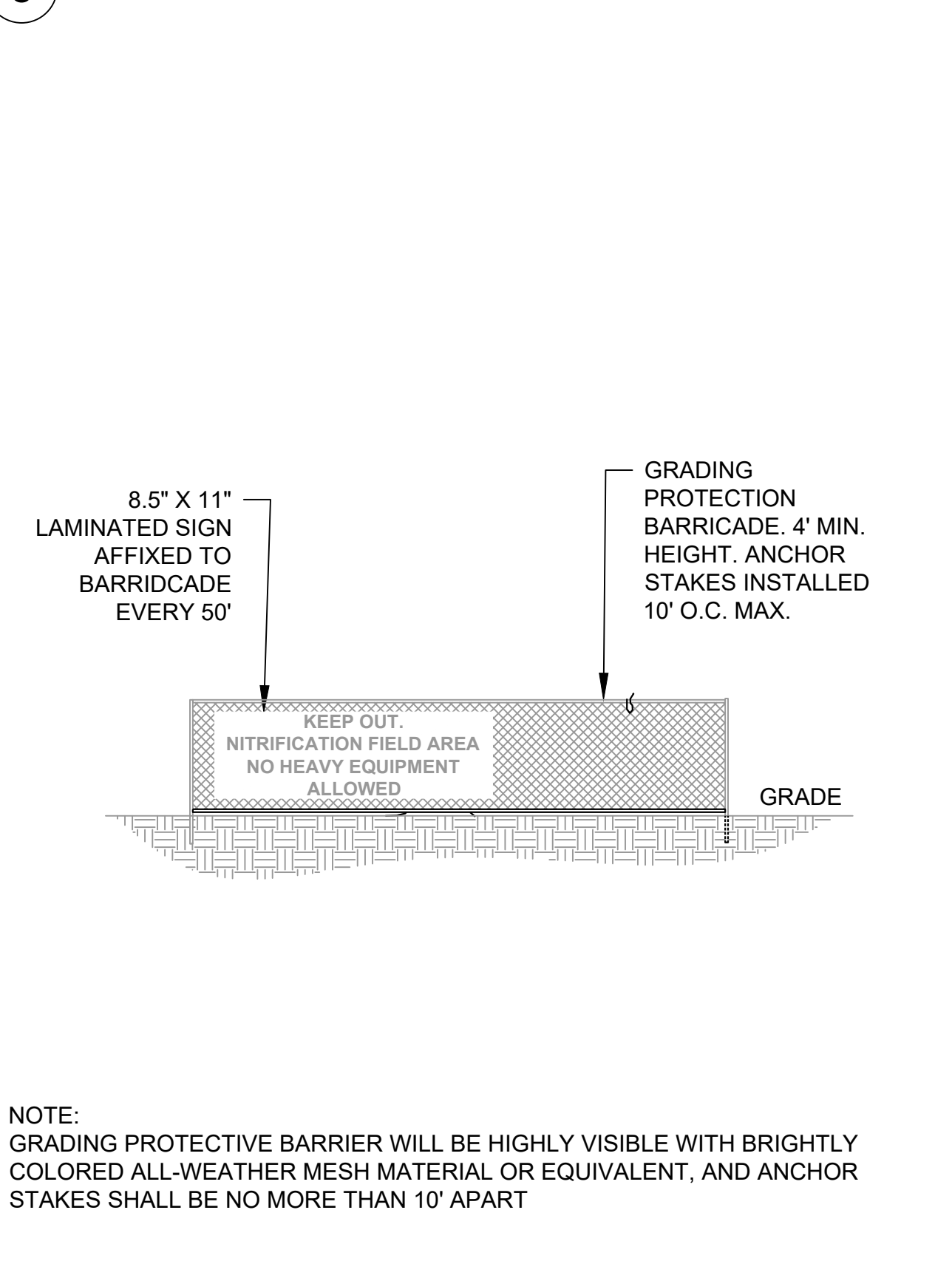
10 WATTLE / INLET PROTECTION NTS



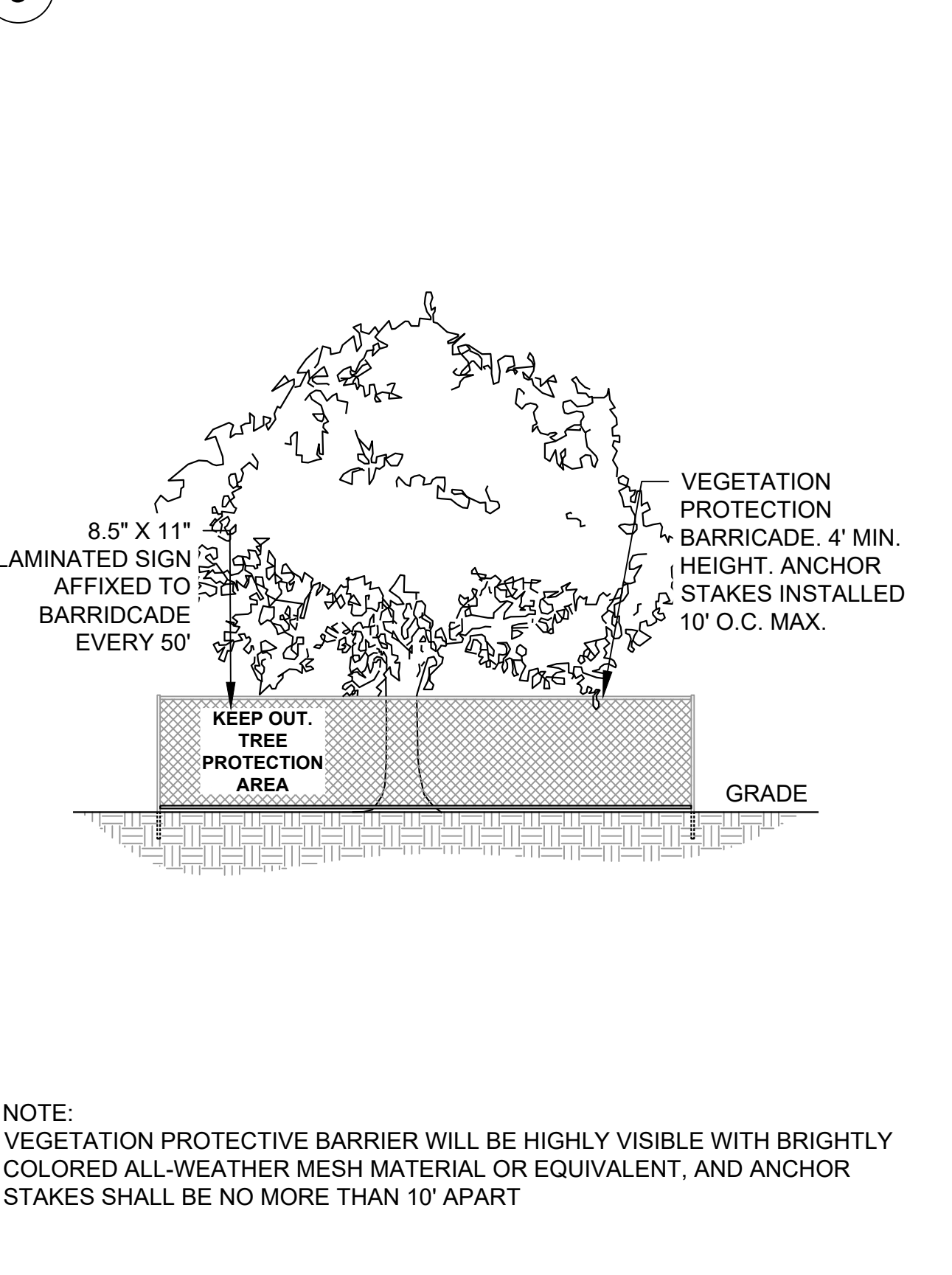
11 MATTING INSTALLATION NTS



12 PERIMETER PROTECTION - SILT SOCK/WATTLE NTS



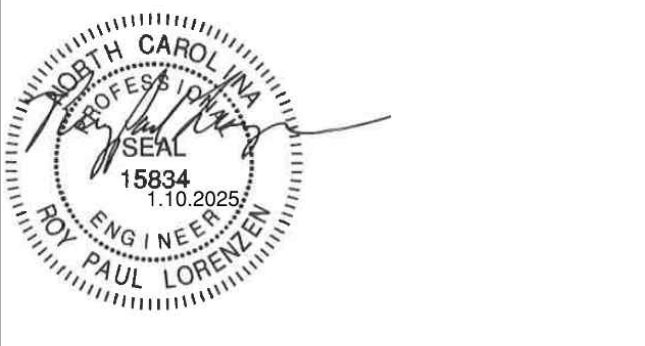
13 GRADING BARRIER NTS



14 TREE PROTECTION NTS

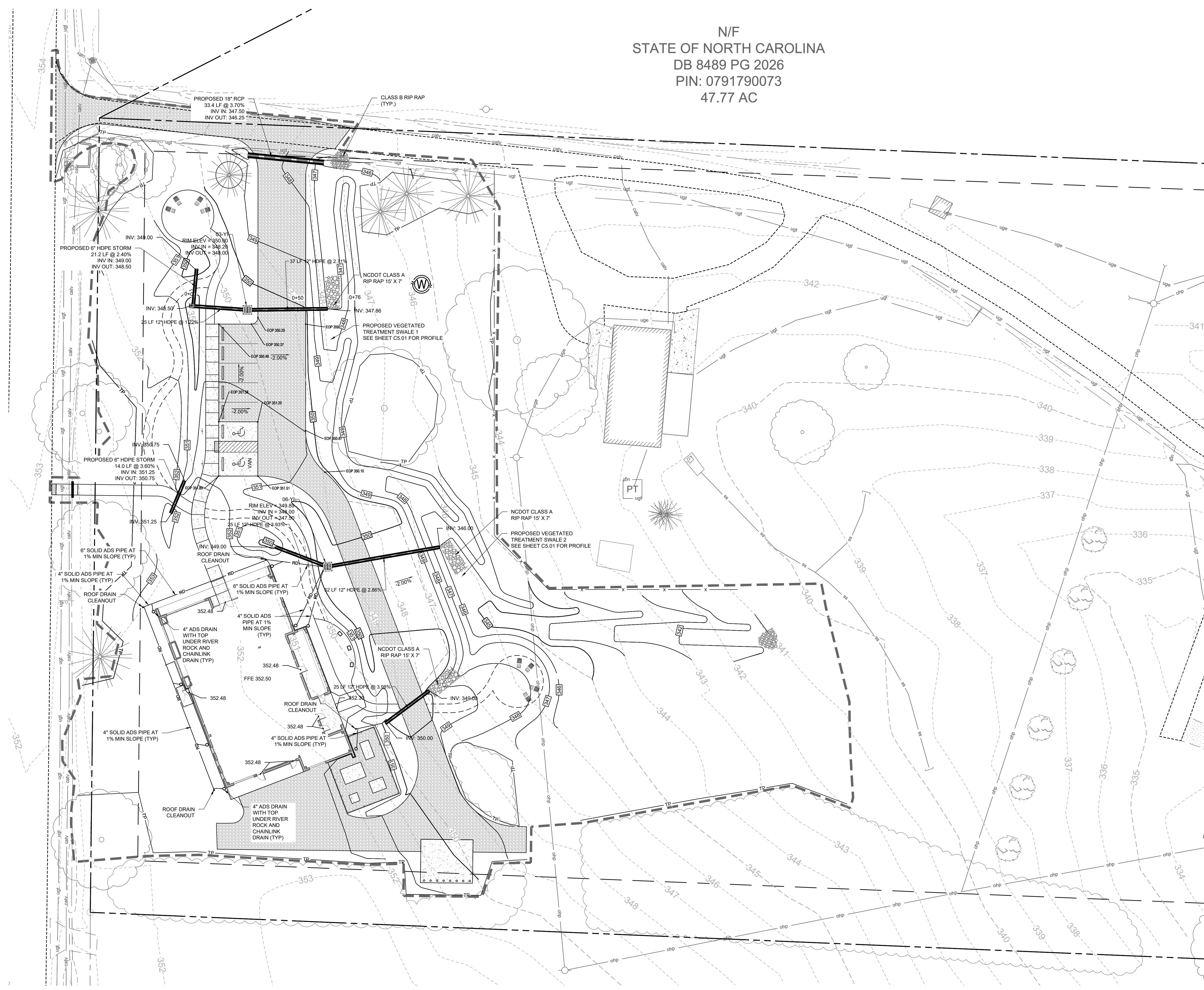


15 DETAIL NOT IN USE NTS



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L:\Projects\2022\220202 - NCSU Apiculture Facility\DWGS\2-PERMITTING\3-Sheets\C22062-C5.00 Grading & Storm Drainage Plan.dwg Jan 06, 2025 - 3:13pm



N/F  
STATE OF NORTH CAROLINA  
DB 8489 PG 2026  
PIN: 0791790073  
47.77 AC

LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
	LIMITS OF DISTURBANCE
	PROPERTY LINE
	EASEMENT
	SETBACK
	BZ RIPARIAN BUFFER (50')
	TP TREE PROTECTION FENCE
	ACCESSIBLE ROUTE

GRADING LEGEND:	
SYMBOL	DESCRIPTION
	PROPOSED JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED AREA DRAIN
	RIPRAP DISSIPATOR
	FLOW DIRECTION
	PROPOSED ELEVATION
	TOP/BOTTOM OF CURB
	TOP/BOTTOM OF WALL
	PROPOSED STORM DRAINAGE
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR

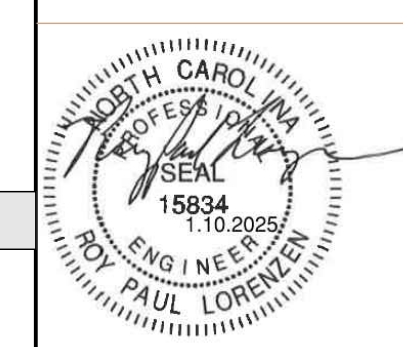
**NOTES:**

- SEE SHEET C0.10 FOR GENERAL AND GRADING NOTES.
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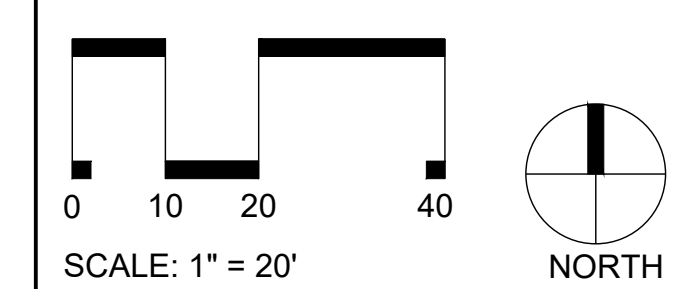
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 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132  
 Title  
**GRADING & STORM DRAINAGE PLAN**

Sheet  
**C5.00**

Plate

LINETYPE LEGEND:	
SYMBOL	DESCRIPTION
	LIMITS OF DISTURBANCE
	PROPERTY LINE
	EASEMENT
	SETBACK
	BZ RIPARIAN BUFFER (50')
	TP TREE PROTECTION FENCE
	ACCESSIBLE ROUTE

GRADING LEGEND:	
SYMBOL	DESCRIPTION
	PROPOSED JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED AREA DRAIN
	RIPRAP DISSIPATOR
	FLOW DIRECTION
	PROPOSED ELEVATION
	TOP/BOTTOM OF CURB
	TOP/BOTTOM OF WALL
	PROPOSED STORM DRAINAGE
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR

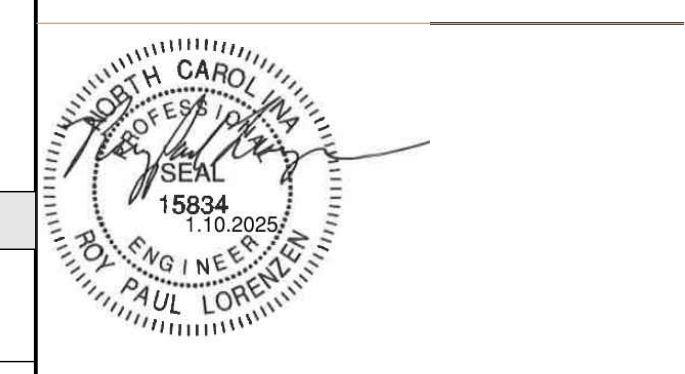
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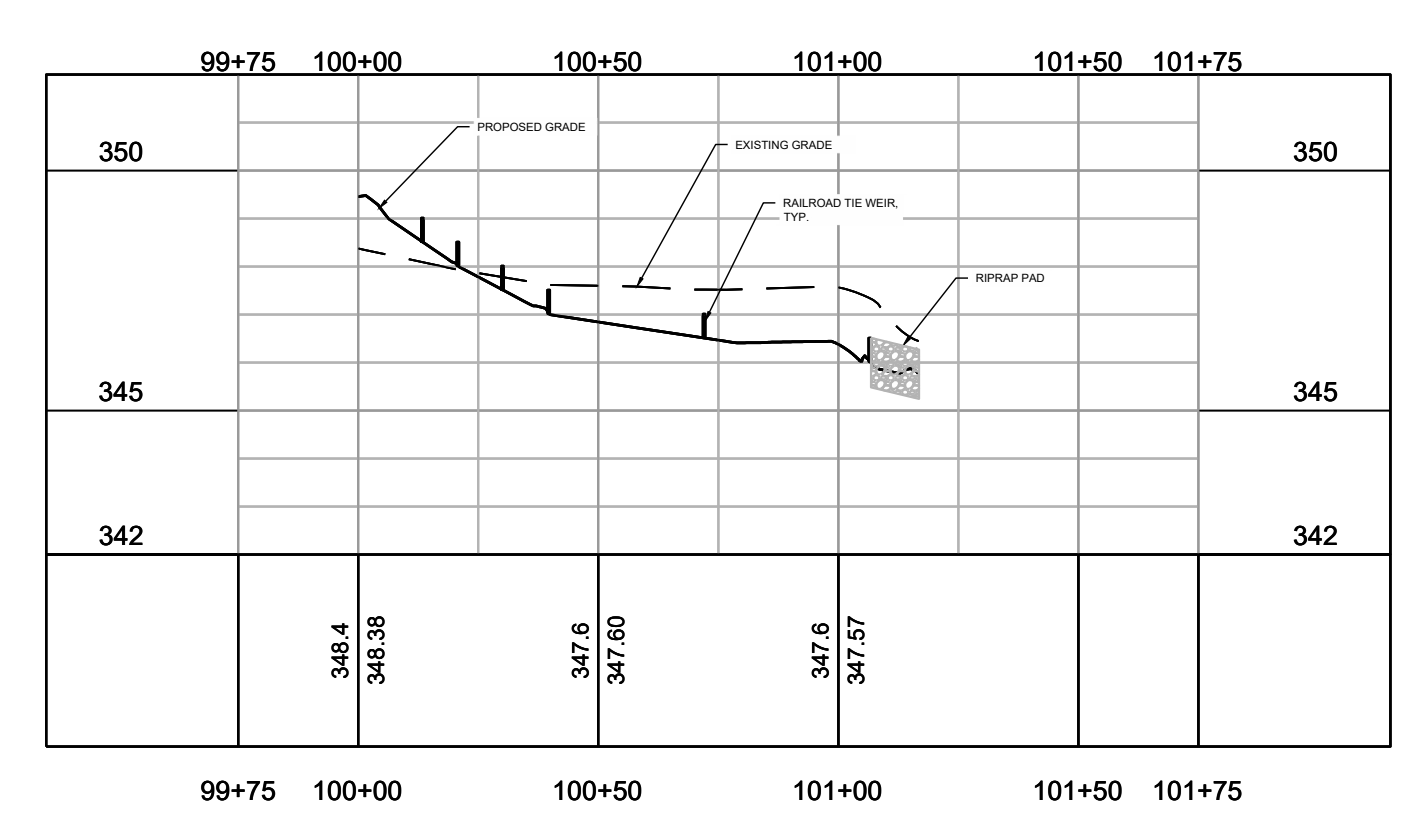
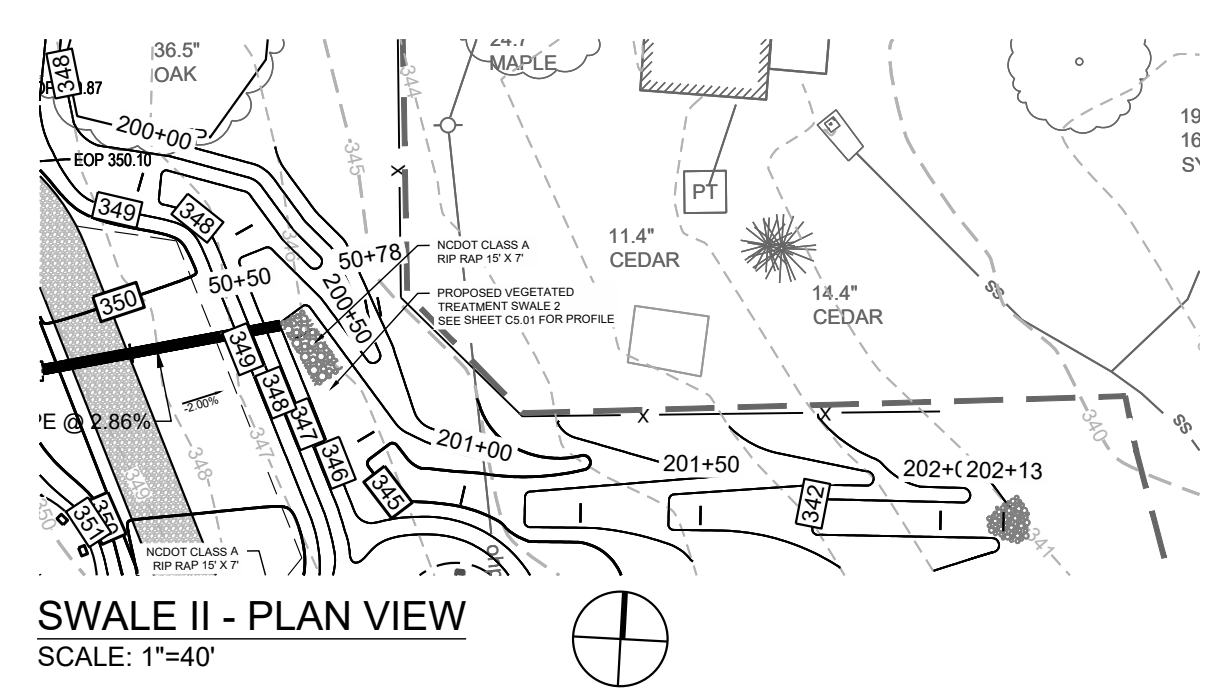
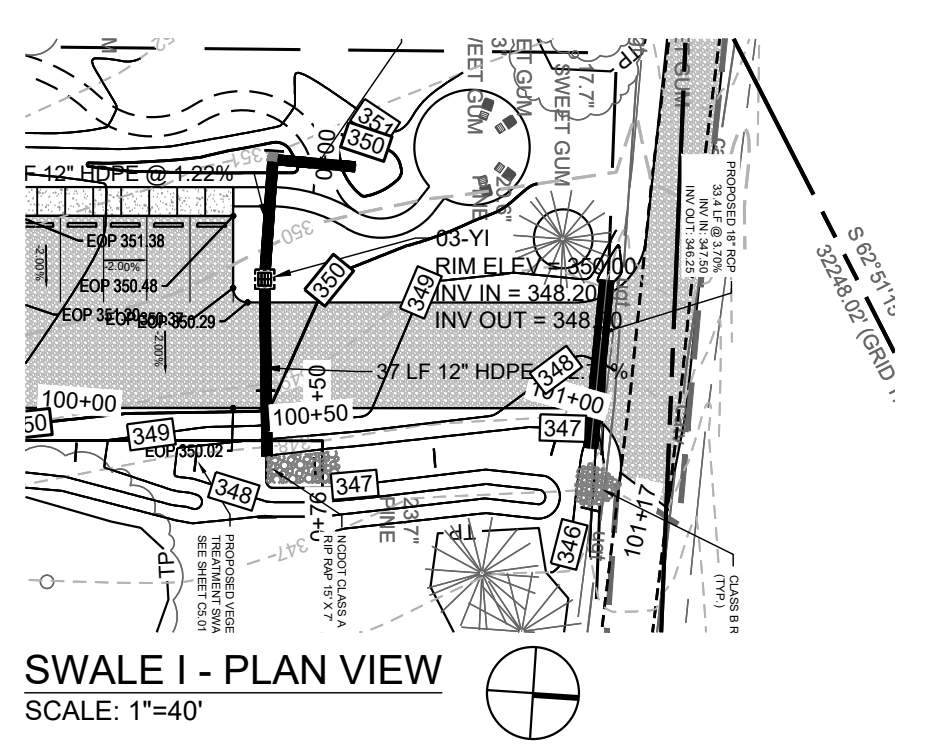
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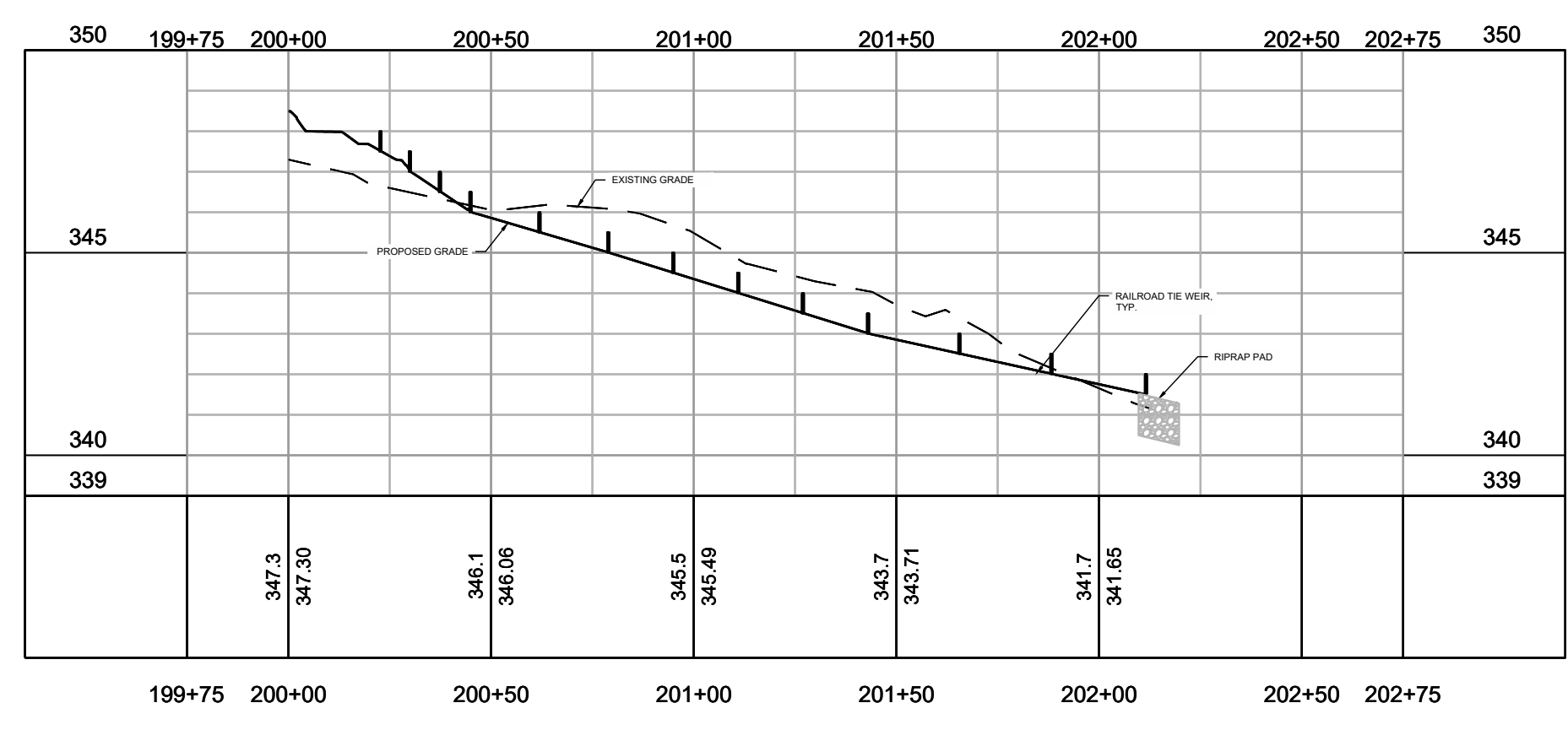
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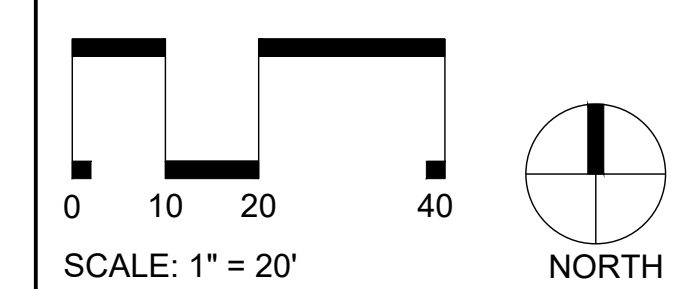
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Checked	RPL
Date	01.10.2025
Revisions	



**SWALE I - PROFILE VIEW**  
 SCALE: 1"=40' (HORIZONTAL) 1"=4' (VERTICAL)



**SWALE II - PROFILE VIEW**  
 SCALE: 1"=40' (HORIZONTAL) 1"=4' (VERTICAL)



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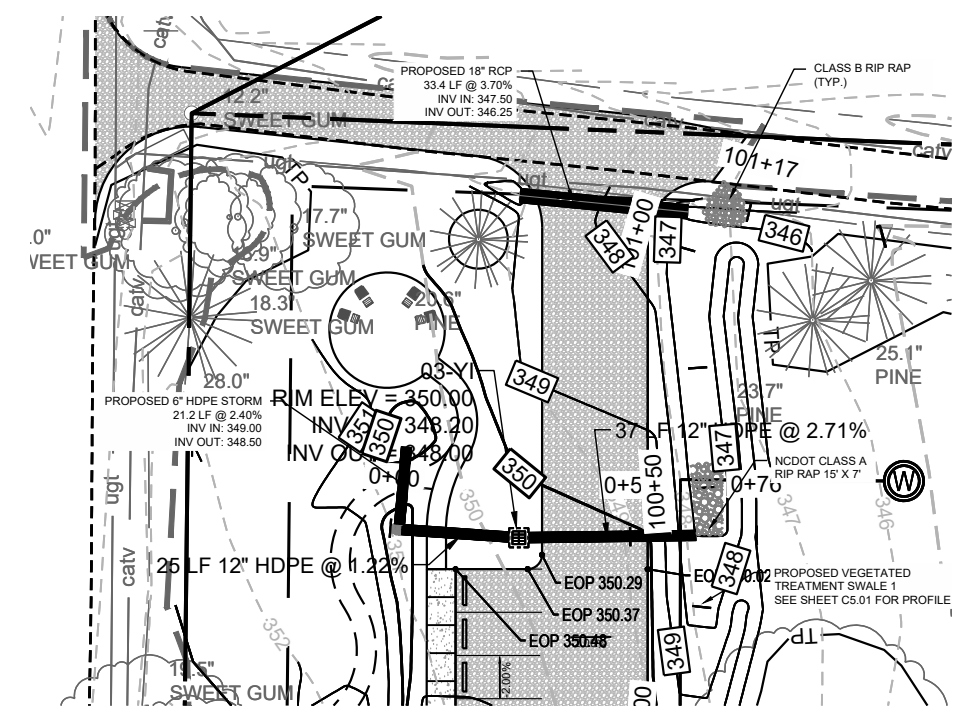
**NCSU Apiculture Facility**  
 Raleigh, NC  
 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132

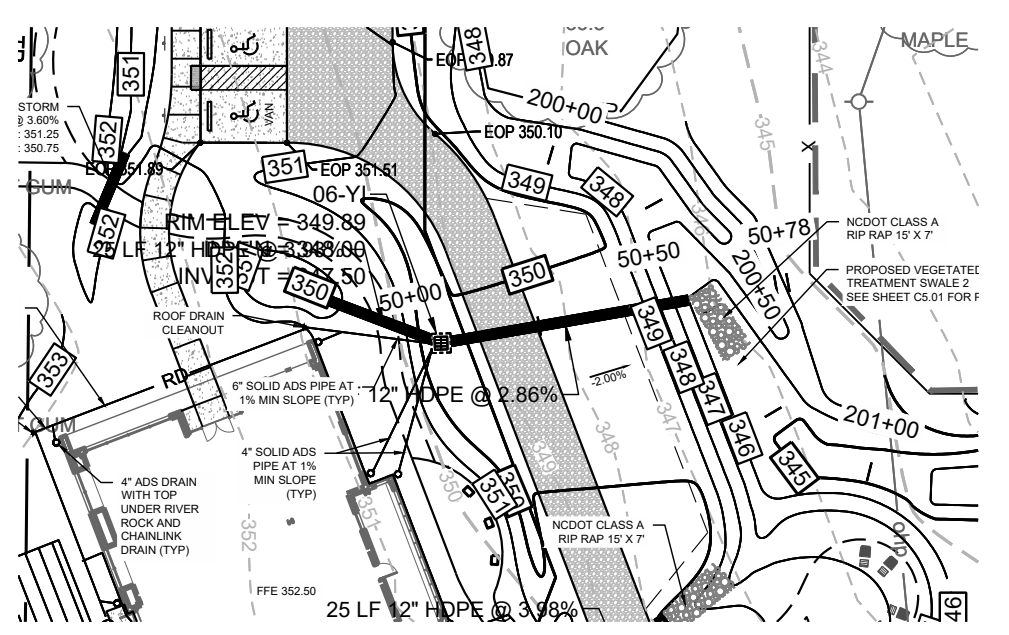
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Sheet  
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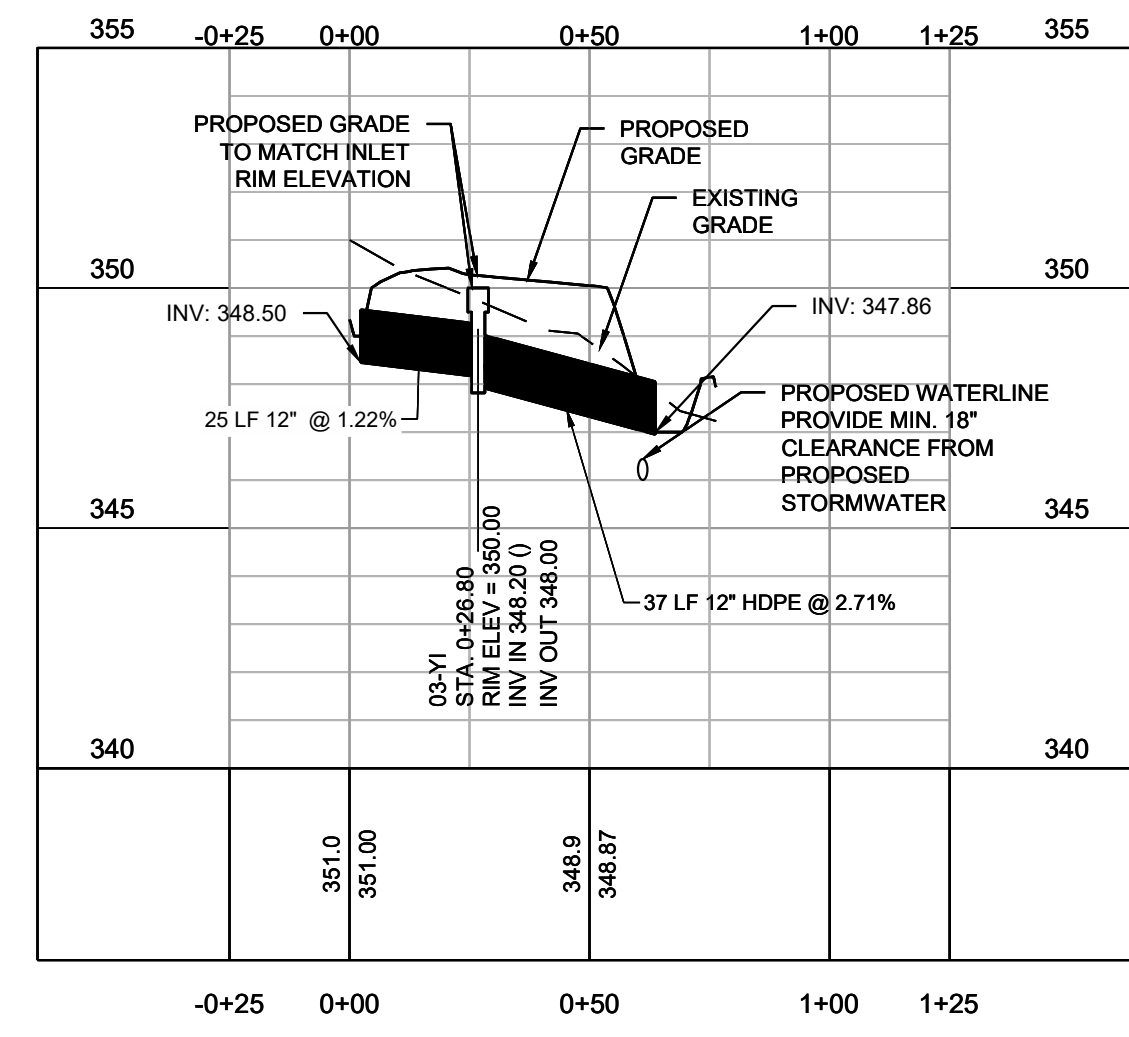
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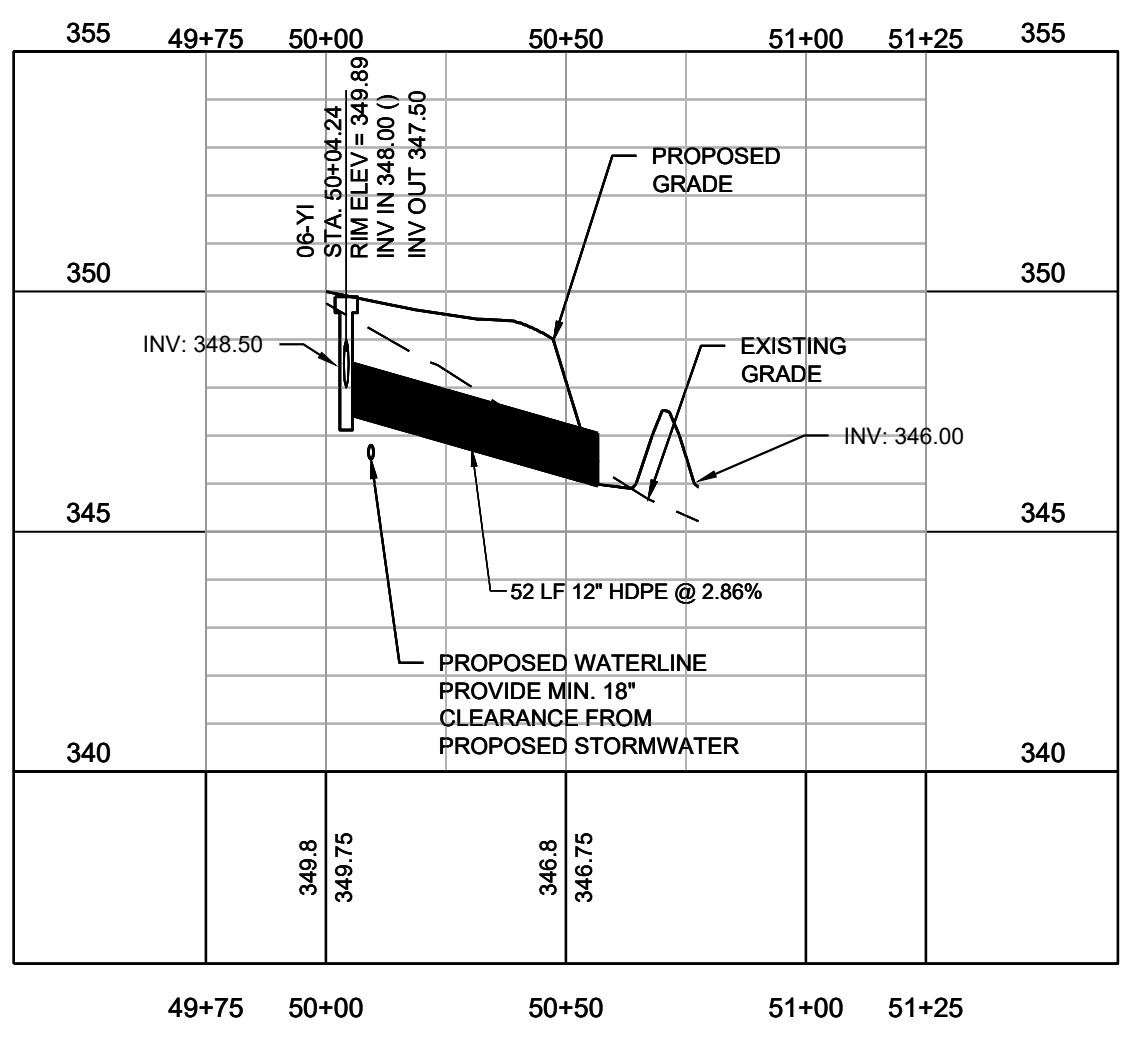
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SCALE: 1"=40'



**STORMWATER PLAN VIEW - SOUTH**  
SCALE: 1"=40'



**STORMWATER PROFILE VIEW - NORTH**  
SCALE: 1"=40' (HORIZONTAL) 1"=4' (VERTICAL)



**STORMWATER PROFILE VIEW - SOUTH**  
SCALE: 1"=40' (HORIZONTAL) 1"=4' (VERTICAL)

**LINETYPE LEGEND:**

SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
---	RIPIARIAN BUFFER (50')
---	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

**GRADING LEGEND:**

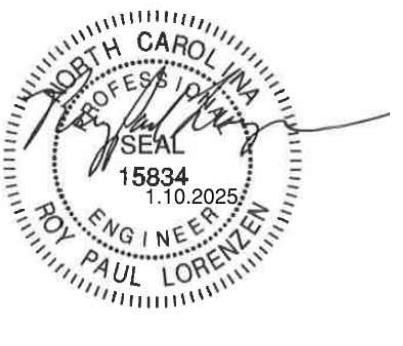
SYMBOL	DESCRIPTION
⊙	PROPOSED JUNCTION BOX
⊞	PROPOSED CATCH BASIN
⊞	PROPOSED AREA DRAIN
⊞	RIPRAP DISSIPATOR
→	FLOW DIRECTION
---	PROPOSED ELEVATION
---	TOP/BOTTOM OF CURB
---	TOP/BOTTOM OF WALL
---	PROPOSED STORM DRAINAGE
---	PROPOSED MAJOR CONTOUR
---	PROPOSED MINOR CONTOUR
---	EXISTING MAJOR CONTOUR
---	EXISTING MINOR CONTOUR

- NOTES:**
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  - FINE GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

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NC LA Corporate License: C-303

**Plumbing, Mechanical, and Electrical Engineer:**  
RMF Engineering  
8081 Arco Corporate Dr Suite 300  
Raleigh, NC 27617  
NC Certificate of Licensure: C-1125



Drawn	CO
Checked	RPL
Date	01.10.2025
Revisions	

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**NCSU Apiculture Facility**  
Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

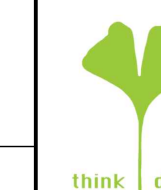
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Title  
**STORM DRAINAGE PROFILES**

Sheet  
**C5.02**

Plate  
of





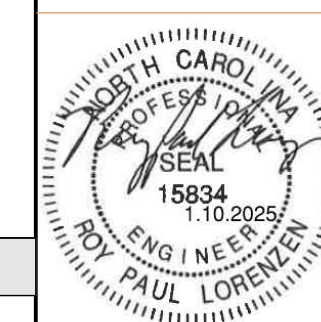


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Drawn CO  
Checked RPL  
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Revisions

**LINETYPE LEGEND:**

SYMBOL	DESCRIPTION
---	LIMITS OF DISTURBANCE
---	PROPERTY LINE
---	EASEMENT
---	SETBACK
BZ	RIPARIAN BUFFER (50')
TP	TREE PROTECTION FENCE
---	ACCESSIBLE ROUTE

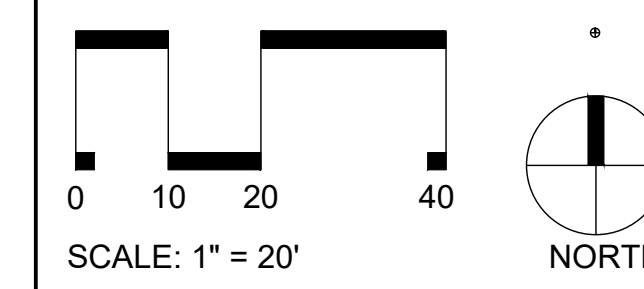
**UTILITY LEGEND:**

SYMBOL	DESCRIPTION
⊕	PROPOSED FIRE HYDRANT
⊗	PROPOSED WATER VALVE
⊙	EXISTING SANITARY SEWER MANHOLE
⊚	PROPOSED SANITARY SEWER MANHOLE
⊙	PROPOSED CLEANOUT
⊙	PROPOSED FIRE DEPARTMENT CONNECTION (FDC)
⊙	PROPOSED BACKFLOW METER
PIV	PROPOSED POST INDICATOR VALVE (PIV)
⊙	PROPOSED GREASE INTERCEPTOR
---	EXISTING WATER LINE
---	PROPOSED WATER LINE
---	EXISTING SANITARY SEWER LINE
---	PROPOSED SANITARY SEWER LINE
---	300' HYDRANT COVERAGE CIRCLE

- NOTES:**
- SEE SHEET C6.10 FOR GENERAL AND UTILITY NOTES.
  - ALL GRADING, LANDSCAPING, MULCH PATHS, AND SEATING IS BY NCSU.

- DOMESTIC WELL DESIGN PARAMETER:**
- WELL SYSTEM CONSTRUCTION TP NE NU NC STATE AND WILL BE EXISTING AT THE TIME OF PROJECT CONSTRUCTION.
  - DESIGN USAGE FOR THE WELL IS 40 GPM AND 300 GAL PER DAY.
  - CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH NC STATE AND TO CONNECT TO THE WELL WITH A NEW 2" PVC WATERLINE FROM BUILDING TO NOTED WELL.

- DOMESTIC SEPTIC SEWER SYSTEM DESIGN PARAMETERS:**
- NOTE: PROVIDE 2" DIAMETER RISERS TO 6-INCHES MIN. ABOVE GRADE FOR ALL SEPTIC TANK AND PUMP TANK MANHOLE OPENINGS.
- SEPTIC SYSTEM BASIC CRITERIA (CALCULATIONS TO REVIEW AGENCIES PROVIDED SEPARATELY):
- SEPTIC SYSTEM SHALL COMPLY WITH LATEST EDITION OF 15A NCAC 18E - WASTEWATER TREATMENT AND DISPERSAL SYSTEMS
  - SEPTIC SYSTEM DESIGN FLOW IS 444 GALLONS PER DAY
  - SEPTIC TANK SIZE IS 1,000 GALLONS MIN.
  - LONG TERM ACCEPTANCE RATE FROM SOIL SCIENTIST IS 0.4 GALLONS PER DAY PER SQUARE FEET
  - DUE TO LIMITED SPACE AVAILABLE FOR NITRIFICATION DISPERSAL FIELD, DISPERSAL FIELD IS DESIGNED USING PPPPS BED SYSTEM AS MANUFACTURED BY T&J PANEL OR EQUIVALENT SYSTEM ALLOWING 50% REDUCTION IN NITRIFICATION DISPERSAL AREA BY NC ON-SITE WASTEWATER RULES
  - PUMP DOSING IS BETWEEN 250 AND 280 GALLONS, APPROXIMATELY 2 DOSES PER DAY
  - PUMP SHALL BE A QUICK DISCONNECT GRINDER PUMP ON A RAIL SYSTEM MOUNTED INSIDE THE PUMP TANK
  - PUMP DRAWDOWN TIME IS APPROXIMATELY 5 MINUTES WITH A FLOW OF 50 GPM AGAINST A TOTAL DYNAMIC HEAD OF APPROXIMATELY 12 FEET.
  - IT IS PROPOSED TO USE A SEPTIC TANK EFFLUENT FILTER.

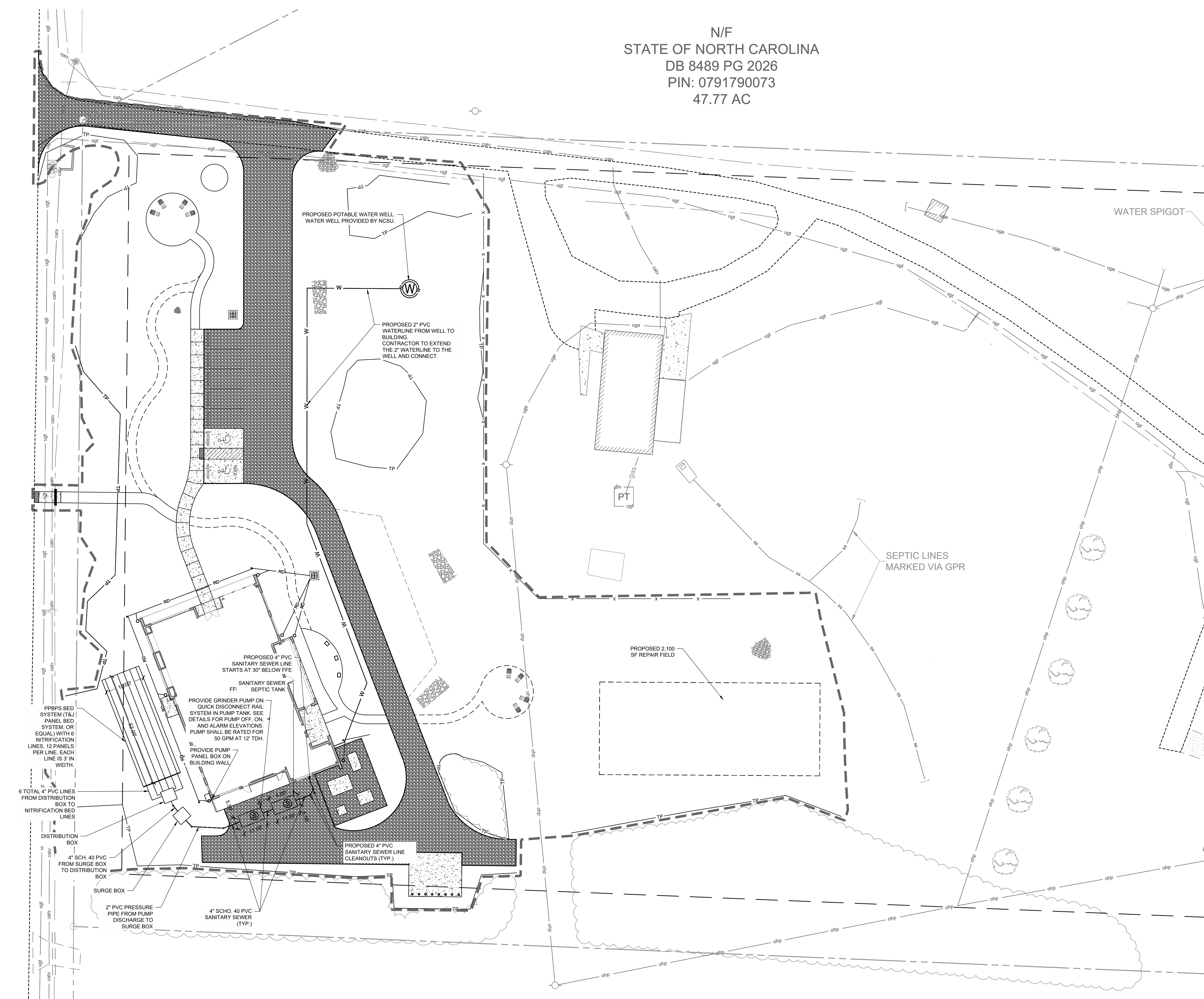


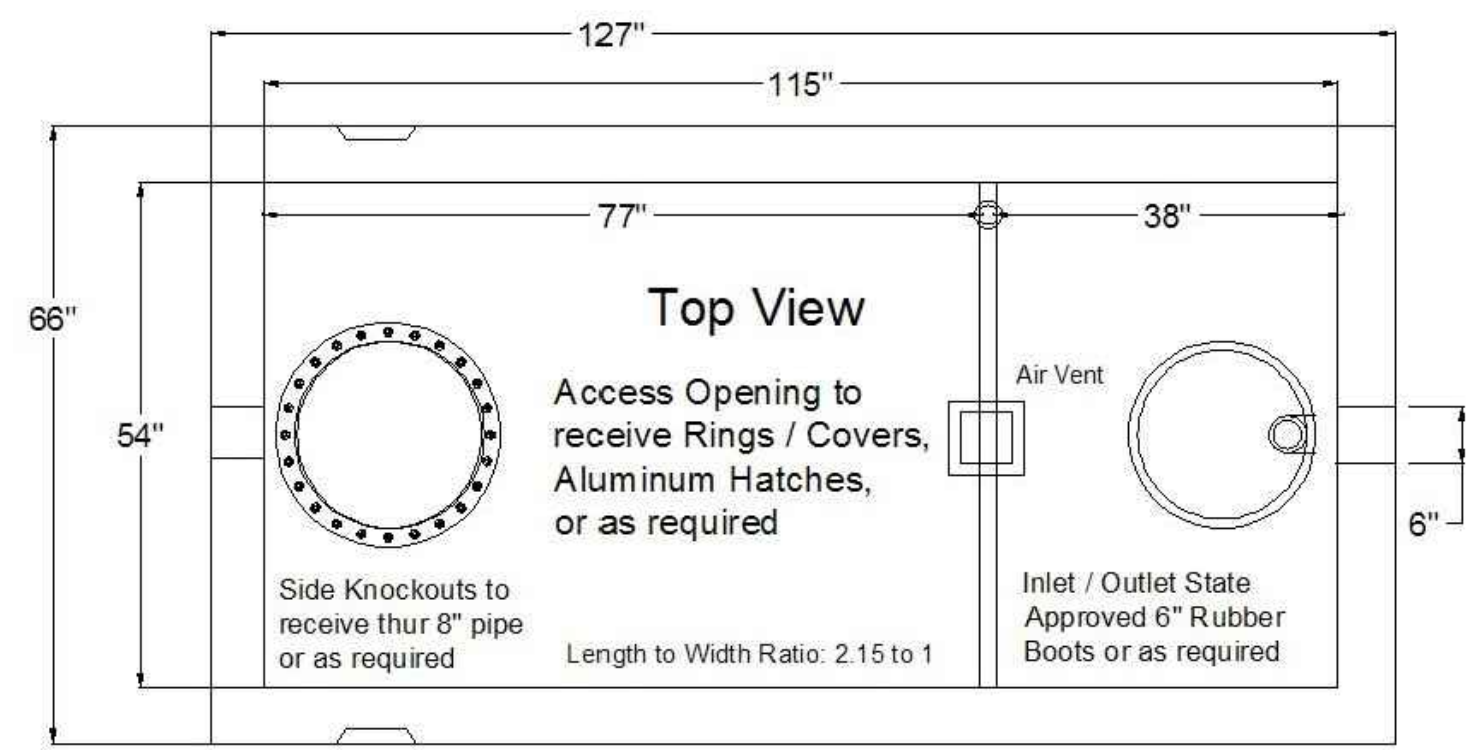
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SCO ID No.: 22-24494-01A  
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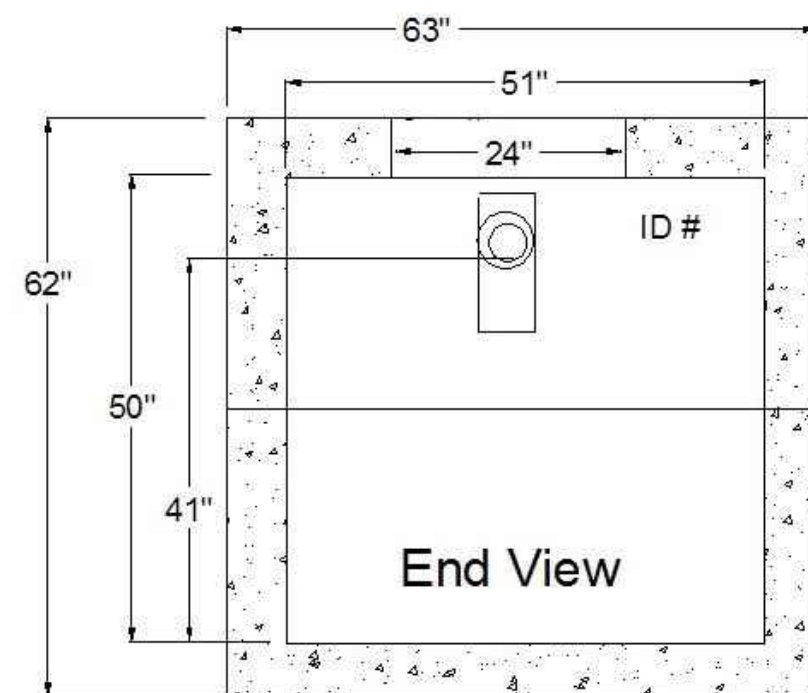
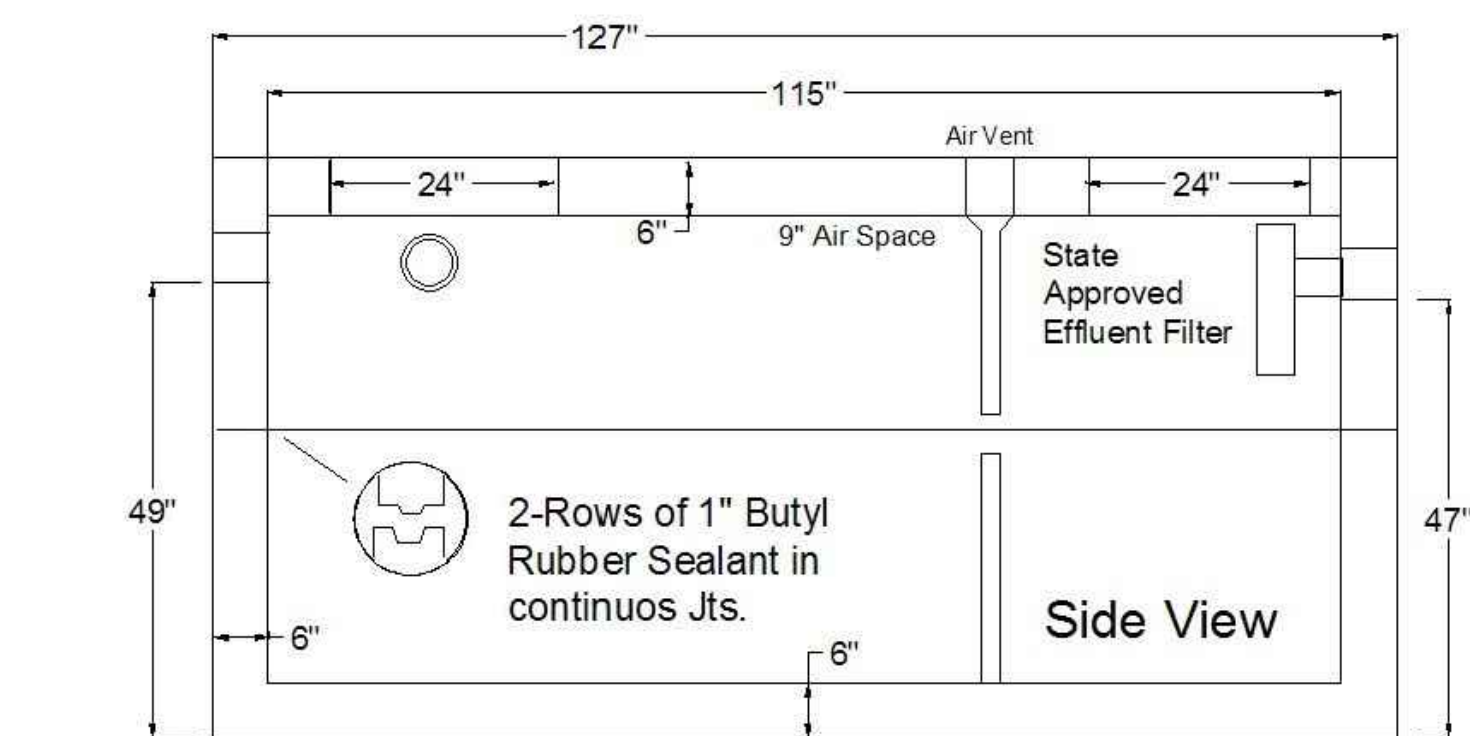
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**UTILITY PLAN**  
Sheet  
**C6.00**  
Plate

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DB 8489 PG 2026  
PIN: 0791790073  
47.77 AC

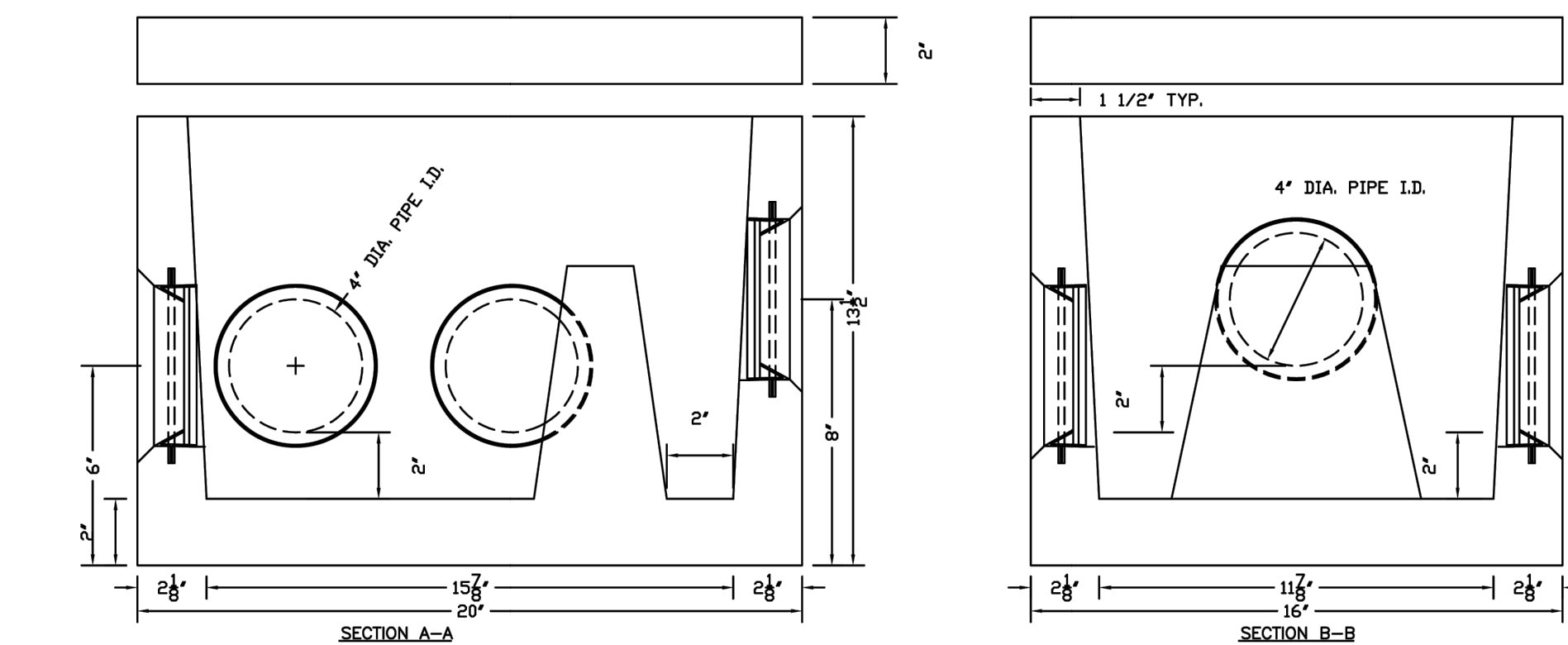
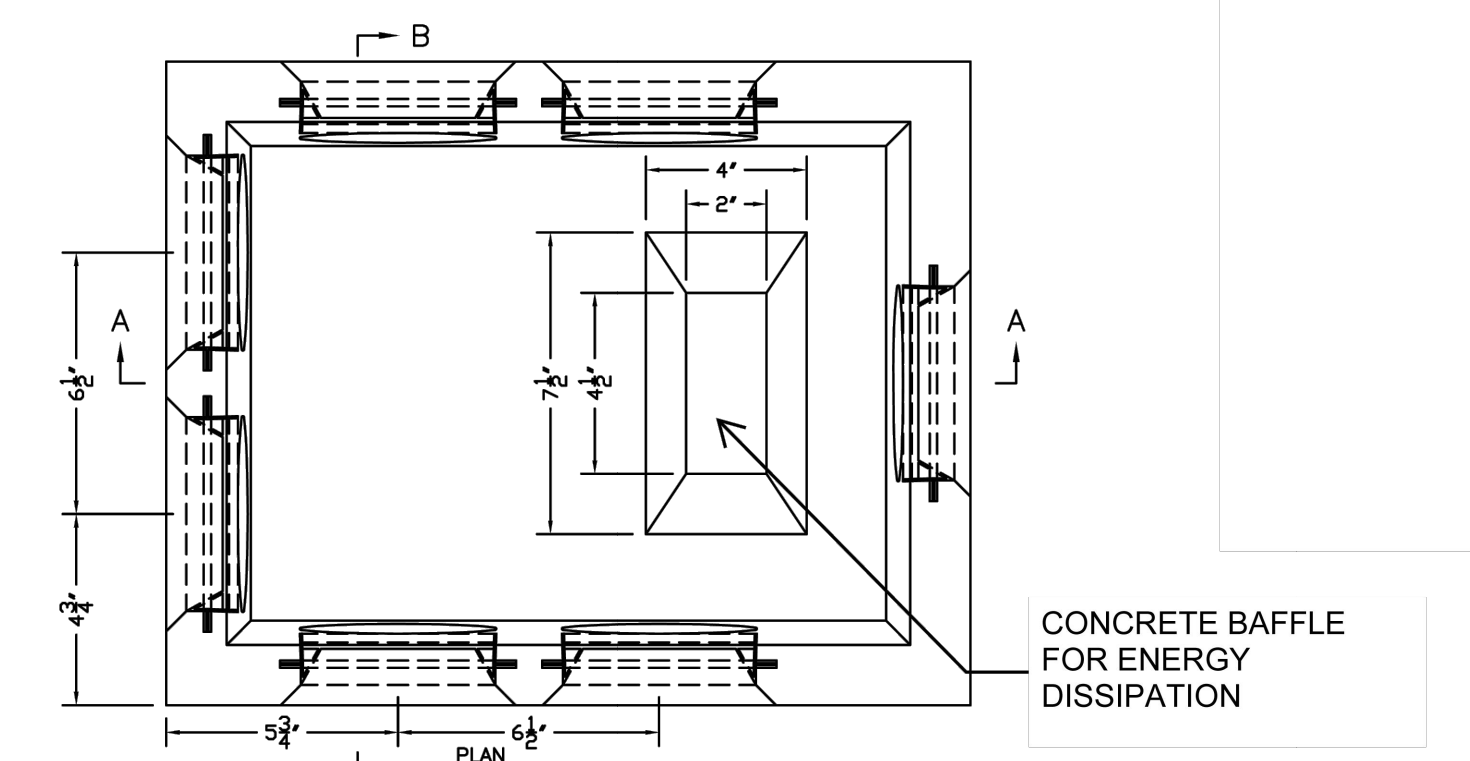




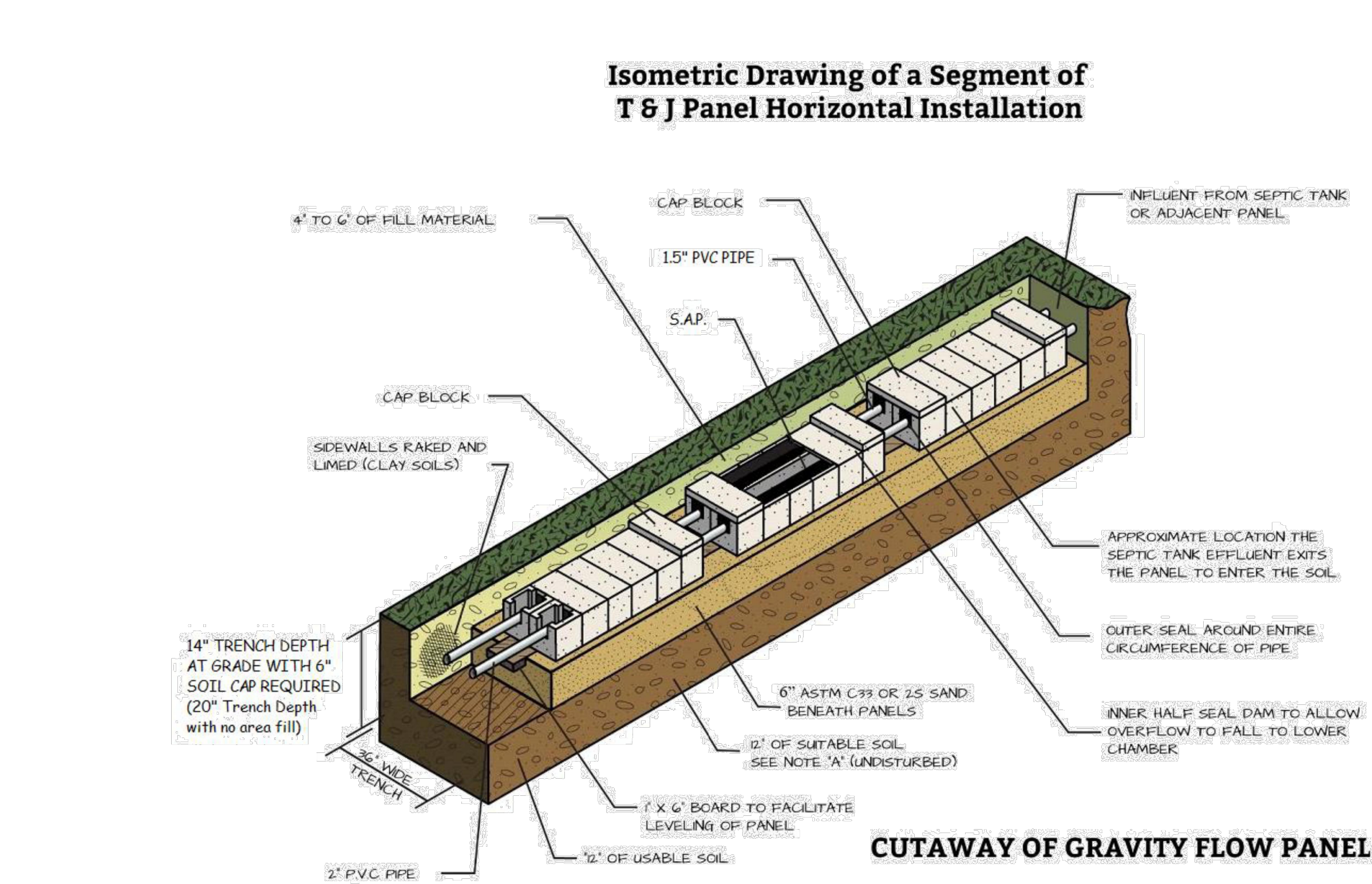
**STB - 374**  
 Traffic Rated  
 Liquid Capacity 1000 Gallons  
 Reinforcing : See Engineering Schedule  
 4500 PSI Concrete w/ State Approved Structural Fiber  
 5.0 yds. Est Weight 18,000 lbs.



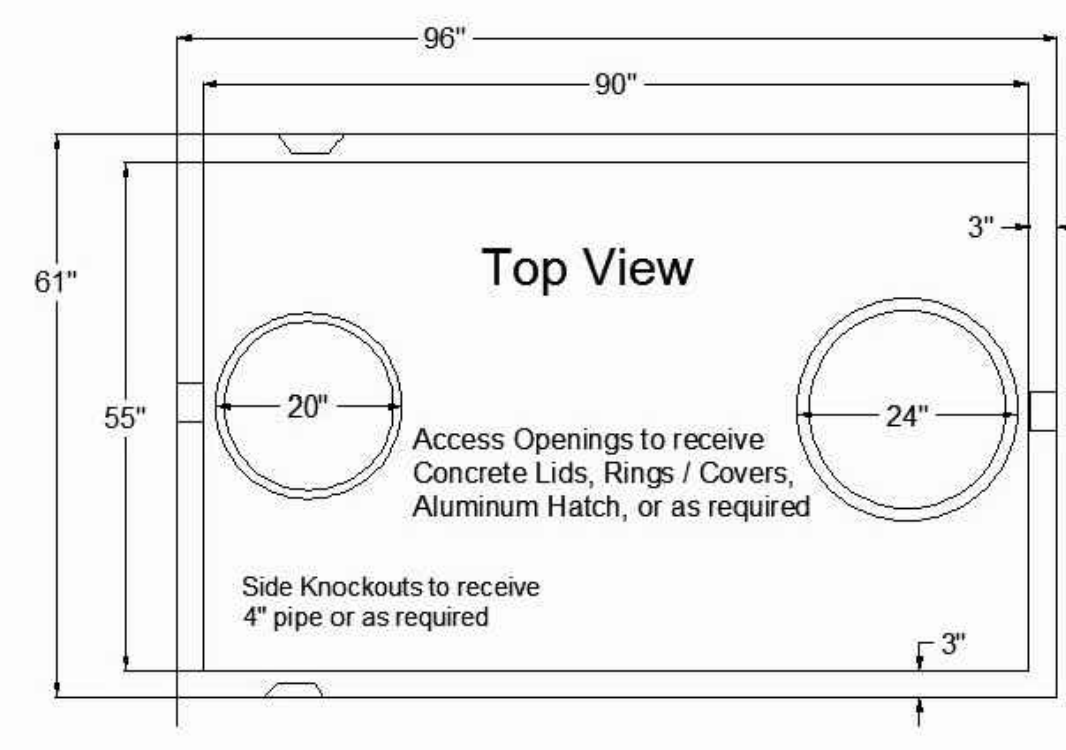
1 SEPTIC TANK DETAIL NTS



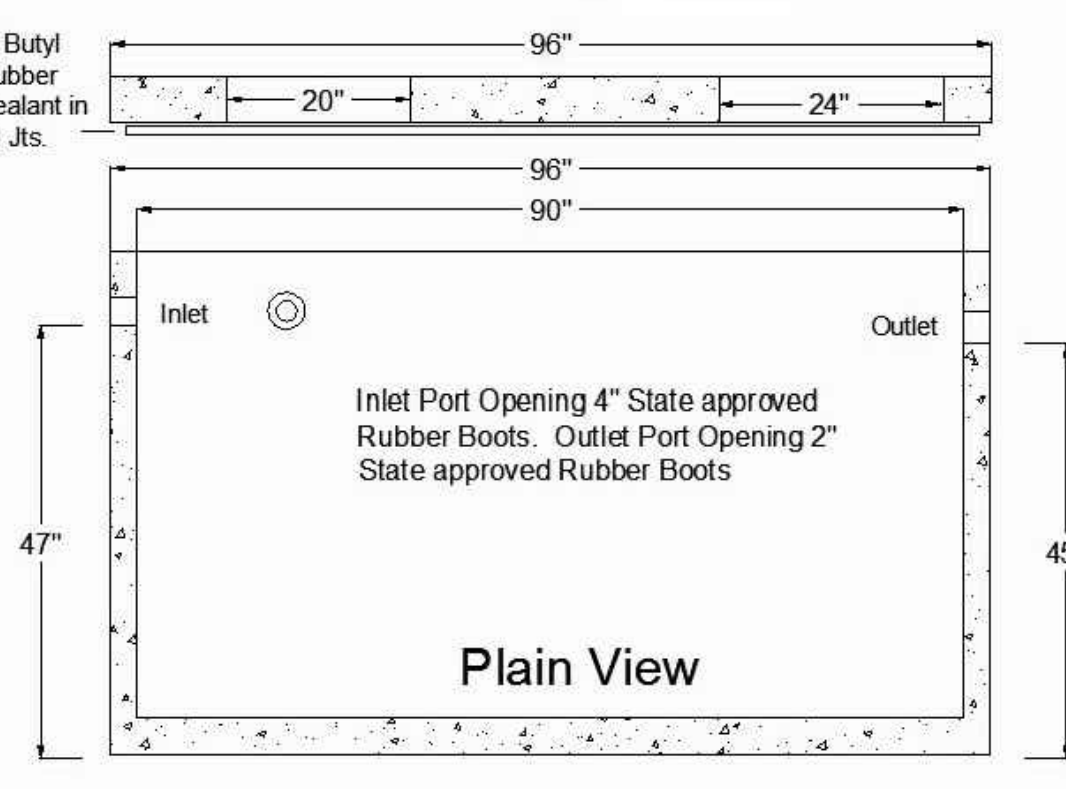
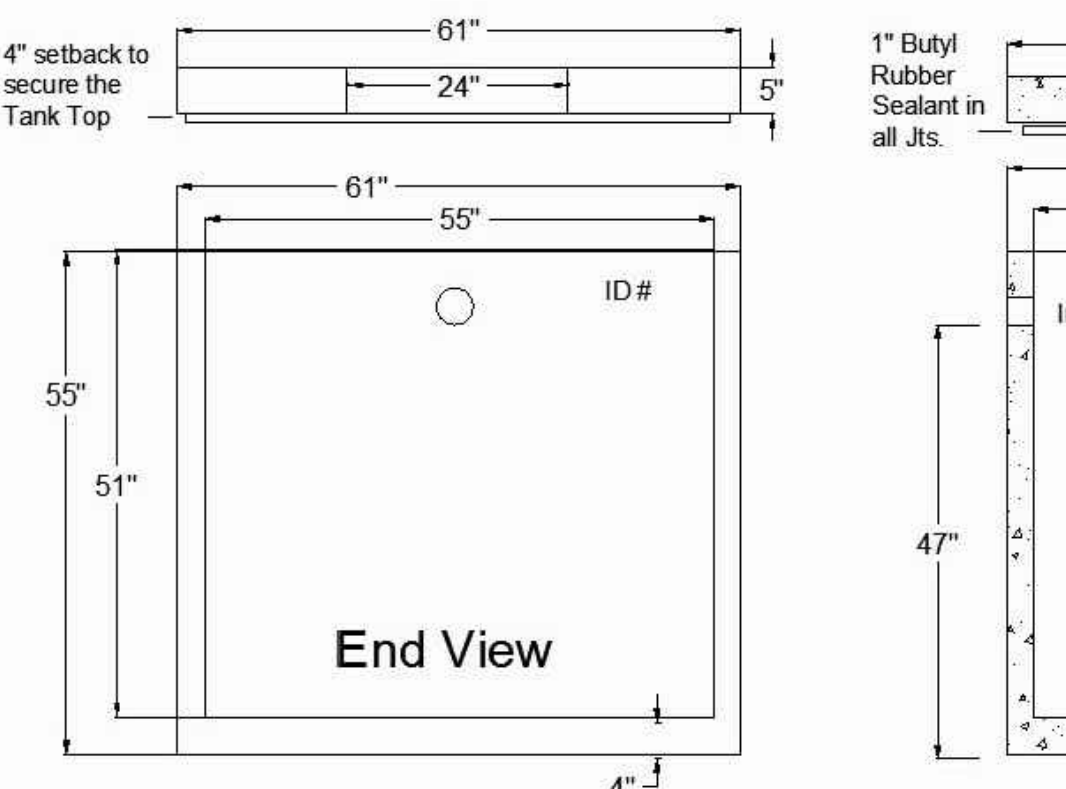
3 DISTRIBUTION BOX DETAIL NTS



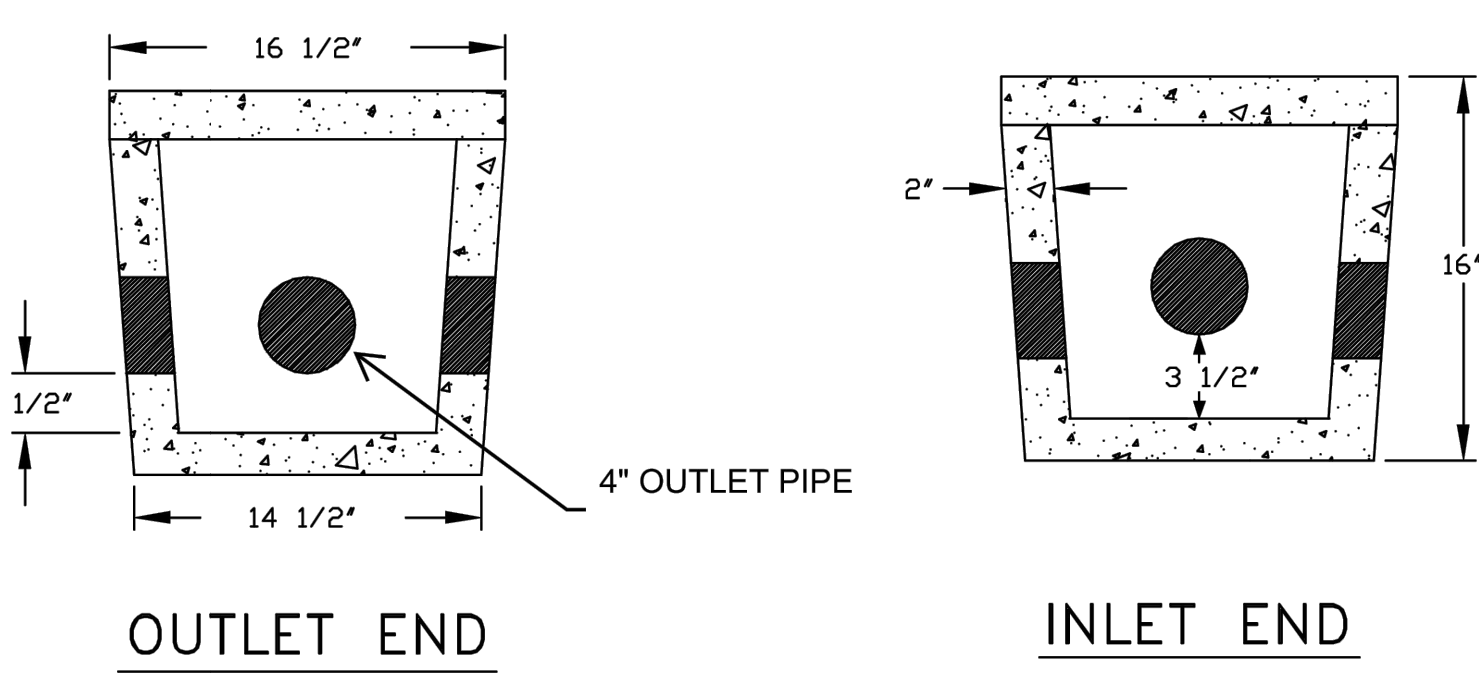
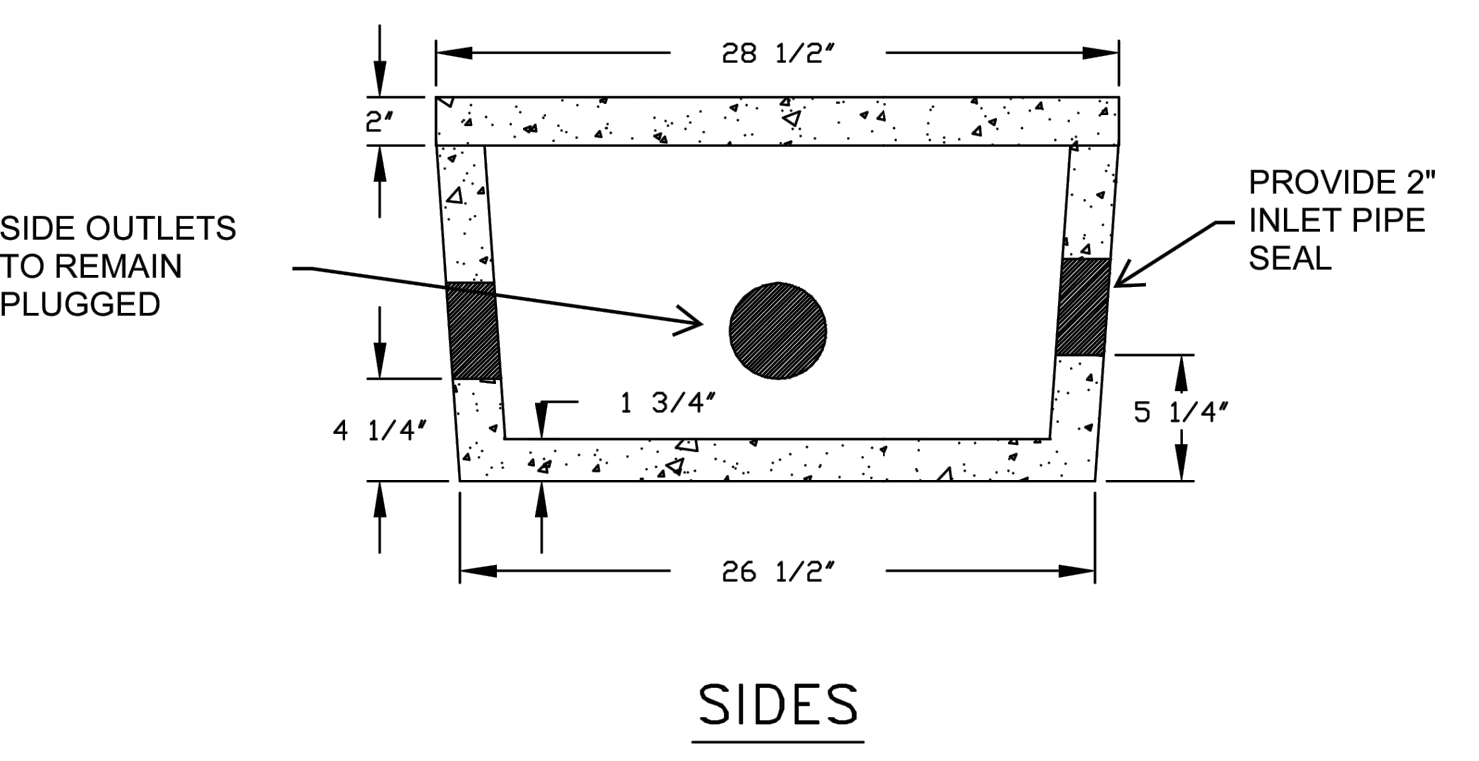
5 T&J PANEL INSTALLATION DETAIL NTS



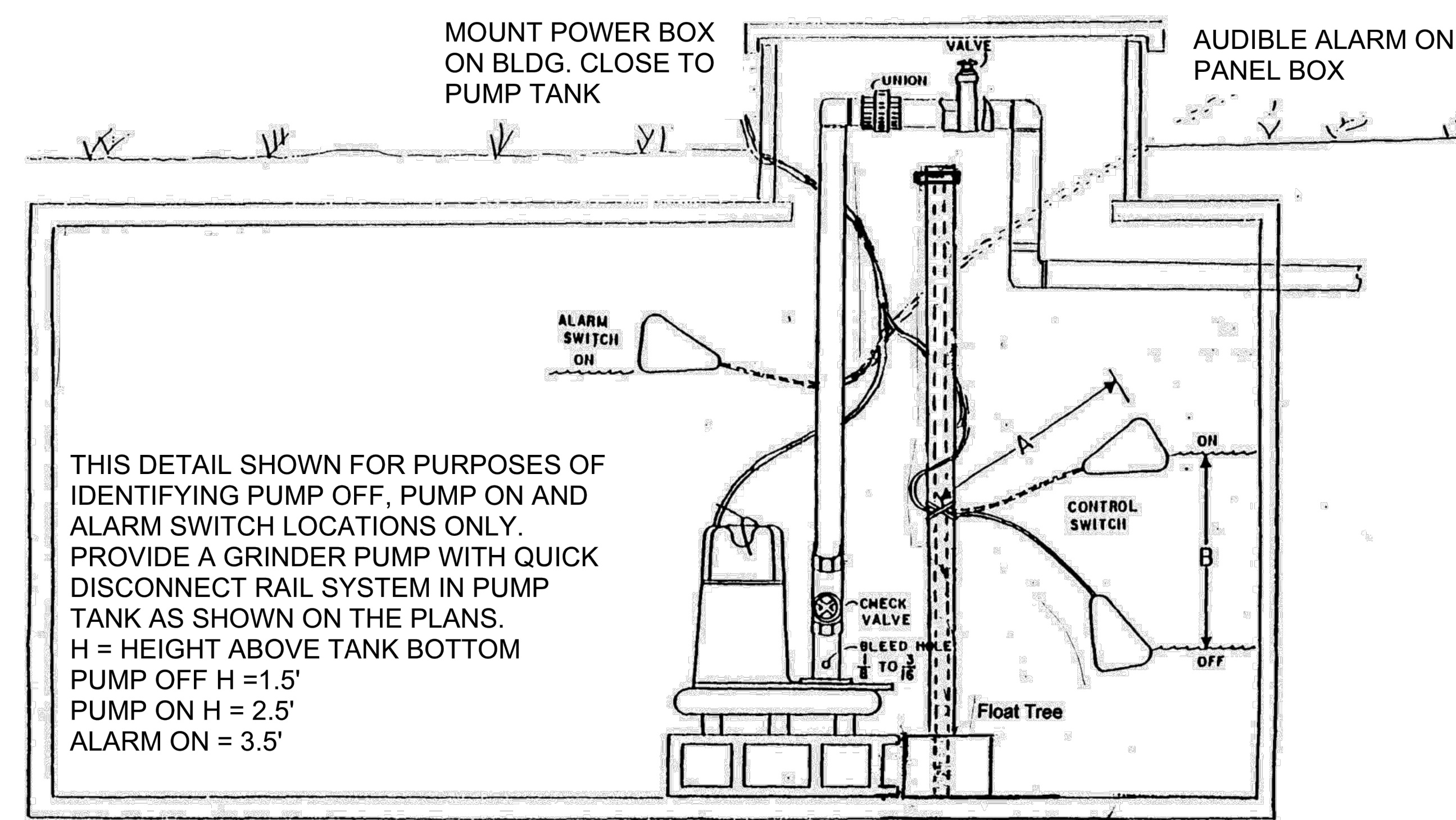
**PT - 214**  
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 18 gals. per inch  
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 2 yds. Est Weight 8200 lbs



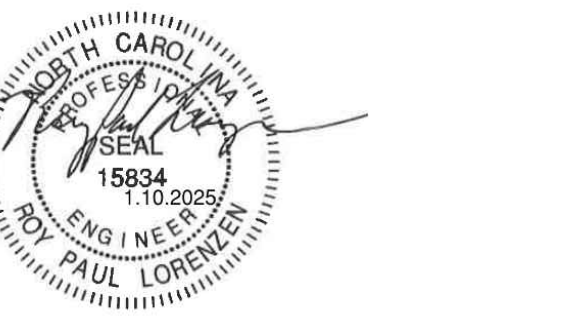
2 SEPTIC PUMP DETAIL NTS



4 SURGE BOX DETAIL NTS



6 WET WELL DETAIL NTS



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Checked	RPL
Date	01.10.2025
Revisions	

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NC Certificate of License: C-1125



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Checked CEH  
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**NOTES:**

- SEE SHEET L7.01 FOR GENERAL AND PLANTING NOTES.
- PLANTINGS TO BE PROVIDED BY NCSU.

**PLANT SCHEDULE PLANTING**

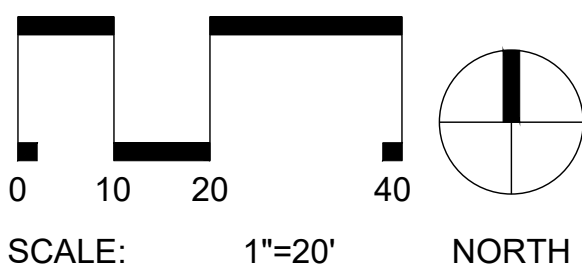
SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT.	CALIPER	HEIGHT	NOTES
<b>TREES</b>							
IA	3		LEAF OPACA AMERICAN HULLY	868		7.0'	SPECIMEN FULL TO GROUND
JE	11		JANPHERIA VIRGINIANA SARTERII REDCEDAR	868		7.0'	SPECIMEN FULL TO GROUND
MG	1		MAGNOLIA GRANDIFLORA ELAEDIA WANNAMAKER CLAUDIA WANNAMAKER SOUTHERN MAGNOLIA	868		10'-12'	SPECIMEN FULL TO GROUND
<b>UNDERSTORY TREES</b>							
AG2	5		AMELANCHIER 3 GRANDIFLORA AUTUMN BRILLIANCE AUTUMN BRILLIANCE APPLE SERVICEBERRY	868		7.0'	SPECIMEN MULTI-STEM
CC	1		CERCIS CANADENSIS JAP THE RED BUD	868		7.0'	SPECIMEN MULTI-STEM
HC	4		HALESIA CAROLINA BELFRUIS	868		6'	SPECIMEN
HV	4		HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	868		4.5'	SPECIMEN MULTI-STEM
OA	8		OPUNTIA MEXICANA PRICKLY PEAR CACTUS	868		4.5'	SPECIMEN
<b>VIA ADJACENT TO LOT TREES</b>							
LT	1		LIRIODENDRON TULIPIFERA TULIP POPULAR	868	2.5" N	12-14'	FULL
<b>FALL/WINTER BLOOMING SHRUBS</b>							
EC	7		EGONIA OXYANTHA PAPERBUSH	CONT.		3.5'-4'	
OF	35		OMNIFLORA PURPUREA SWIFT OLIVE	CONT.		3.5'-4'	
<b>SPRING/SUMMER BLOOMING SHRUBS</b>							
BS	13		BURDELAU DAVIDI PETITE INDIGO PETITE BUTTERFLY BUSH	CONT.		3'-4'	
CH	37		CLETHRA ALFALFOLIA 'FLAMMINGO' FLAMINGO SUMMERBELL	CONT.		15-18"	
IV	8		IREA VIRGINICA 'HENRY'S GARNET' HENRY'S GARNET SWEETSPICE	CONT.		15-18"	FULL
<b>SHRUB AREAS</b>							
BL	97		BONAIPIUM COPALIFOLIUM LITTLE BLUESTEM	CONT.			PLANTED BETWEEN RIVER STONE
<b>SPRING/SUMMER BLOOMING PERENNIALS</b>							
AL	11		ACHILLEA MILEFOLIUM ACERONIA LITTLE MONARDELLA COMMON YARROW	#1			
AL3	40		ASTER NOVAE ANGLIAE 'DWARF COLBY' DWARF COLBY NEW ENGLAND ASTER	#1			
EW	29		ECHINACEA PURPUREA 'PASTORAL' POWDERWILD BERRY CONEFLOWER	#1			
PA	62		PEROVSKIA ATRIPLEXIFOLIA PRIME TIME PRIME TIME RUSSIAN SAGE	#1			
PS	20		SALVIA BALDUNGENSIS 'SALSA PURPLE' SALSA PURPLE SAGE	#1			
SB	46		SCABIOSA COLUMBARIA 'SICA PINK' SICA PINK SCABIOSA	#1			
<b>GROUND COVERS</b>							
CT	17,355 SF		CYNODON DACTYLON 'TUFF' TUFF BERMUDGRASS	300			
GRN	1,363 SF		DECOMPOSED GRANITE				4" DEEP, TO BE APPROVED BY LANDSCAPE ARCHITECT. GREY COLOR
STN	484 SF		DECORATIVE STONE 3/4" RIVERSTONE				4" DEEP, TO BE APPROVED BY LANDSCAPE ARCHITECT
MM	24,063 SF		DEER RESISTANT MEADOW MIX	SEED			BY EARNEST SEEDS
MLO1	8,483 SF		MULCH TRIPLE BREEDED HARDWOOD				4" DEEP, NATURAL COLOR

**NOTES:**

- ALL PATHS, PLANT BED PREPARATION, LANDSCAPING AND SITE FURNISHINGS BY OWNER.
- CONTRACTOR IS RESPONSIBLE TO PREPARE SITE FOR TURNOVER TO OWNER WITH PLANTED AREAS FREE OF CONSTRUCTION DEBRIS.
- PLANTED AREAS TO BE GRADED, DECOMPACTED, SCARIFIED AND PREPARED FOR PLANTING SOIL PRIOR TO SITE TURNOVER TO OWNER.

**SCO NOTES:**

- ALL HARDSCAPES MUST BE PROTECTED BY 3/4" THICK 4" X 8" PLYWOOD. THE CONTRACTOR MUST PROVIDE ADEQUATE PROTECTION OF EXISTING CONCRETE, ASPHALT, AND BRICK.
- ALL DAMAGE MUST BE REPAIRED BY THE CONTRACTOR TO ENSURE EQUAL MATERIAL SUBSTITUTION.
- LCS WILL PROVIDE TREE PROTECTION AS NEEDED IN ALL AREAS THAT MAY HAVE POTENTIAL IMPACT.
- NO STORING OF MATERIAL OR EQUIPMENT ON LANDSCAPED AREAS, INCLUDING MULCH BEDS AND LAWN.
- ALL EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE INCLUDING ASPHALT, ROCKS, ET CETERA UPON COMPLETION.
- ALL VEHICULAR TRAFFIC ON HARDSCAPES IS BY PERMIT ONLY AND NOT ALLOWED ON SOFTSCAPES. ALL DAMAGES MADE TO HARDSCAPES/SOFTSCAPES MUST BE REPAIRED BY THE CONTRACTOR.



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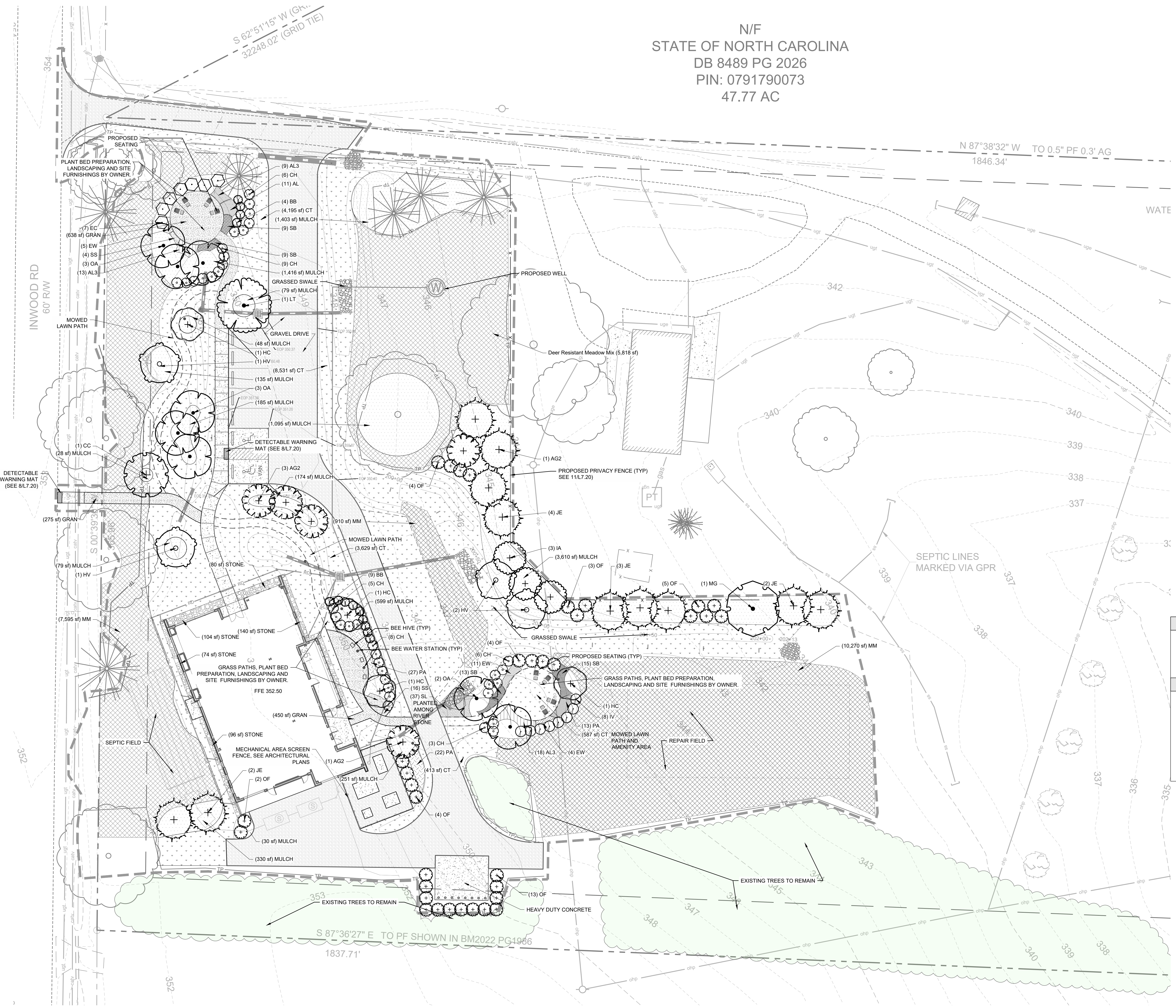
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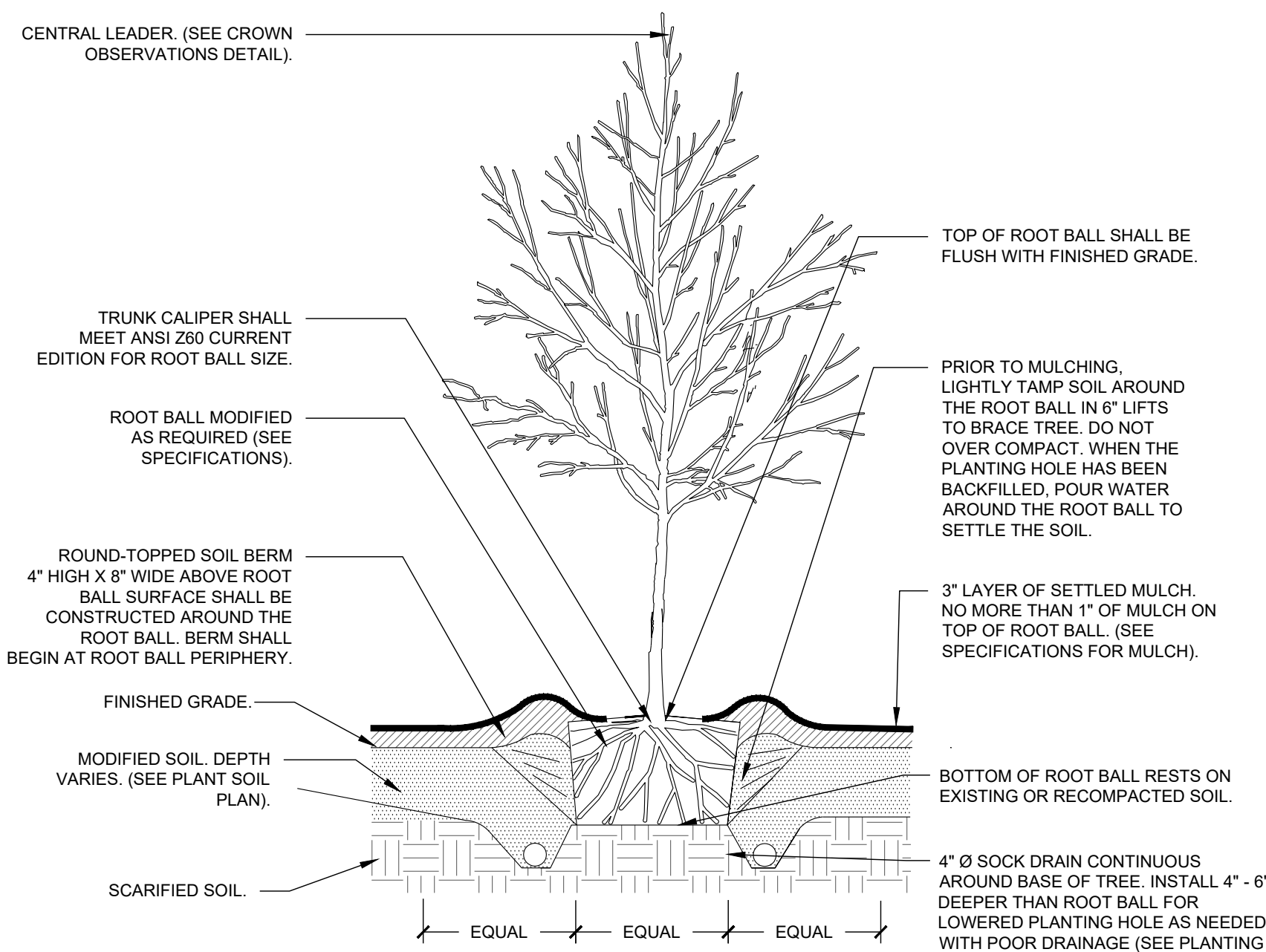
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Sheet **L7.00**

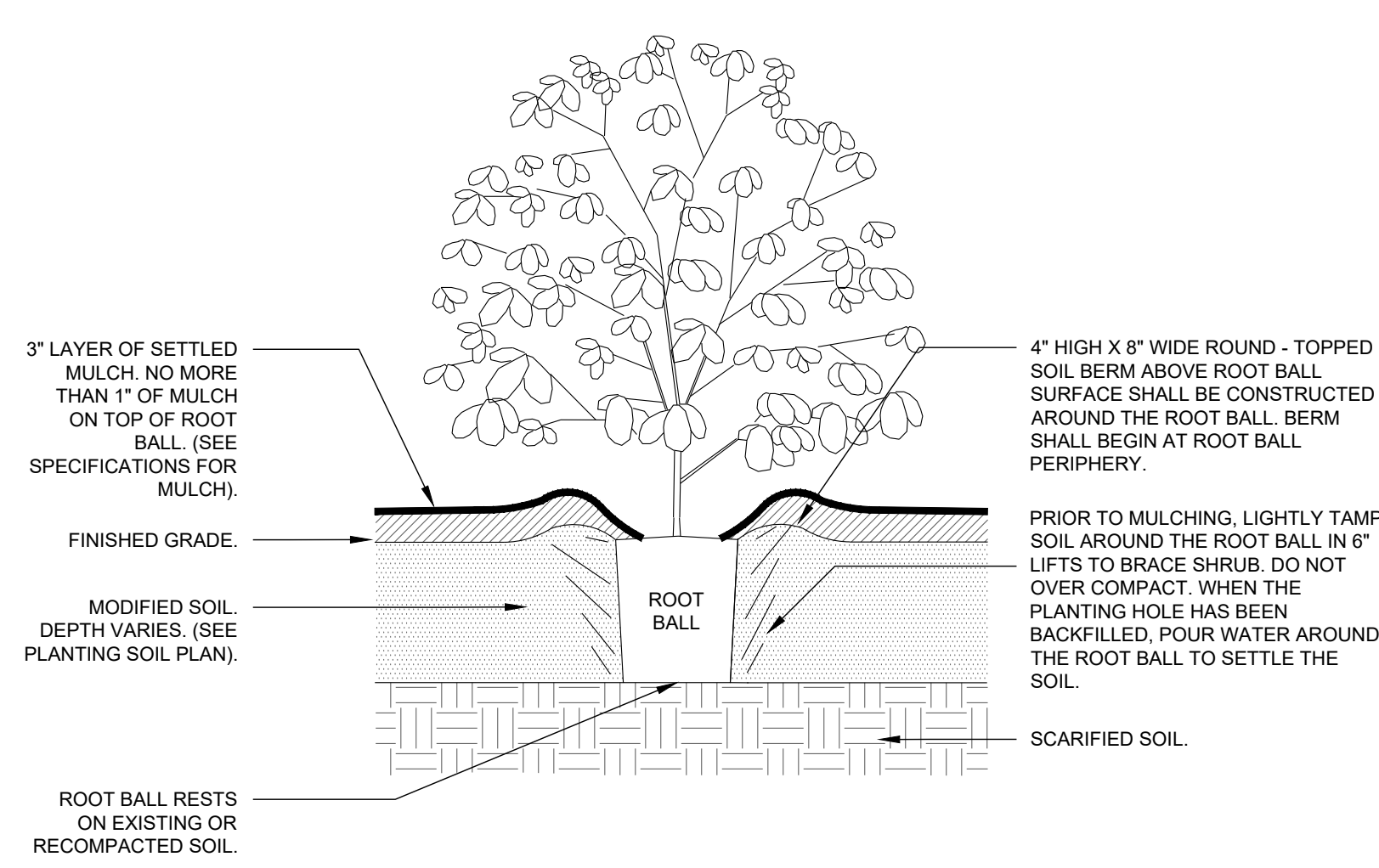
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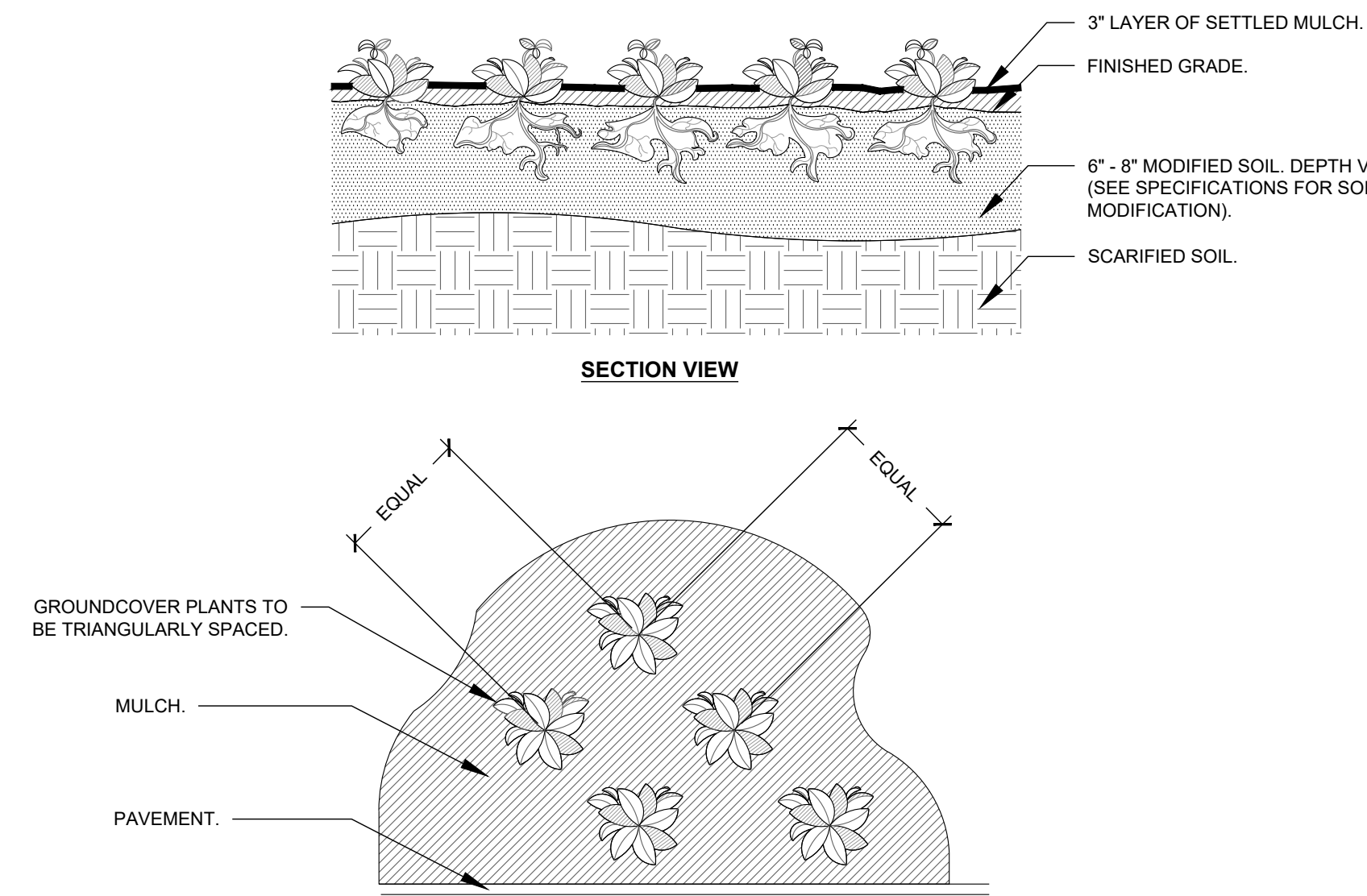




1 TREE (TYPICAL) SECTION NTS

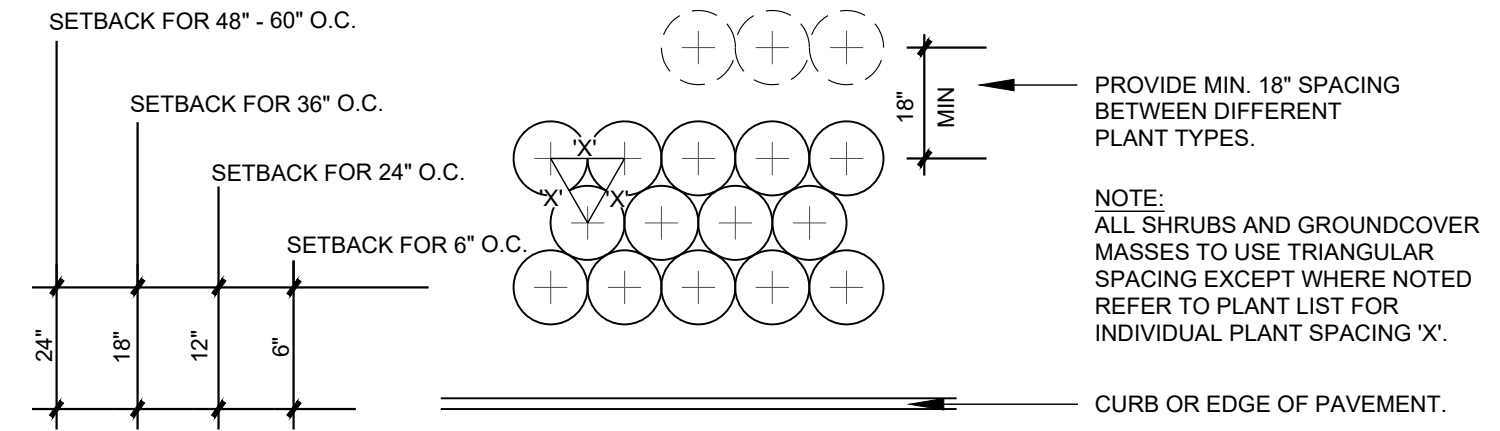


2 SHRUB (TYPICAL) SECTION NTS

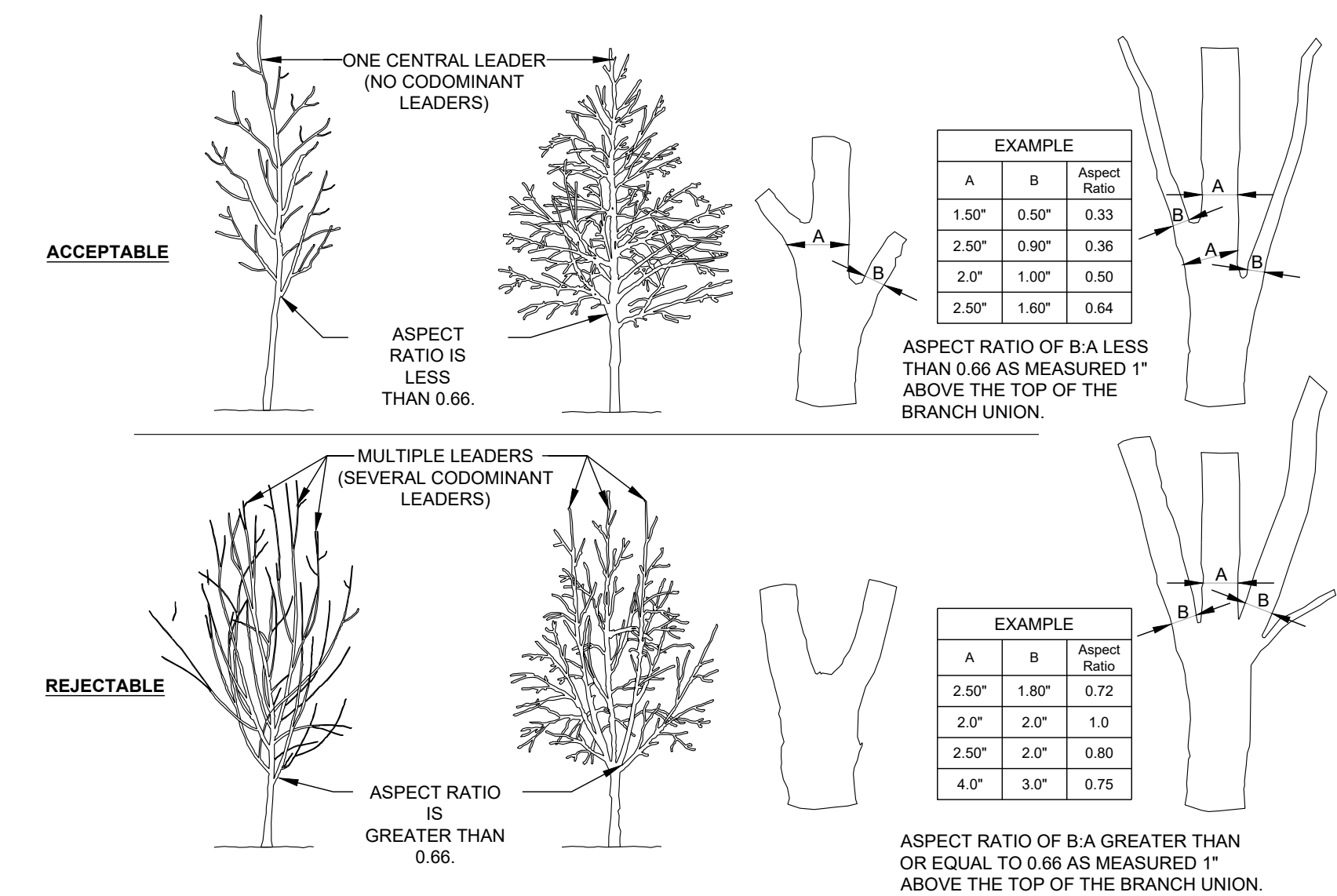


3 GROUNDCOVER PLANTING (TYPICAL) SECTION NTS

- NOTES:**
- SEE PLANTING LEGEND FOR GROUNDCOVER SPECIES, SIZE AND SPACING DIMENSION.
  - SMALL ROOTS (1/2\"/>



4 SHRUB AND GROUNDCOVER SPACING SECTION NTS



5 CROWN OBSERVATIONS - HIGH BRANCHED SECTION NTS

- PLANTING NOTES:**
- DO NOT STAKE TREES EXCEPT WHERE SPECIFIED BY LANDSCAPE ARCHITECT. STAKING IS REQUIRED FOR TREES PLANTED ON SLOPES.
  - WHERE SEVERAL TREES WILL BE PLANTED CLOSE TOGETHER SUCH THAT THEY WILL LIKELY SHARE ROOT SPACE, TILL IN SOIL AMENDMENTS TO A DEPTH OF 4-6\"/>

6 PLANTING NOTES SECTION NTS

**PERMANENT SEEDING: MEADOW MIX**

**Species List:**

Botanic Name	Common Name	Percentage
<i>Indigofera</i>	Indigo	30%
<i>Sorghastrum nutans</i>	Late Bluestem	30%
<i>Planicum virginicum</i>	Switchgrass	10%
<i>Elymus virginicus</i>	Virginia Wild Rye	10%
<i>Rutbeckia hirta</i>	Black-eyed Susan	10%
<i>Echinacea purpurea</i>	Purple Coneflower	10%

**Seed:** Seed to be Pure Live Seed (PLS) at a rate of 5-6 lbs./1,000 sq'. Contractor shall provide empty bags upon request to verify proper product is used.

**Soil Amendments:** Follow recommendations of soil tests. Soil pH to be 6.0 to 7.0. Apply ground agricultural limestone and 10-10-10 fertilizer as recommended to achieve optimum soil conditions.

**Seeding:**

- Prior to seeding, eradicate all existing vegetation with an approved herbicide, i.e. glyphosate (Roundup) by a licensed spray technician. A second application may be required two weeks later if first application is insufficient. If excess dead plant material remains on the surface, raking and removal may be necessary to achieve good seed-to-soil contact and sunlight penetration.
- Organic matter shall be added to soils containing high levels of clay. Organic material shall be worked into the top 6\"/>

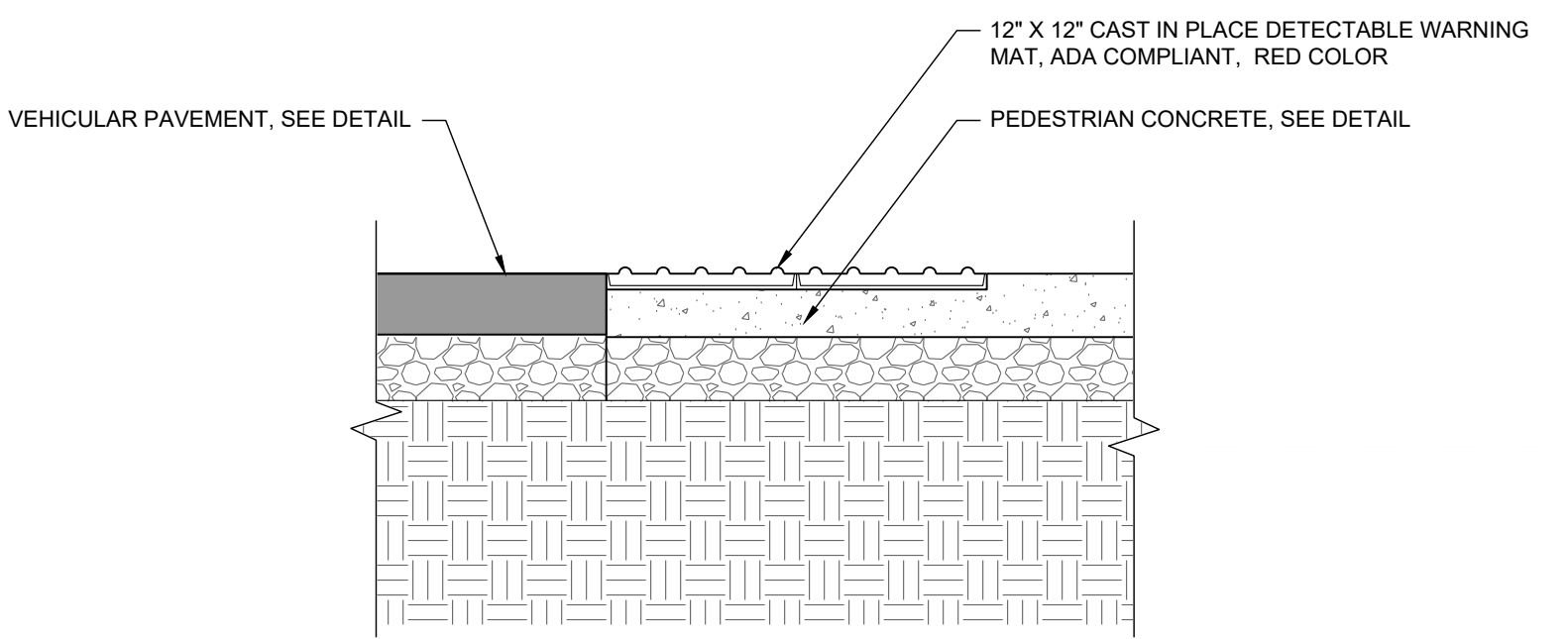
**Seeding Dates:** April 1 - June 1

**Mulch:** Apply 4,000 lbs/acre straw. Anchor straw by tacking with asphalt, netting or mulch anchoring tool.

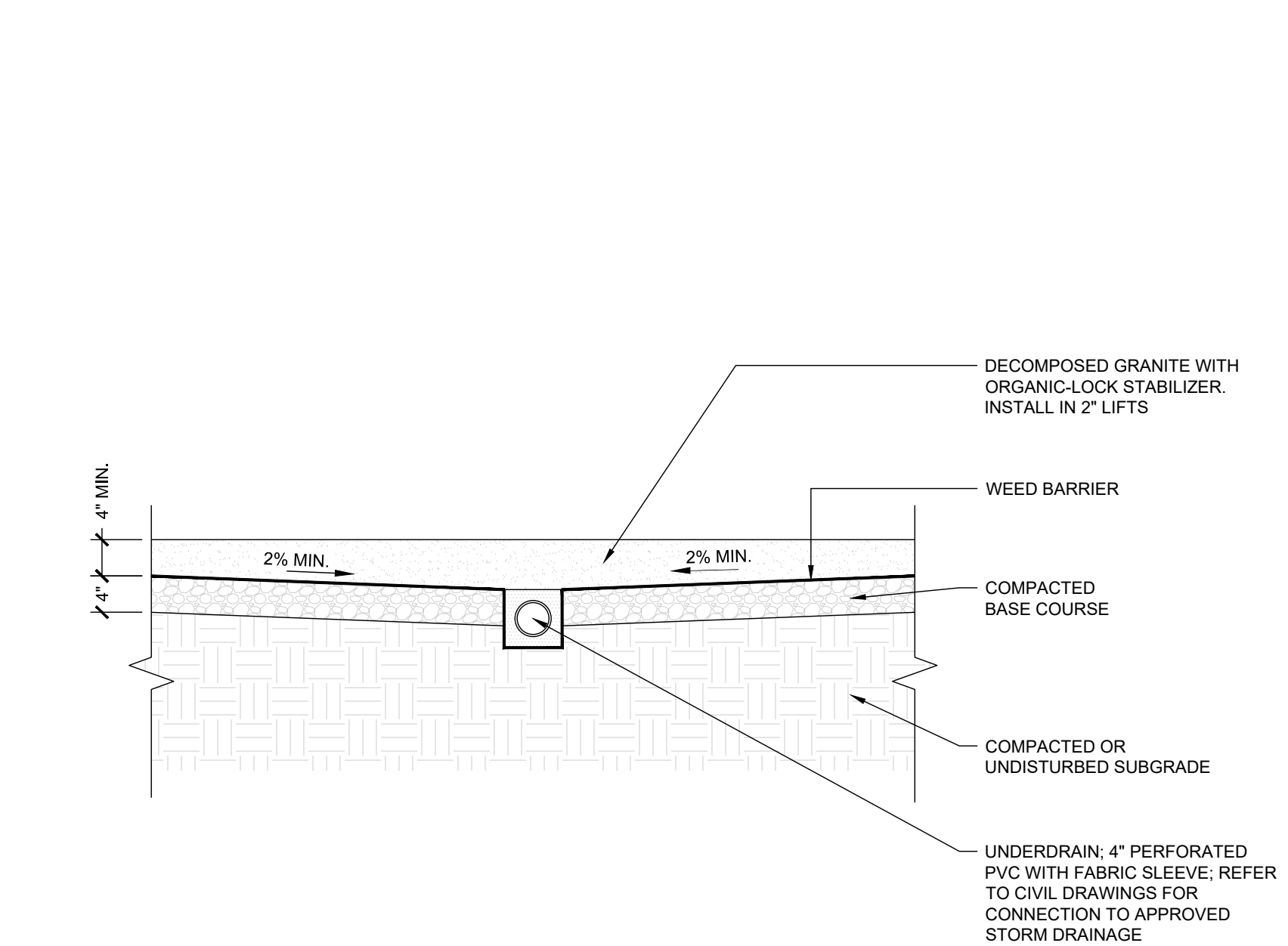
**Maintenance:**

- Re-fertilize if growth is not fully adequate.
- Re-seed, fertilize and mulch immediately following erosion or other damage.
- Meadows are to be mowed only three (3) times per year: Mid-Spring around April 15th, Mid-Summer around July 15th and once again in late fall around November 1st at a height no lower than 12\"/>

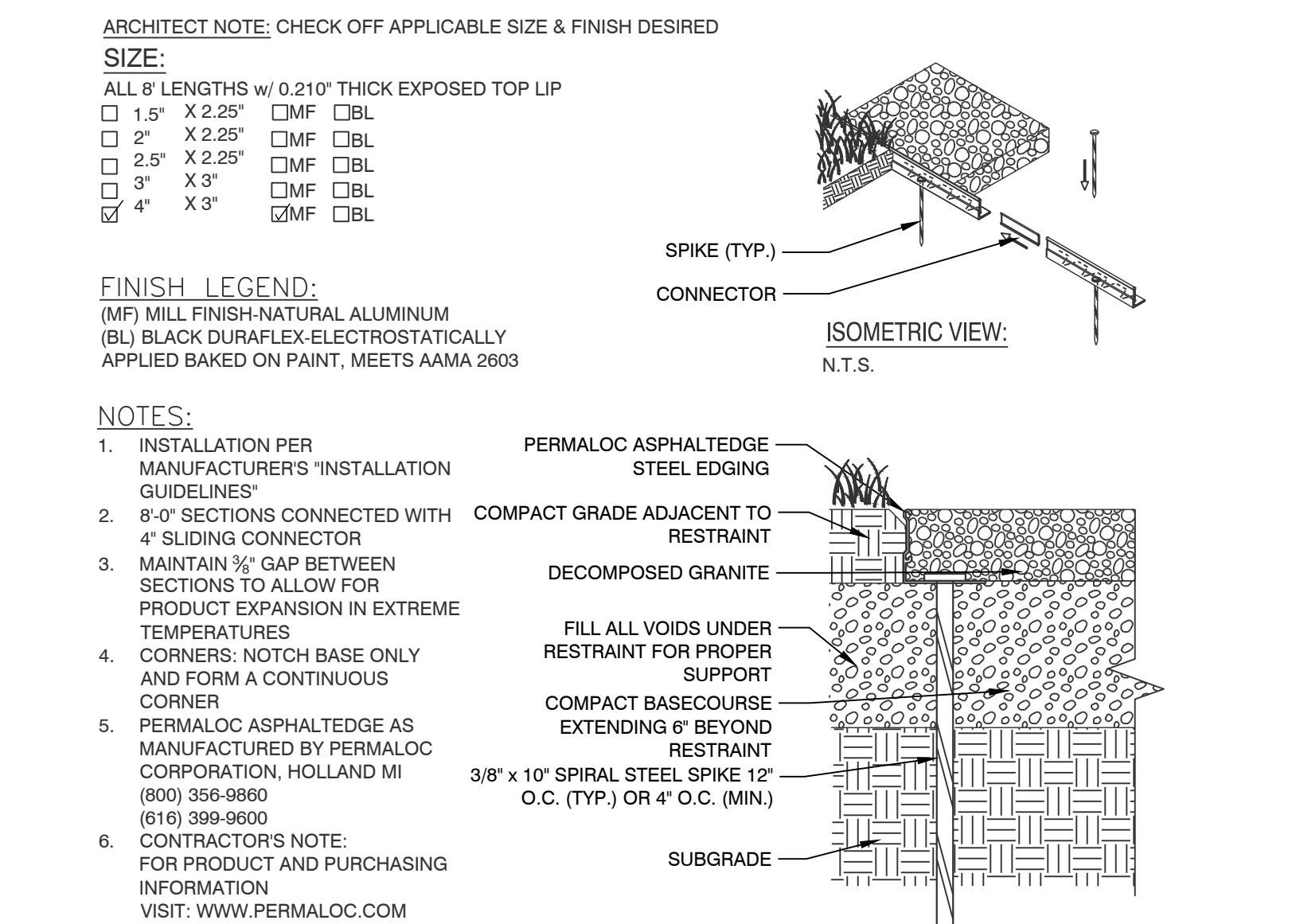
7 MEADOW MIX NOTES SECTION NTS



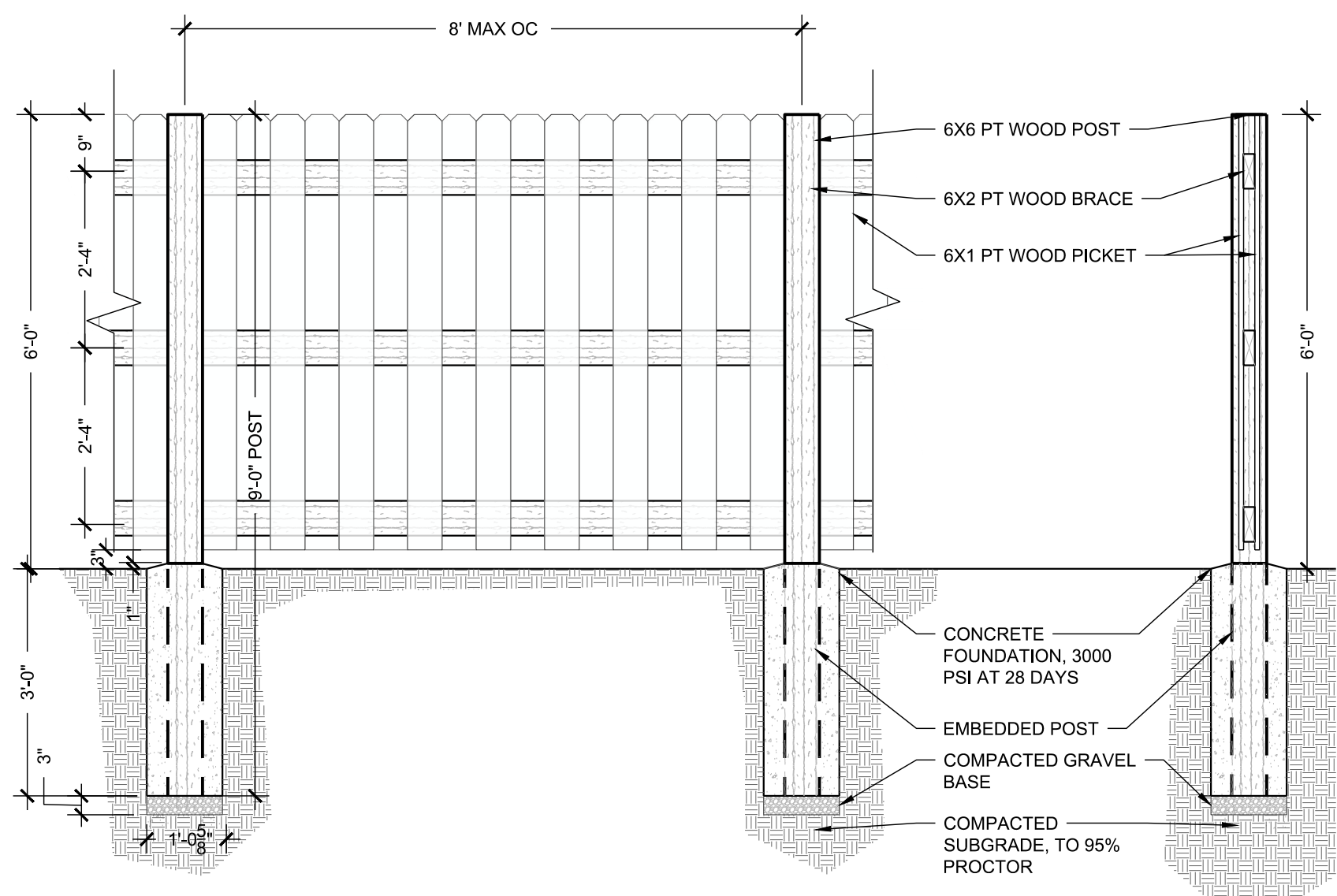
8 CIP ADA WARNING MAT SECTION 1\"/>



9 DECOMPOSED GRANITE PAVING SECTION 3/4\"/>



10 METAL EDGING BY OWNER SECTION NTS



11 6' HEIGHT WOOD FENCE PLAN 1/2\"/>

12 NOT IN USE PLAN NTS





ABBREVIATIONS			
@	AT	HD	HEADED
&	AND	HI	HIGH
Ø	DIAMETER	HORIZ	HORIZONTAL
AB	ANCHOR BOLTS	HSS	HOLLOW STRUCTURAL SECTION
ACI	AMERICAN CONCRETE INSTITUTE	INT	INTERIOR
ADDL	ADDITIONAL	JT	JOINT
ADH	ADHESIVE	K	KIP(S)
AFF	ABOVE FINISHED FLOOR	KB	KNEE BRACE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	KSI	KIPS PER SQUARE INCH
AISI	AMERICAN IRON AND STEEL INSTITUTE	LB	LONG BAR
ALT	ALTERNATE	LBS	POUNDS
ARCH	ARCHITECT'S / ARCHITECTURAL	LLH	LONG LEG HORIZONTAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	LLV	LONG LEG VERTICAL
AWS	AMERICAN WELDING SOCIETY	LO	LOW
B/ or BOT	BOTTOM	LOC	LOCATION
BCK	BOTTOM CHORD EXTENSION	LSH	LONG SIDE HORIZONTAL
BFB	BOTTOM FLANGE BRACE	LSV	LONG SIDE VERTICAL
BFF	BELOW FINISHED FLOOR	LWC	LIGHT WEIGHT CONCRETE
BLDG	BUILDING	MAX	MAXIMUM
BM	BEAM	MC	MOMENT CONNECTION
BOS	BOTTOM OF STEEL	MCI	MASONRY CONTROL JOINT
BRG	BEARING	MECH	MECHANICAL
BTWN	BETWEEN	MFR	MANUFACTURER
CANT	CANTILEVER	MID	MIDDLE
CJ	CONTROL JOINT	MIN	MINIMUM
CL	CENTERLINE	MISC	MISCELLANEOUS
CLR	CLEAR	MOW	MIDDLE OF WALL
CMU	CONCRETE MASONRY UNIT	MP	MASONRY PILASTER
COL	COLUMN	No or #	NUMBER
CONC	CONCRETE	NS	NEAR SIDE
CONN	CONNECTION	NTS	NOT TO SCALE
CONST JT	CONSTRUCTION JOINT	NWC	NORMAL WEIGHT CONCRETE
CONT	CONTINUOUS	OC	ON CENTER
CONTR	CONTRACTOR	OPNG	OPENING
COORD	COORDINATE	OPP	OPPOSITE HAND
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER
d	NAILS (PENNY)	PED	PEDESTAL
DBA	DEFORMED BAR ANCHOR	PL	PLATE
DEFL	DEFLECTION	PSF	POUNDS PER SQUARE FOOT
DEPR	DEPRESSION / DEPRESSED	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	PT	PRESSURE TREATED
DIAG	DIAGONAL	P-T	POST-TENSIONED
DIM	DIMENSION	REF	REFERENCE
DIST	DISTANCE	REINF	REINFORCING
DWG(S)	DRAWING(S)	REQD	REQUIRED
DWL(S)	DOWEL(S)	SB	SHORT BAR
EA	EACH	SCHD	SCHEDULE
EE	EACH END	SIM	SIMILAR
EF	EACH FACE	SOG	SLAB ON GRADE
EJ	EXPANSION JOINT	SPEC(S)	SPECIFICATION(S)
ELEV	ELEVATION	SQ	SQUARE
EMBED	EMBEDDED / EMBEDMENT	STD	STANDARD
ENGR	ENGINEER	STIFF	STIFFENER
EOD	EDGE OF DECK	STIRR	STIRRUP(S)
EOS	EDGE OF SLAB	STL	STEEL
EQ	EQUAL	STR	STRUCTURAL
EQUIP	EQUIPMENT	T/	TOP
EW	EACH WAY	TCX	TOP CHORD EXTENSION
EXIST	EXISTING	TOC	TOP CHORD CONCRETE
EXP	EXPANSION	TOF	TOP OF FOOTING
EXT	EXTERIOR	TOS	TOP OF STEEL
FDN	FOUNDATION	TOW	TOP OF WALL
FEE	FINISHED FLOOR ELEVATION	TYP	TYPICAL
FOM	FACE OF MASONRY	UNO	UNLESS NOTED OTHERWISE
FOW	FACE OF WALL	VERT	VERTICAL
FS	FAR SIDE	VIF	VERIFY IN FIELD
FTG	FOOTING	W/	WITH
GA	GAUGE	WWF	WELDED WIRE FABRIC
GALV	GALVANIZED	WP	WORK POINT
GT	GIRDER TRUSS		

SYMBOL LEGEND	
SYMBOL	MEANING
	SPOT ELEVATION. ELEVATION RELATIVE TO REFERENCE ELEVATION.
<No>	TOP OF FOOTING, GRADE BEAM, PILE CAP, OR DRILLED PIER. ELEVATION RELATIVE TO REFERENCE ELEVATION.
	STEP IN TOP OF FOOTING ELEVATION. SEE "TYPICAL STEP IN WALL FOOTING" DETAIL. ELEVATION RELATIVE TO REFERENCE ELEVATION.
	DEPRESSED OR RAISED SLAB ELEVATION. SEE "TYPICAL STEP IN SLAB ON GRADE" DETAIL. ELEVATION RELATIVE TO REFERENCE ELEVATION.
[No]	TOP OF WALL OR PEDESTAL. ELEVATION RELATIVE TO REFERENCE ELEVATION.
(No)   [+No]	TOP OF STEEL/JOIST BEARING ELEVATION   TOP OF STEEL ABOVE STEEL/JOIST BEARING ELEVATION.
	SLOPED   STEPPED SLAB.
F#	SPREAD FOOTING TYPE, SEE SCHEDULE.
P#	CONCRETE PEDESTAL TYPE, SEE SCHEDULE.
PC#	PILE CAP TYPE, SEE SCHEDULE.
G# W# D	CONCRETE GRADE BEAM TYPE, SEE SCHEDULE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).
CB# W# D	CONCRETE BEAM TYPE, SEE SCHEDULE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).
CJ# W# D	CONCRETE JOIST TYPE, SEE SCHEDULE. "W" INDICATES NOMINAL JOIST WIDTH AND "D" INDICATES JOIST DEPTH (IN INCHES).
PCB W# D	PRECAST CONCRETE BEAM. "W" INDICATES ASSUMED BEAM WIDTH AND "D" INDICATES ASSUMED BEAM DEPTH (IN INCHES).
PT# W# D	POST-TENSIONED CONCRETE BEAM TYPE, SEE SCHEDULE. "W" INDICATES BEAM WIDTH AND "D" INDICATES BEAM DEPTH (IN INCHES).
	STUD RAIL REINFORCING TYPE, SEE "ELEVATED SLABS STUD RAILS" DETAIL.
CSW#	CONCRETE SHEAR WALL TYPE, SEE SCHEDULE.
MP#	MASONRY PILASTER TYPE, SEE "TYPICAL MASONRY PILASTERS" DETAIL.
ML#	MASONRY LINTEL TYPE, SEE "TYPICAL LOAD BEARING LINTELS" DETAIL.
BP#	STEEL BEARING PLATE TYPE, SEE "TYPICAL STEEL BEAM BEARING" DETAIL.
MSW#	MASONRY SHEAR WALL TYPE, SEE SCHEDULE.
	SPAN DIRECTION OF METAL ROOF DECK, SEE "TYPICAL 1 1/2" METAL ROOF DECK" DETAIL. CONSTRUCTION SHALL BE 1 1/2"-22GA METAL ROOF DECK.
	SPAN DIRECTION OF METAL ROOF DECK, SEE "TYPICAL 3" METAL ROOF DECK" DETAIL. CONSTRUCTION SHALL BE 3"-18GA METAL ROOF DECK.
	SPAN DIRECTION OF COMPOSITE SLAB, SEE "TYPICAL COMPOSITE SLAB" DETAIL. CONSTRUCTION SHALL BE 3 1/4" LIGHT WEIGHT CONCRETE ON 2"-20GA COMPOSITE METAL DECK (5 1/4" TOTAL THICKNESS). TOP OF STEEL ELEVATION 5 1/4" BELOW FINISHED FLOOR ELEVATION, UNO.
	SPAN DIRECTION OF COMPOSITE SLAB, SEE "TYPICAL COMPOSITE SLAB" DETAIL. CONSTRUCTION SHALL BE 4 1/2" NORMAL WEIGHT CONCRETE ON 2"-20GA COMPOSITE METAL DECK (6 1/2" TOTAL THICKNESS). TOP OF STEEL ELEVATION 6 1/2" BELOW FINISHED FLOOR ELEVATION, UNO.
W10	COMPOSITE W10x15 STEEL BEAM WITH HEADED STUDS @24"OC.
W12	COMPOSITE W12x16 STEEL BEAM WITH HEADED STUDS @24"OC.
V#, M#, L#, A#, T#, TF#	STEEL BEAM DESIGN END REACTIONS (WHERE APPLICABLE). "V" INDICATES VERTICAL SHEAR, "M" INDICATES BENDING MOMENT, "L" INDICATES LATERAL SHEAR, "A" INDICATES AXIAL TENSION/COMPRESSION, "T" INDICATES TORSION, AND "TF" INDICATES TRANSFER FORCE THROUGH CONNECTION ON BOTH SIDES OF FRAMING JOINT. ALL LOADS ARE FACTORED FOR STRENGTH DESIGN IN UNITS OF KIP AND KIP-FT. ALL LOADS SHALL BE CONSIDERED REVERSIBLE, UNO.
	STEEL BEAM MOMENT CONNECTION.
	VERTICAL FRAME TYPE, SEE ELEVATIONS.
SSW#	METAL STUD SHEAR WALL TYPE, SEE SCHEDULE.
C#	WOOD COLUMN TYPE, SEE SCHEDULE. ALL COLUMNS ARE TO BE EXTENDED TO THE FOUNDATION WHETHER SHOWN ON PLAN OR NOT.
H#	WOOD HEADER TYPE, SEE SCHEDULE.
WSW#	WOOD SHEAR WALL TYPE, SEE SCHEDULE.

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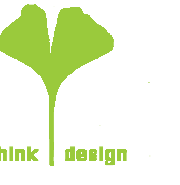
Revisions

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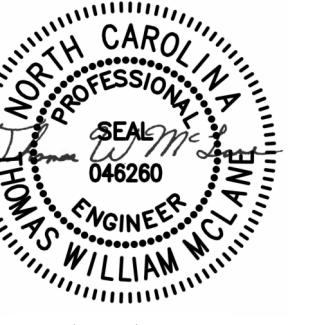
**NCSU Apiculture Facility**  
 Raleigh, NC  
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 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132  
 Title  
**ABBREVIATIONS AND SYMBOL LEGEND**

Sheet  
**S002**  
 Plate

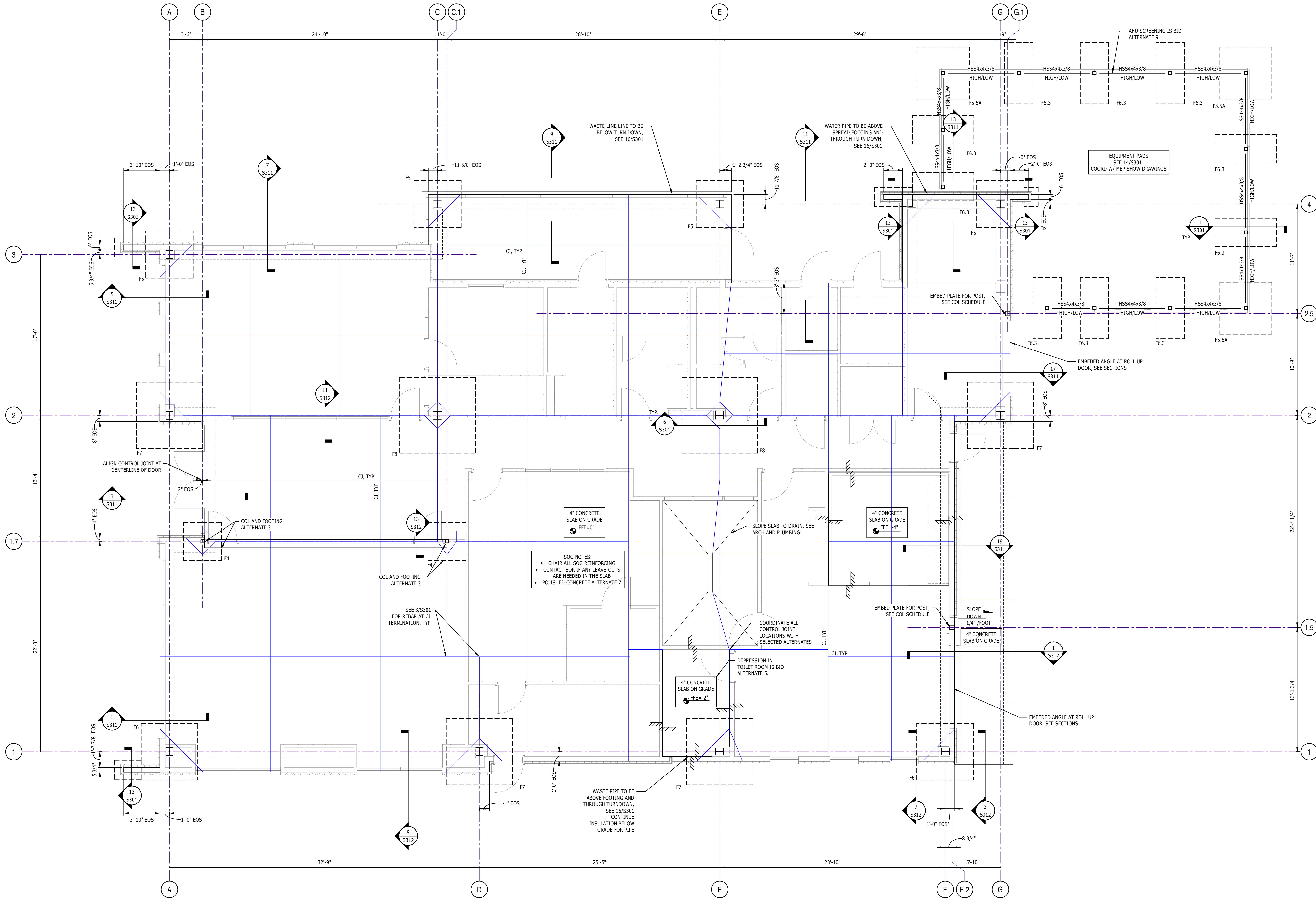


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Checked: TWM  
Date: 01/10/2025  
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**SOG NOTES:**  
 • CHAIR ALL SOG REINFORCING  
 • CONTACT FOR IF ANY LEAVE-OUTS ARE NEEDED IN THE SLAB  
 • POLISHED CONCRETE ALTERNATE 7

**1 FOUNDATION PLAN**

- 1/4" = 1'-0"
- FOUNDATION PLAN NOTES:**
- SEE S001 & S002 FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOL LEGEND.
  - REFERENCE FINISHED FLOOR ELEVATION 0'-0". ACTUAL ELEVATION IS 352.50'
  - SEE S301 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
  - SEE S501 FOR STEEL COLUMN SCHEDULE.
  - TOP OF FOOTING ELEVATION 2'-0" BELOW FINISHED FLOOR ELEVATION, UNO.
  - SLOPE EXTERIOR SLABS, SIDEWALKS, AND PAVING AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
  - ALTERNATE 7 - POLISHED CONCRETE (UNPOLISHED BASE BID).

MARK	SIZE			REINFORCEMENT (EACH WAY)	
	WIDTH	LENGTH	DEPTH	TOP	BOTTOM
F4	4'-0"	4'-0"	1'-0"	NA	(5)#5
F5	5'-0"	5'-0"	1'-2"	NA	(6)#5
F5.5A	5'-6"	5'-6"	1'-6"	#5@12 OC	#5@12 OC
F6	6'-0"	6'-0"	1'-2"	NA	(7)#5
F6.3	3'-0"	6'-6"	1'-6"	#5@12 OC	#5@12 OC
F7	7'-0"	7'-0"	1'-3"	NA	(8)#7
F8	8'-0"	8'-0"	1'-3"	NA	(9)#5

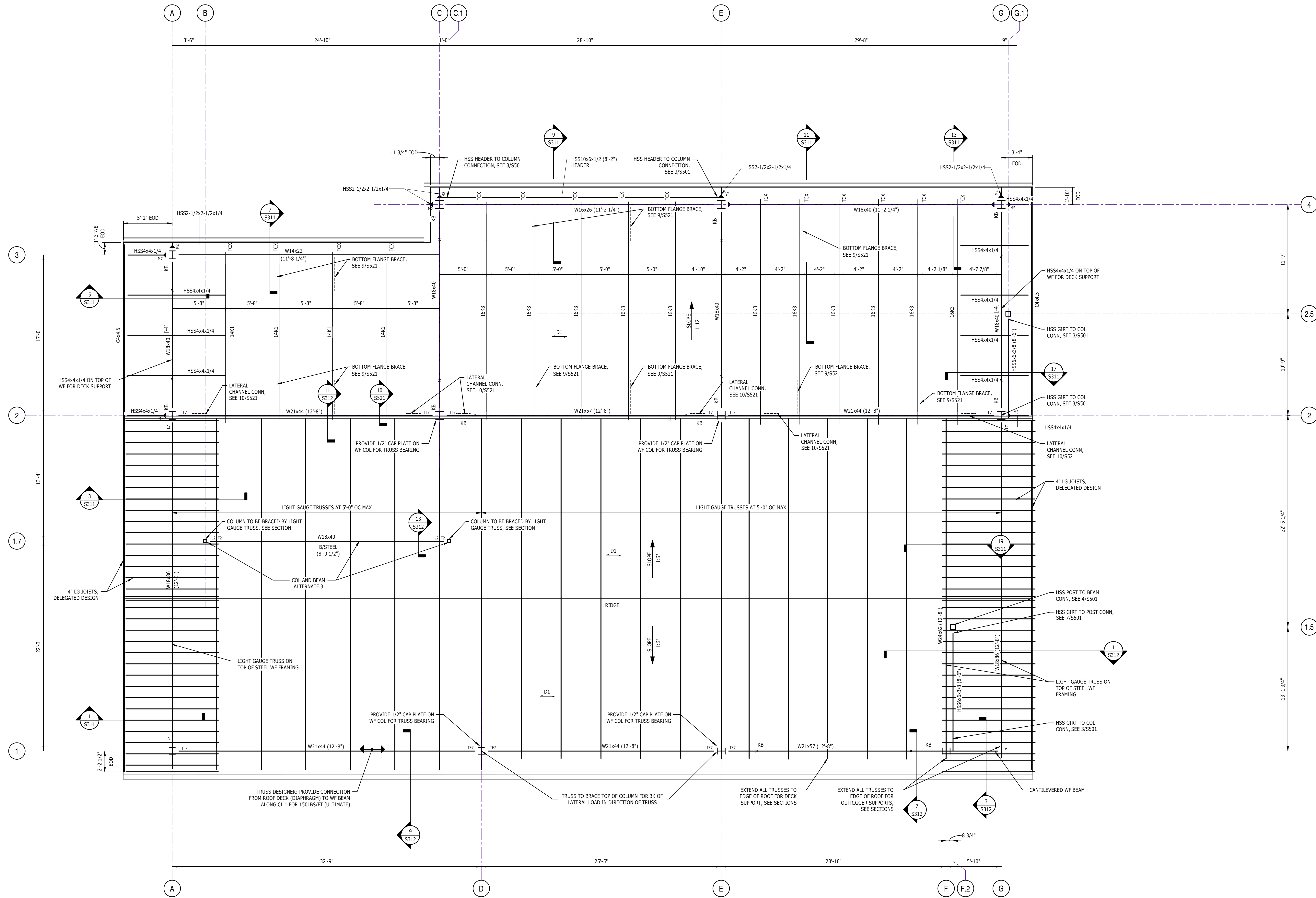
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Project Number 132  
Title **FOUNDATION PLAN**

Sheet **S101**  
Plate

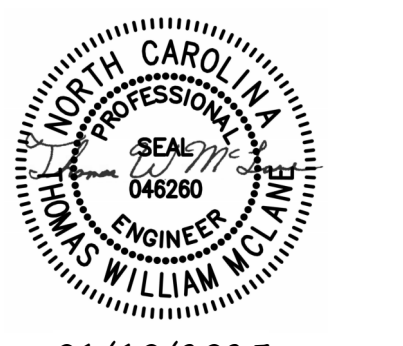




**1** ROOF FRAMING PLAN  
1/4" = 1'-0"

- ROOF FRAMING PLAN NOTES:
- SEE S001 & S002 FOR GENERAL NOTES, ABBREVIATIONS, AND SYMBOL LEGEND.
  - "KB" INDICATES KNEE BRACE, SEE S251.
  - SEE S521 FOR TYPICAL STEEL ROOF FRAMING DETAILS.
  - SEE S501 FOR STEEL COLUMN SCHEDULE.
  - DIMENSIONS ARE TO OUTSIDE FACE OF FRAMING, UNO. REFER TO ARCHITECTURAL DRAWINGS FOR ALL WALL LOCATIONS AND DIMENSIONS.
  - SEE ARCHITECTURAL DRAWINGS FOR ALL ROOF SLOPES.

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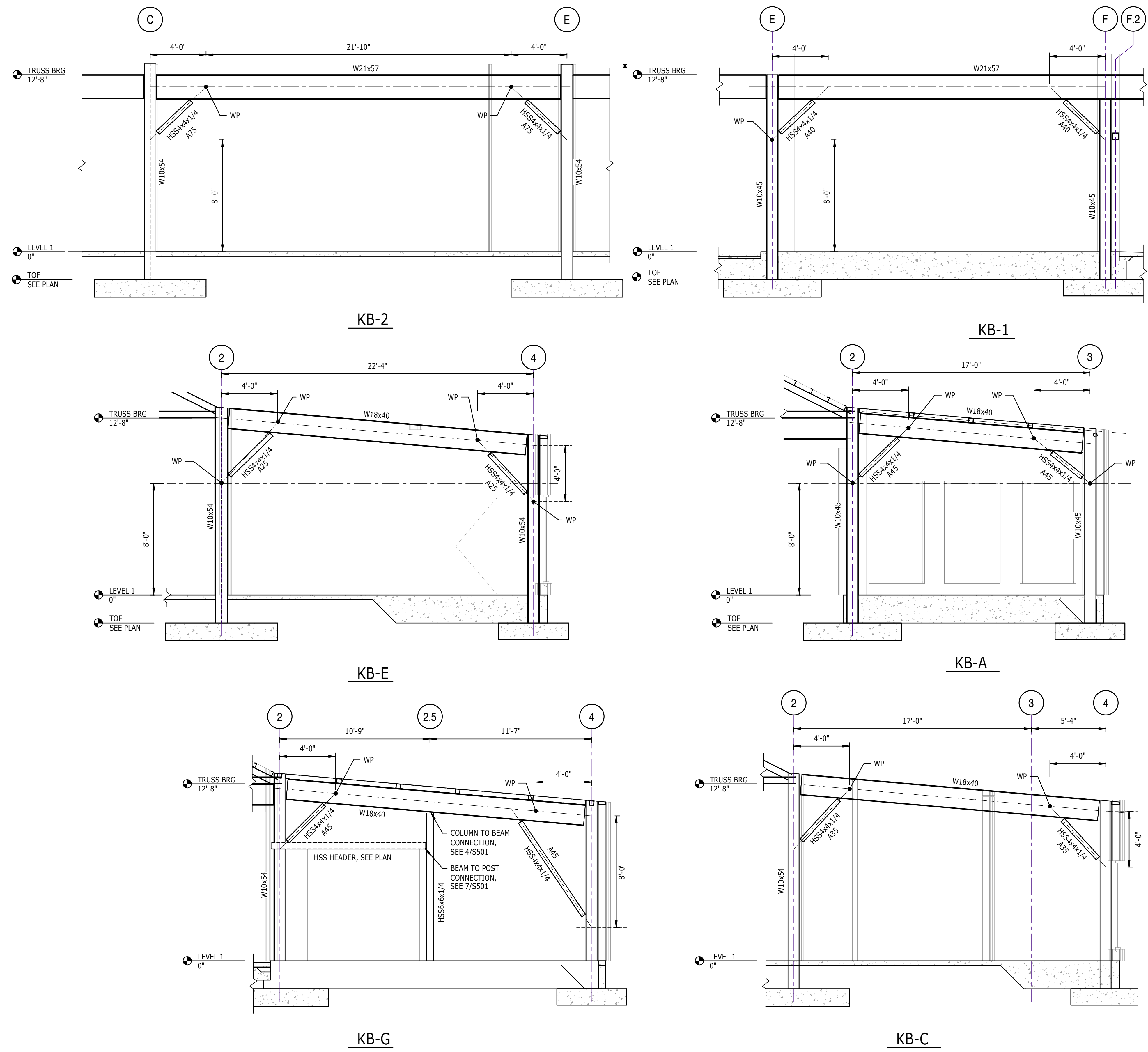
Project Number 132

**ROOF FRAMING PLAN**

Sheet

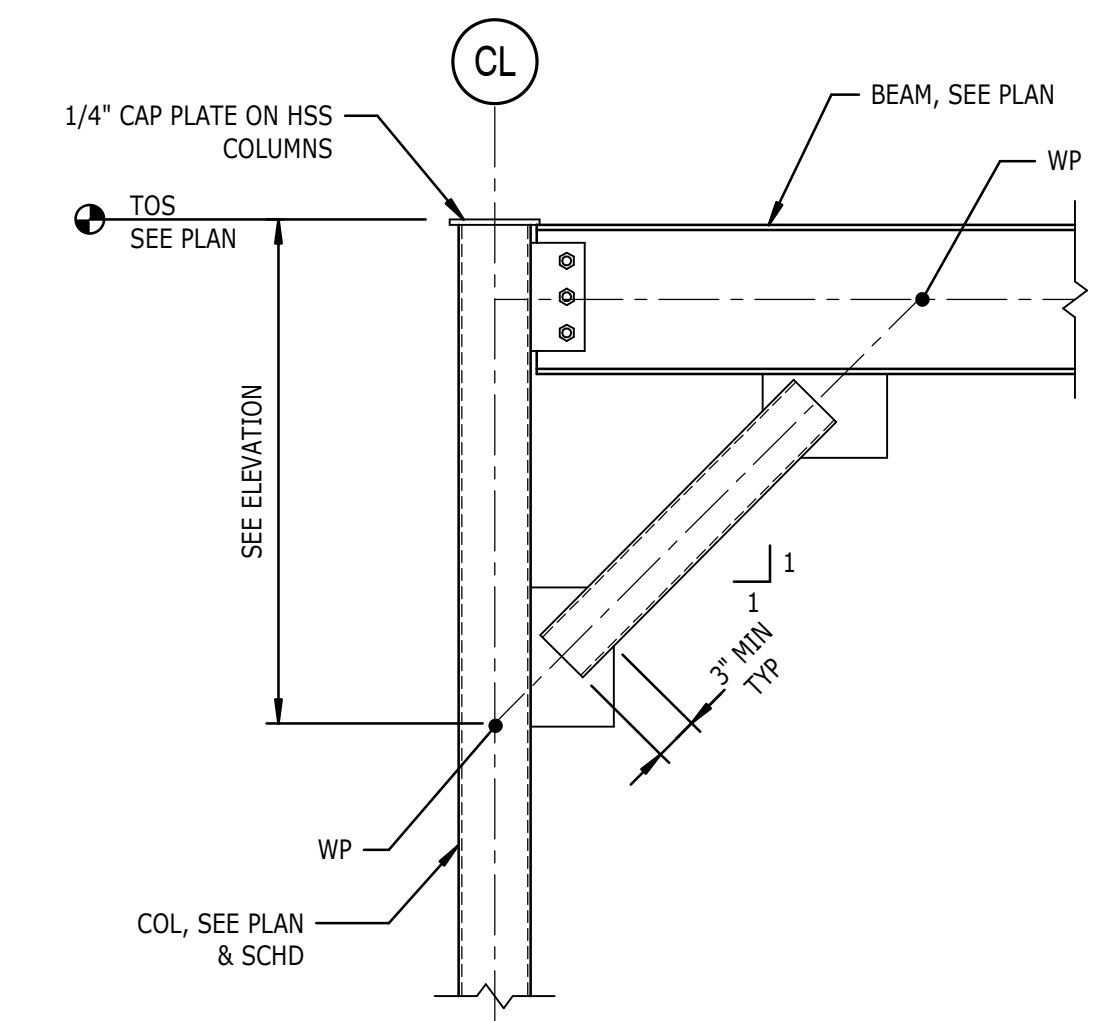
**S102**

Plate

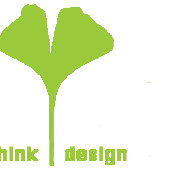


- NOTES:
- CENTROIDS OF MEMBERS SHALL COINCIDE, UNO.
  - FABRICATOR SHALL DESIGN ALL BEAM TO COLUMN CONNECTIONS WITHIN VERTICAL FRAME TO SUPPORT THE HORIZONTAL AND VERTICAL COMPONENTS OF THE BRACE FORCE SHOWN ON THE ELEVATION. ALLOWABLE STRESS INCREASES OR LOAD REDUCTIONS ARE NOT PERMITTED.

**1** VERTICAL FRAME & KNEE BRACE ELEVATIONS  
S251 NTS



**4** TYPICAL KNEE BRACE  
S251 3/4" = 1'-0"

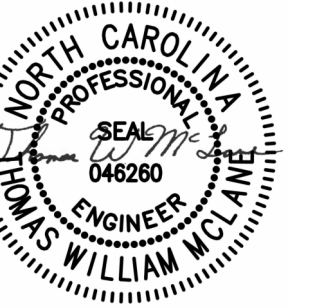


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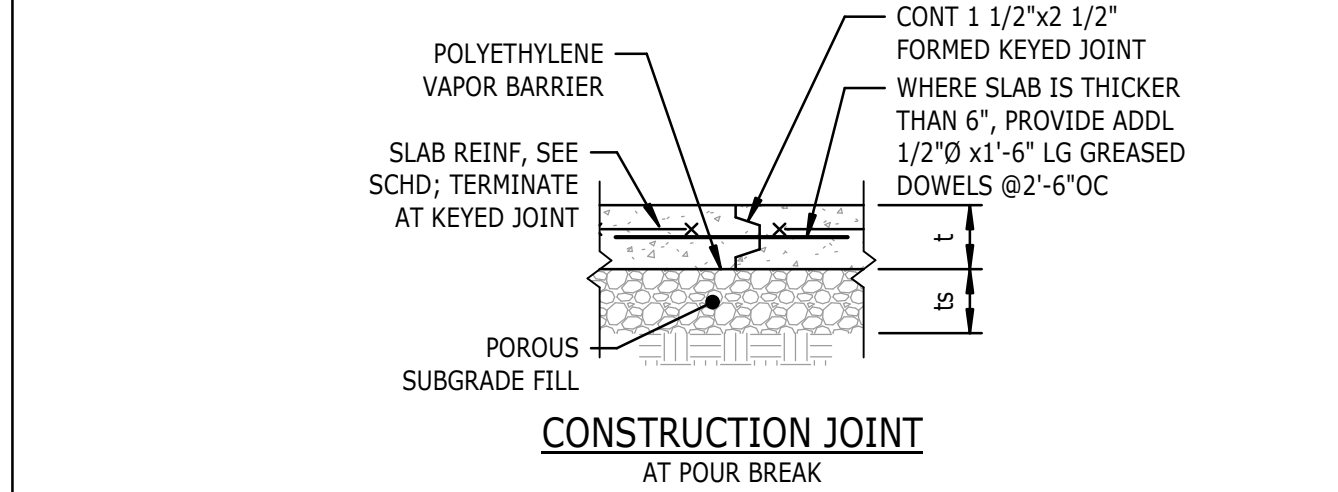
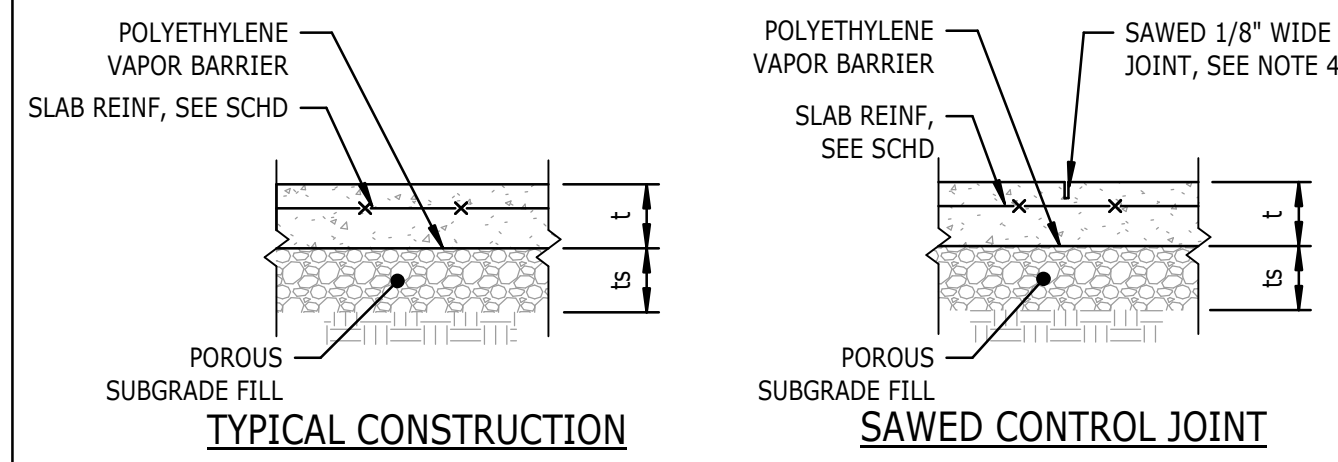
Project Number: 132

Title:  
**VERTICAL FRAME ELEVATIONS AND DETAILS**

Sheet

**S251**

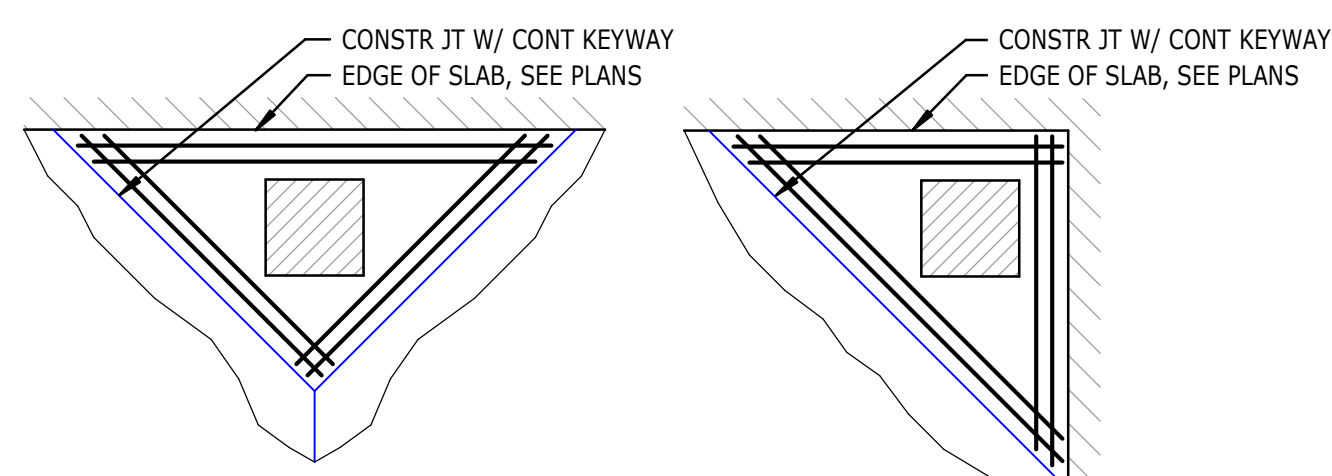
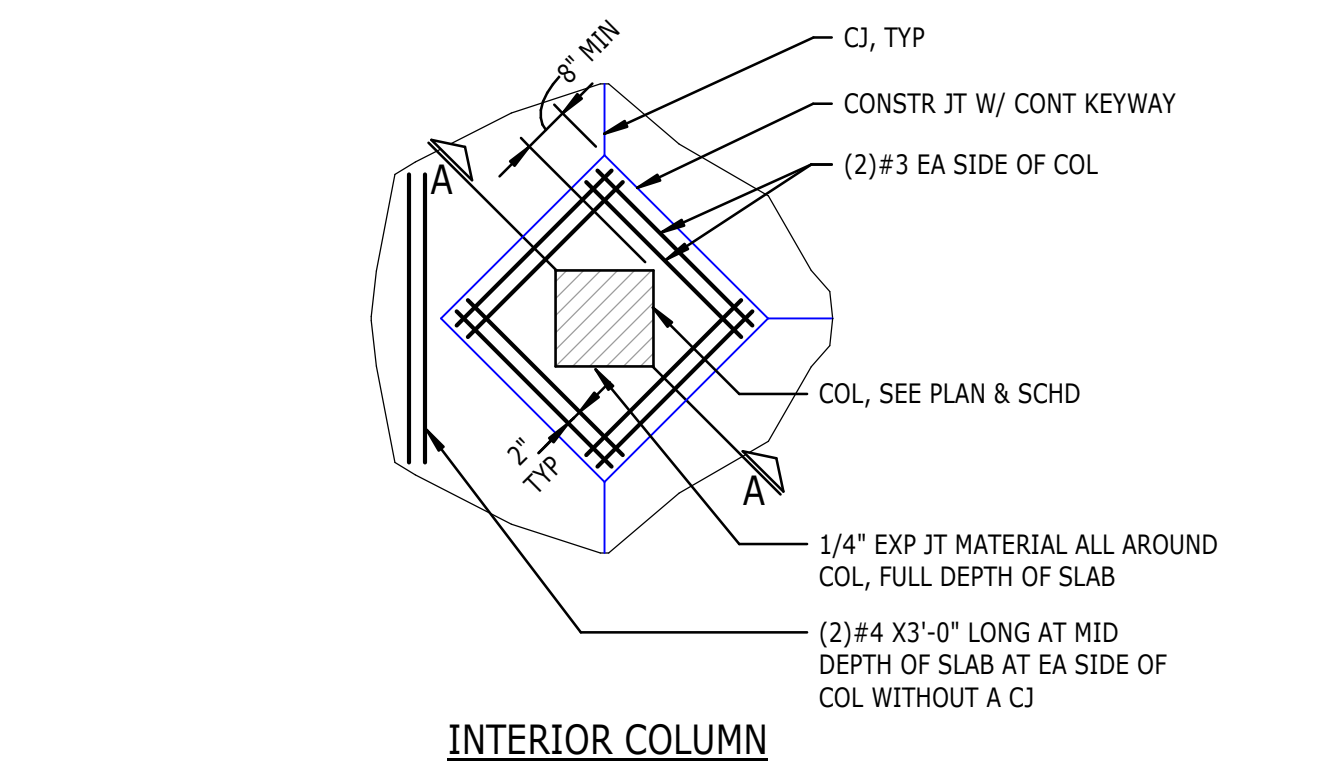
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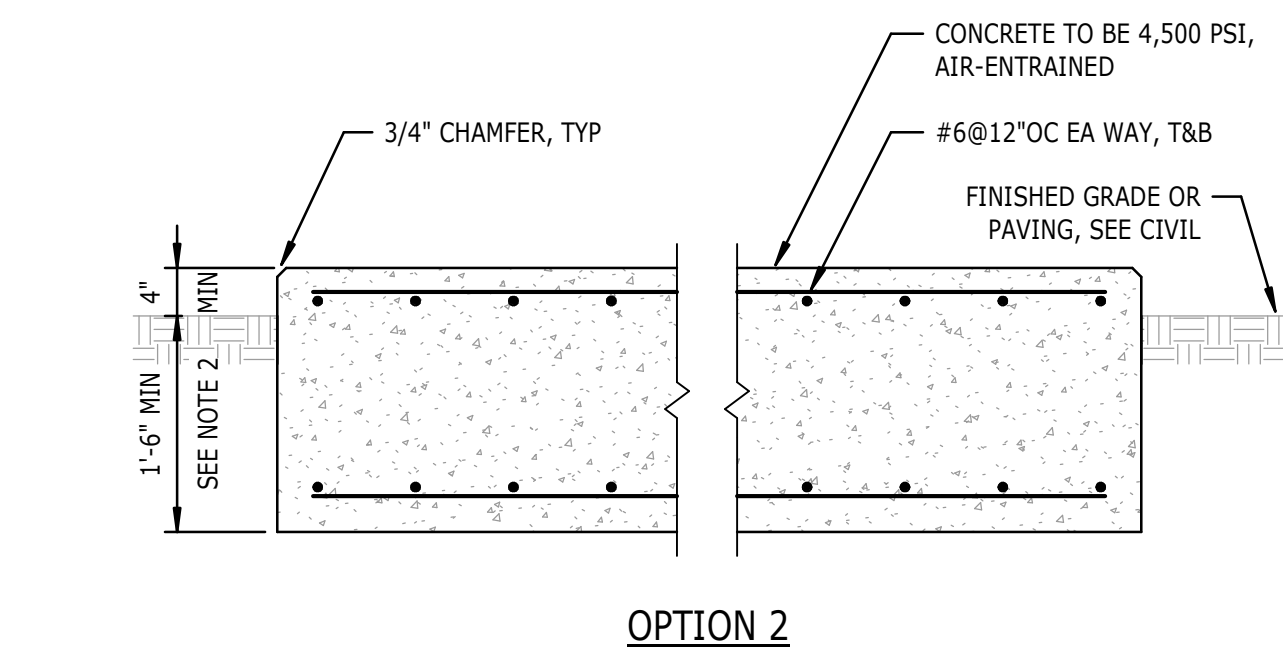
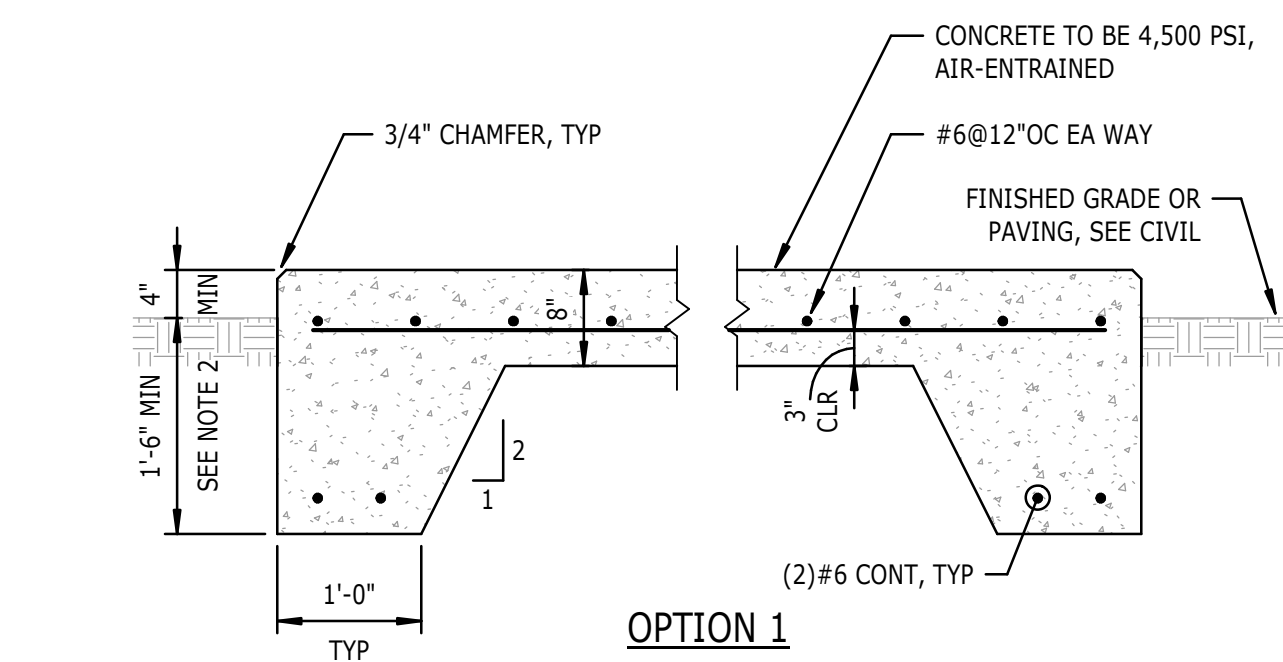
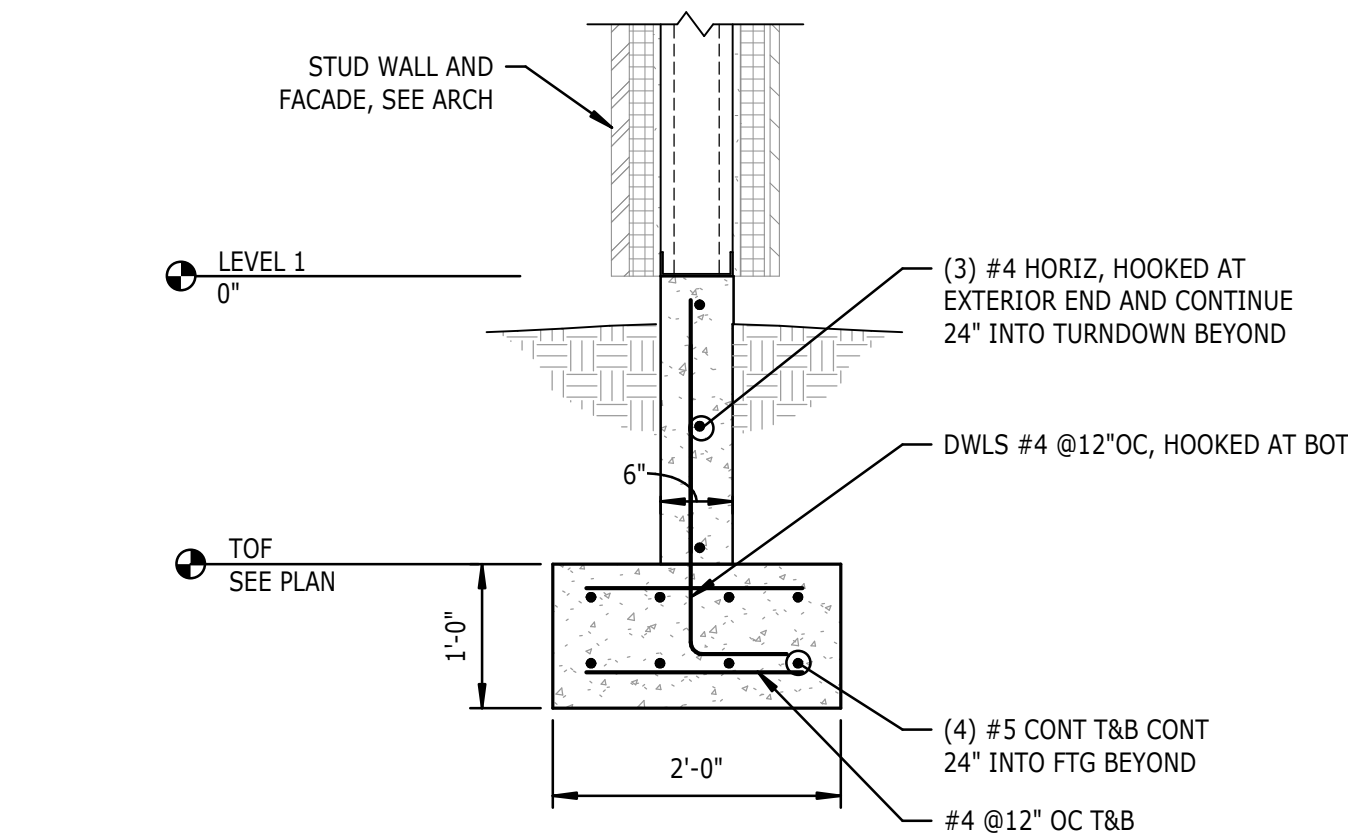
t	REINFORCING	CLEAR COVER FROM TOP OF SLAB	SAWED CJ DEPTH
4"	6x6-W2.1W2.1	1 1/2"	1"

- NOTES:  
 1. 't' DENOTES SLAB THICKNESS, SEE PLANS. 'ts' DENOTES POROUS SUBGRADE FILL THICKNESS, SEE "FOUNDATION" GENERAL NOTES.  
 2. LOCATION OF SLAB ON GRADE CONSTRUCTION JOINTS SHALL BE DETERMINED BY THE CONTRACTOR. JOINT LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.  
 3. SEE PLANS FOR LOCATION OF CONTROL JOINTS. WHERE NOT SHOWN ON PLAN, CONTACT THE ENGINEER.  
 4. SAW CUT CONTROL JOINTS WITHIN 8 HOURS OF SLAB POUR. SEE SCHEDULE FOR DEPTH OF CONTROL JOINTS.  
 5. 15 MIL THICK POLYETHYLENE VAPOR BARRIER TO BE PLACED UNDER ALL SLABS, TURNDOWNS, TRENCHES, TRENCH DRAINS, GRADE BEAMS, ETC.

**17 TYPICAL SLAB ON GRADE**  
 S301 1" = 1'-0"

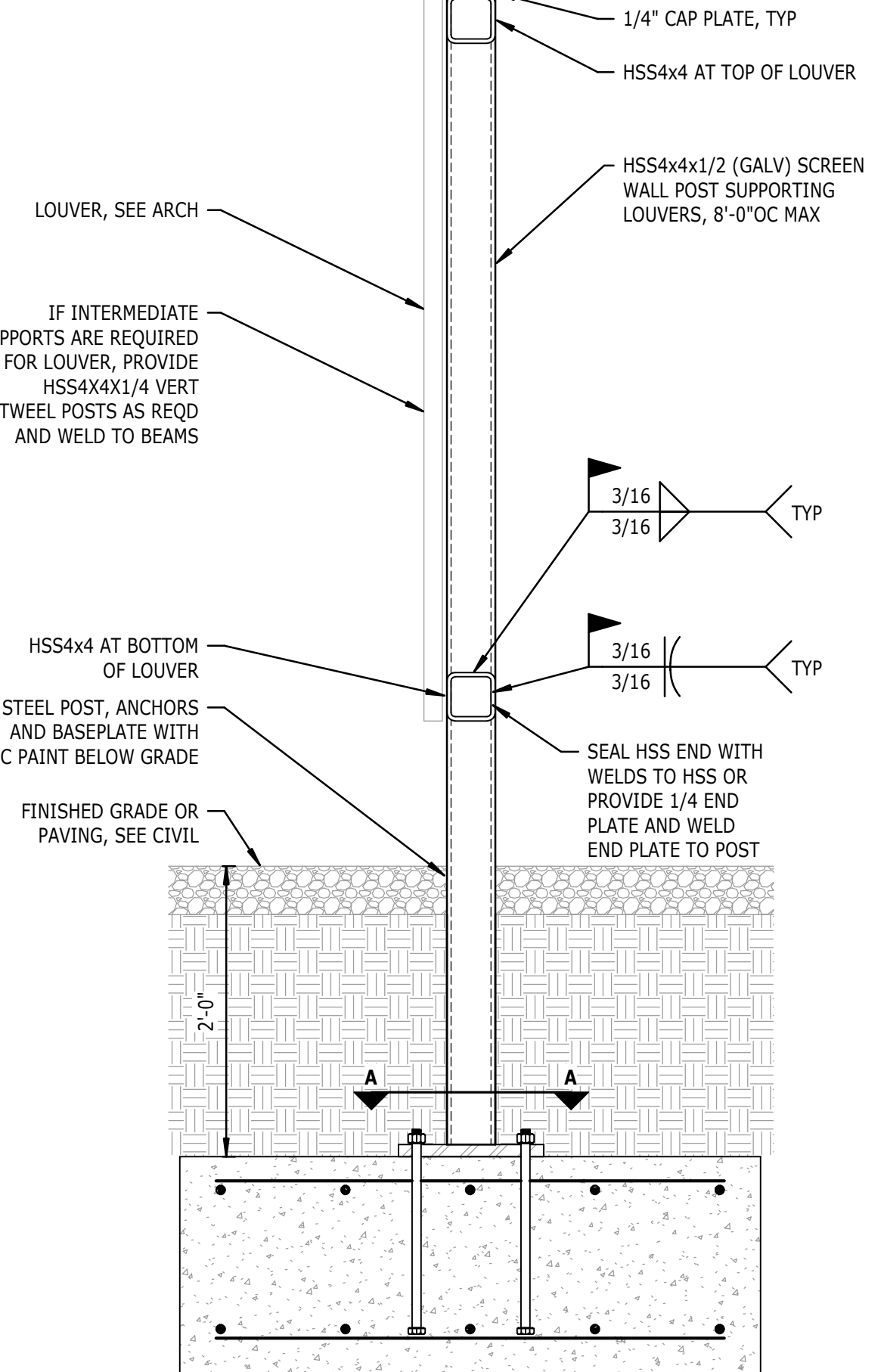
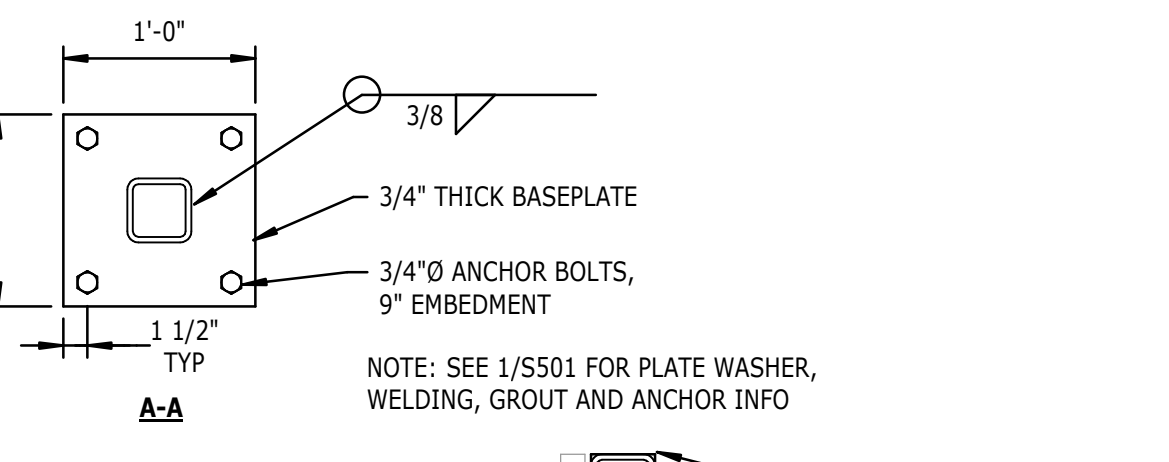
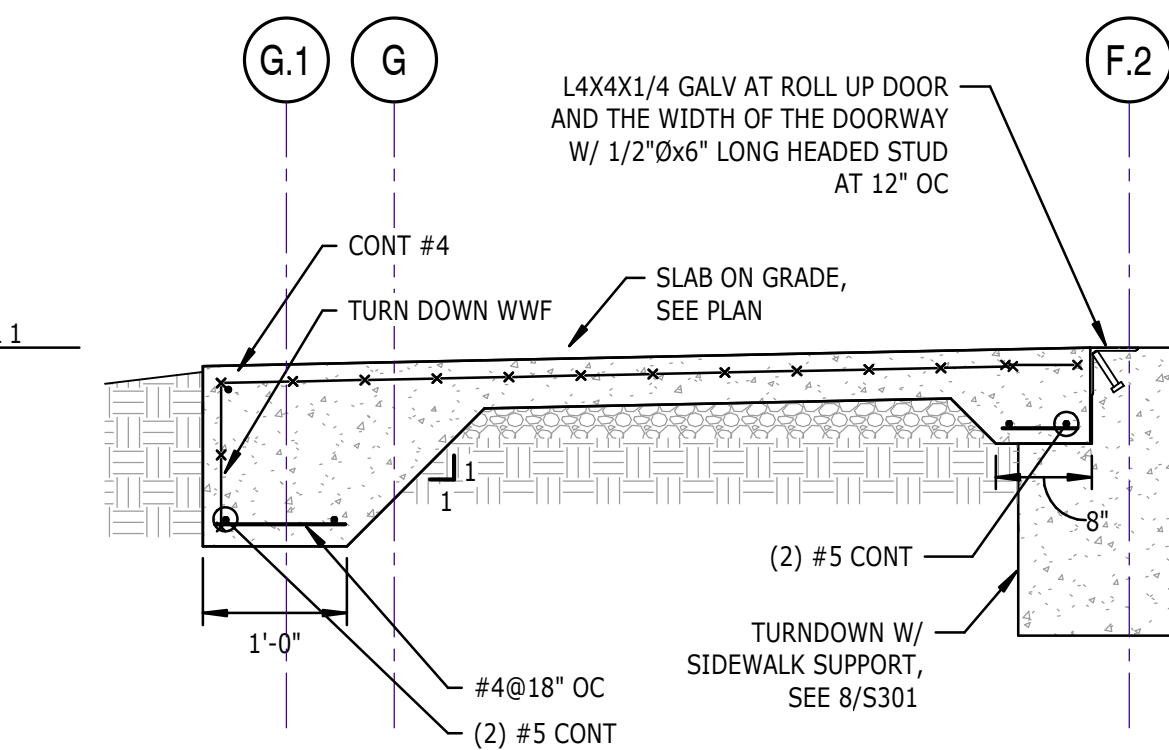
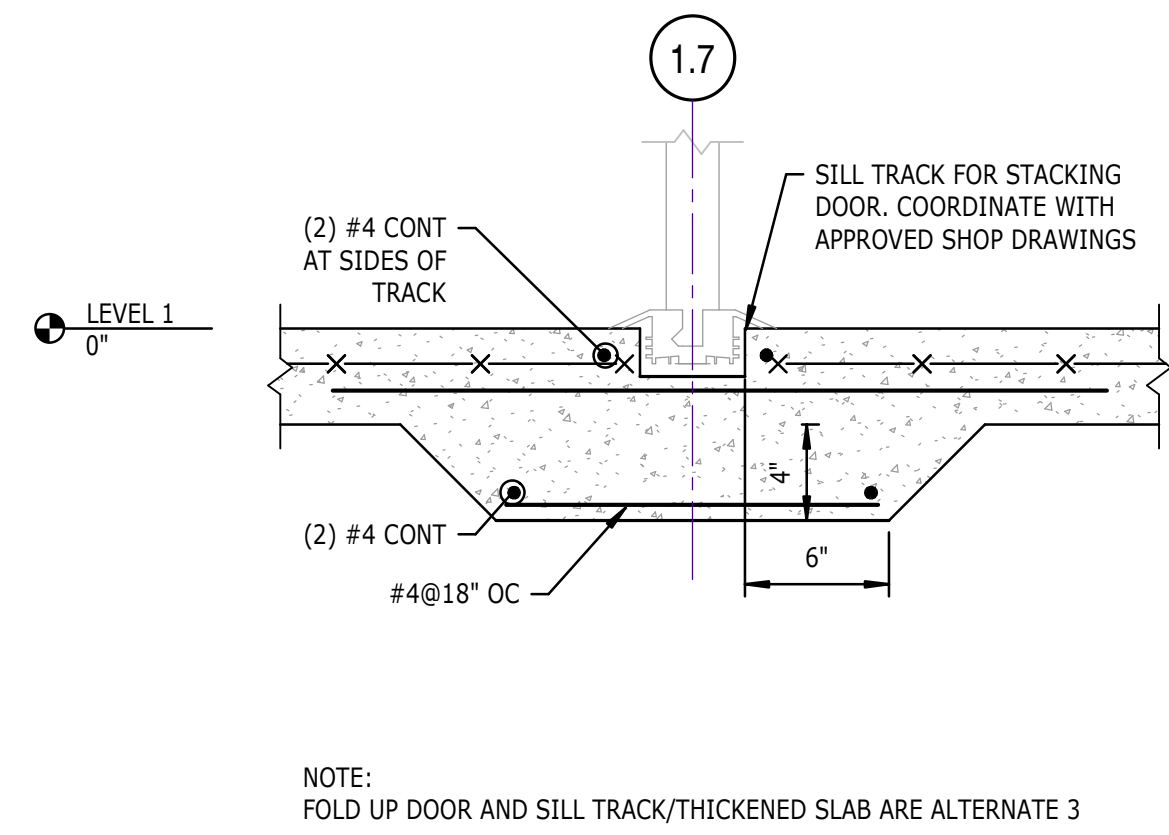
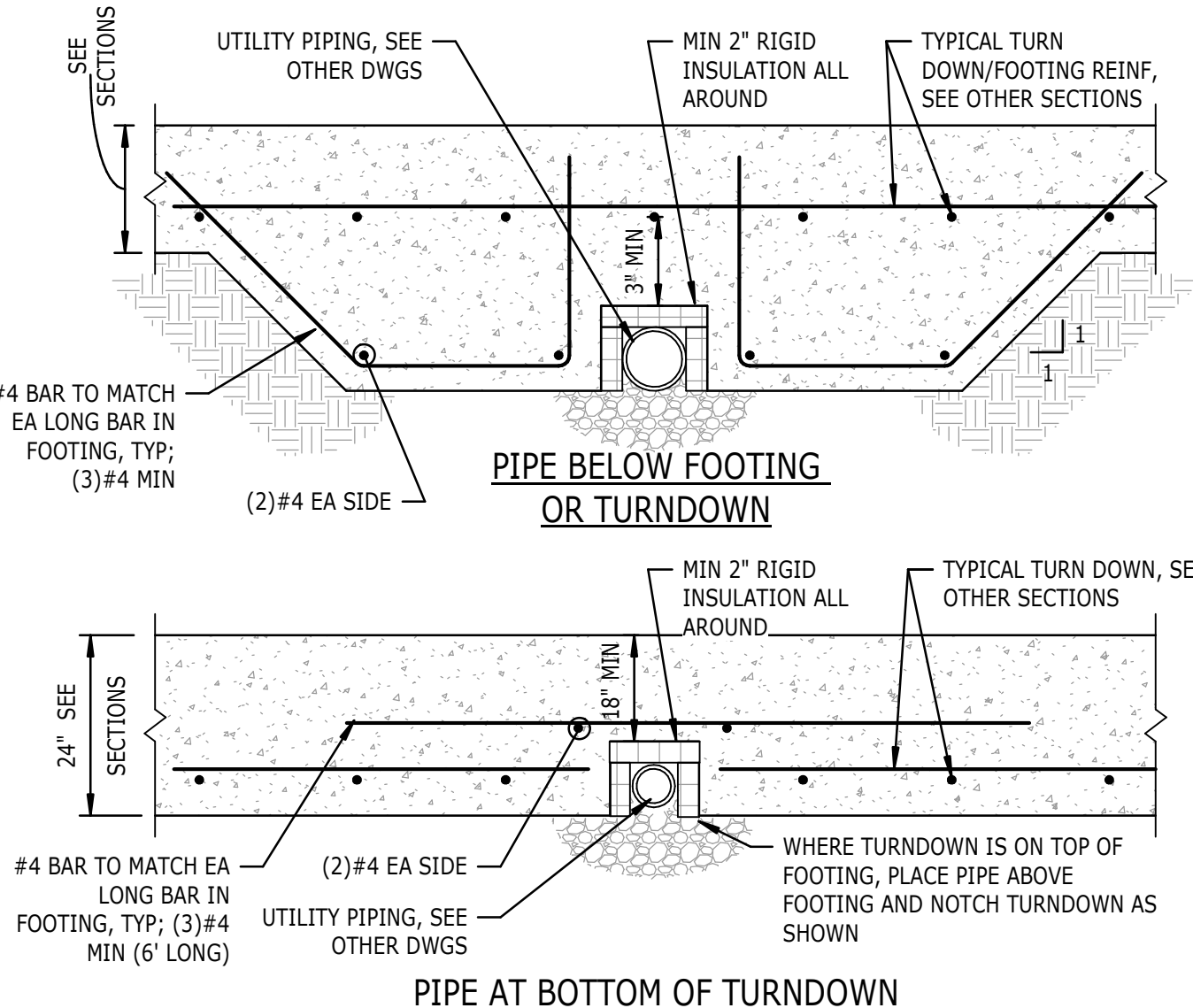


**20 TYPICAL COLUMN ISOLATION JOINTS**  
 S301 1/2" = 1'-0"



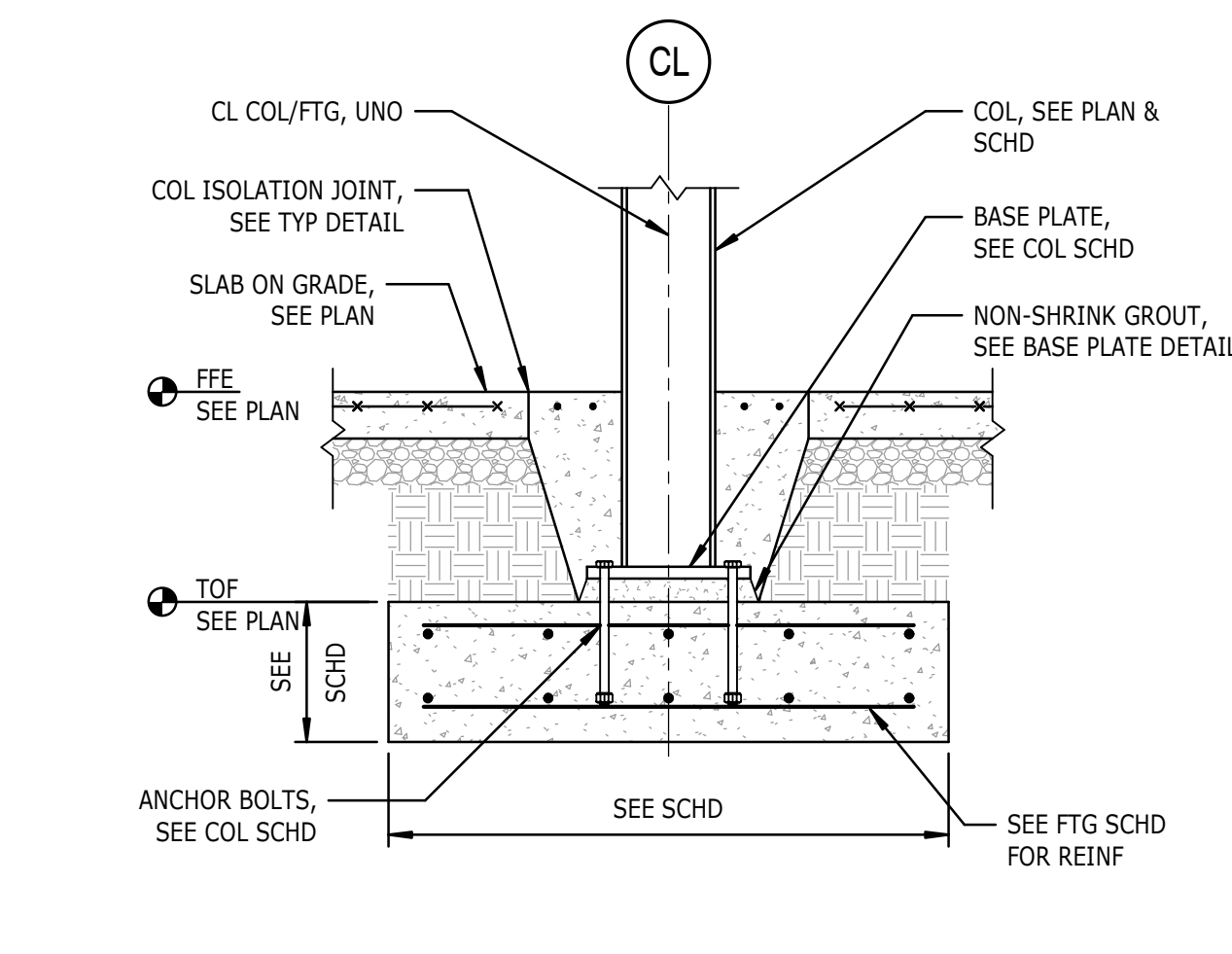
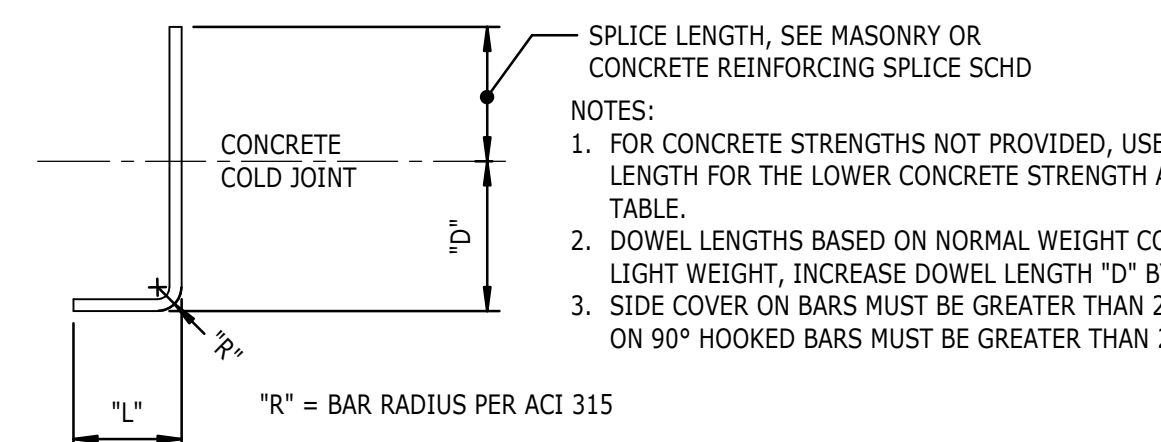
- NOTES:  
 1. THE EXACT SIZE, SHAPE, AND LOCATION OF EQUIPMENT PADS SHALL BE DETERMINED BY THE CONTRACTOR AFTER APPROVAL OF EQUIPMENT SHOP DRAWINGS. ANCHOR BOLTS WHERE REQUIRED SHALL BE SIZED AND LOCATED ACCORDING TO MANUFACTURER'S REQUIREMENTS.  
 2. INCREASE DEPTH AS REQUIRED BY THE GEOTECHNICAL REPORT FOR AREA-SPECIFIC FREEZE-THAW DEPTHS.

**14 TYPICAL EXTERIOR EQUIPMENT PAD**  
 S301 NTS

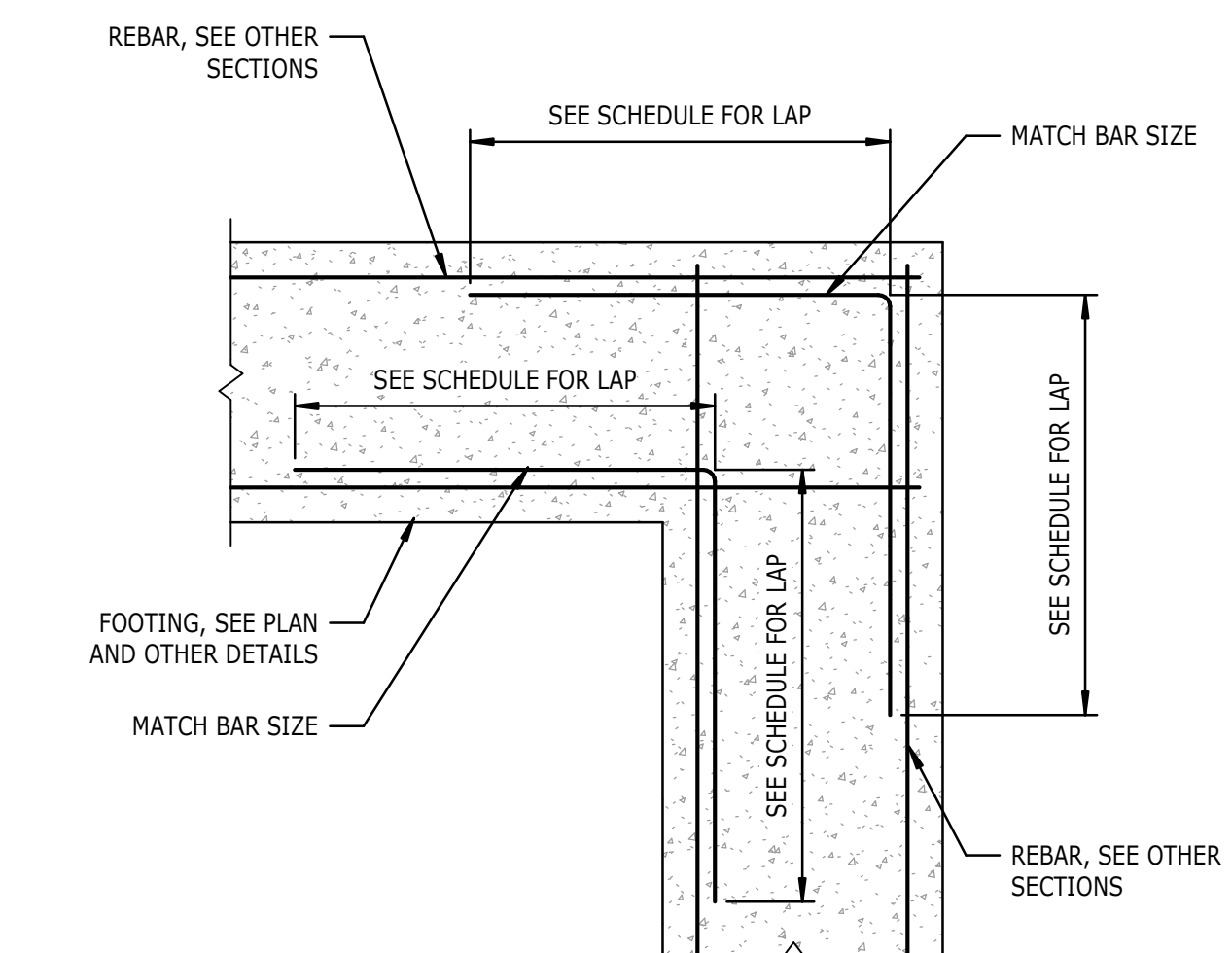


**11 EQUIPMENT PAD SCREEN WALL SECTION**  
 S301 NTS

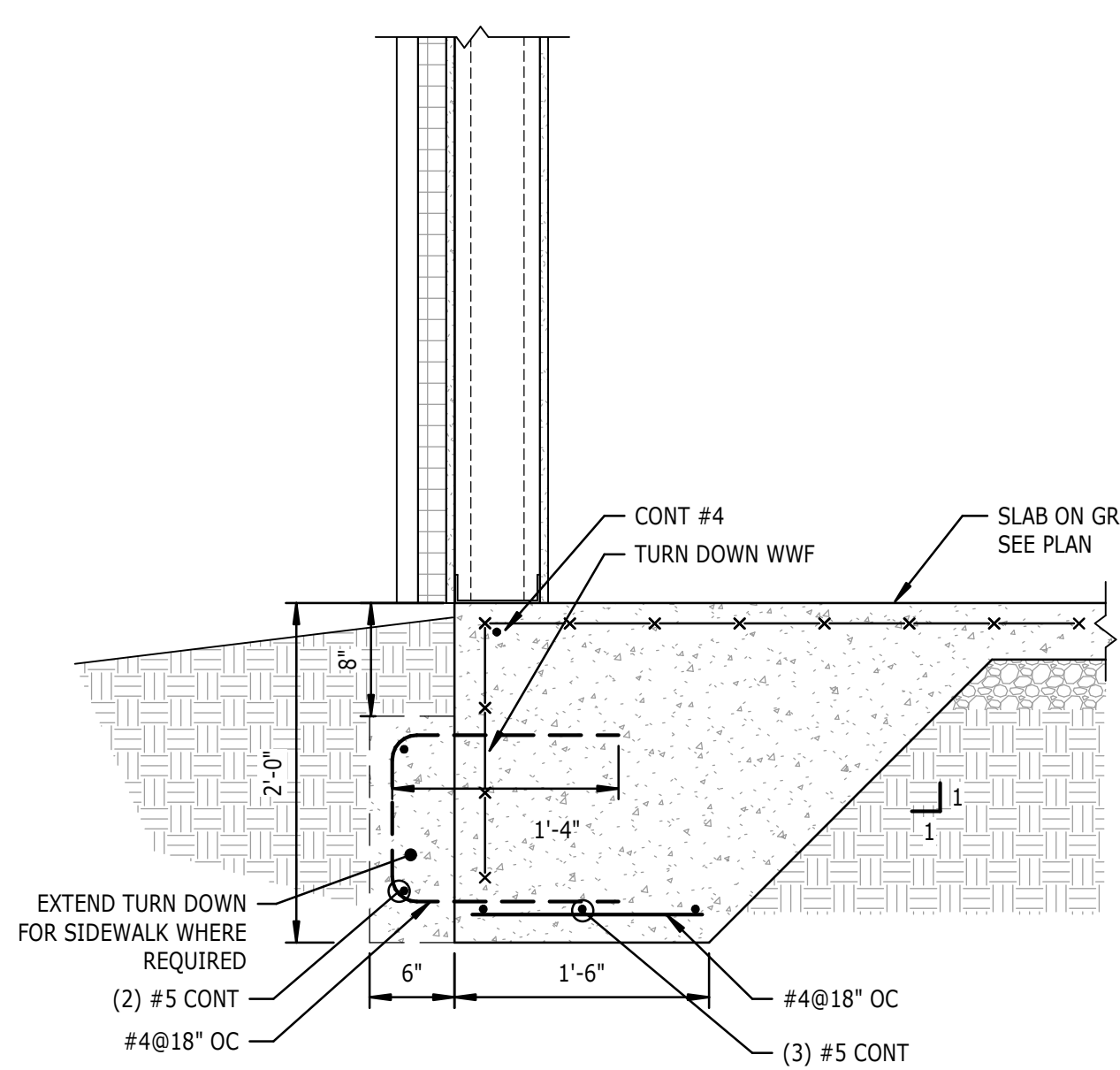
BAR SIZE	LEG DIM, "L"	EMBEDMENT, "D"		
		f <sub>c</sub> = 3,000 PSI	f <sub>c</sub> = 4,000 PSI	f <sub>c</sub> = 5,000 PSI
#3	6"	6"	6"	6"
#4	8"	8"	7"	6"
#5	10"	10"	9"	8"
#6	12"	12"	10"	9"
#7	14"	14"	12"	11"
#8	16"	16"	14"	12"
#9	19"	18"	15"	14"
#10	22"	20"	17"	15"
#11	24"	22"	19"	17"



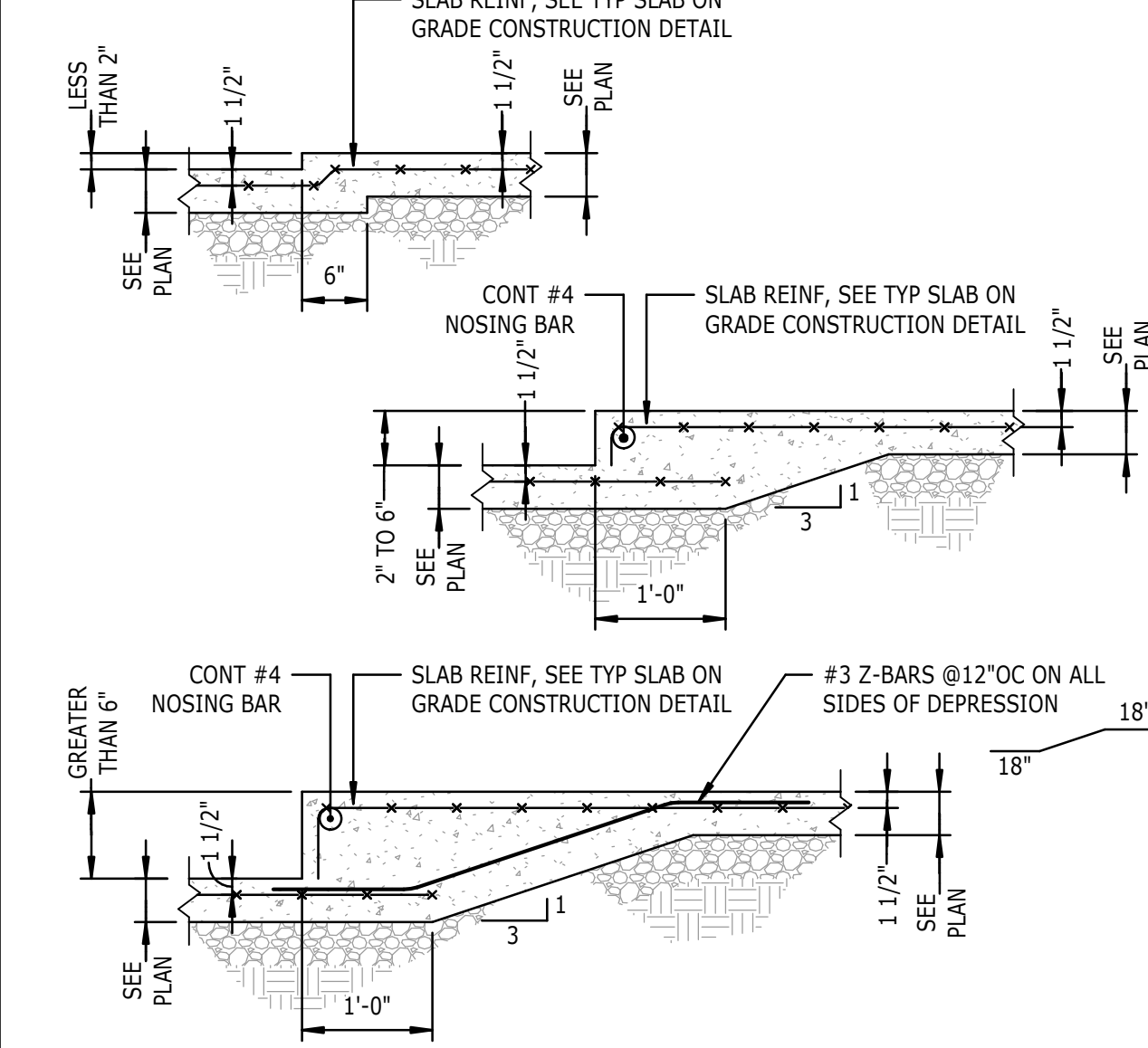
**6 TYPICAL FOOTING AT STEEL COLUMN**  
 S301 NTS



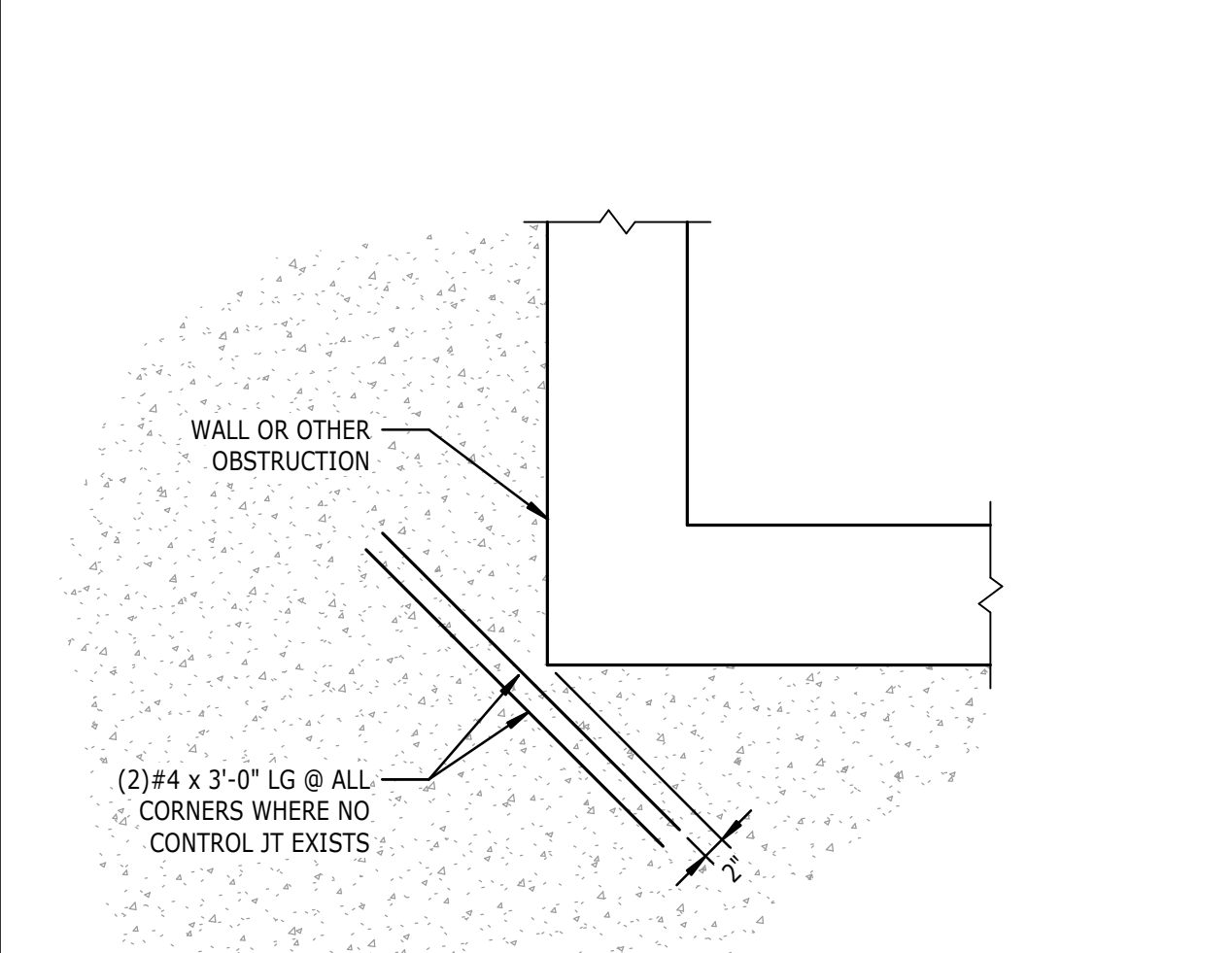
**7 TYPICAL FOOTING CORNER**  
 S301 NTS



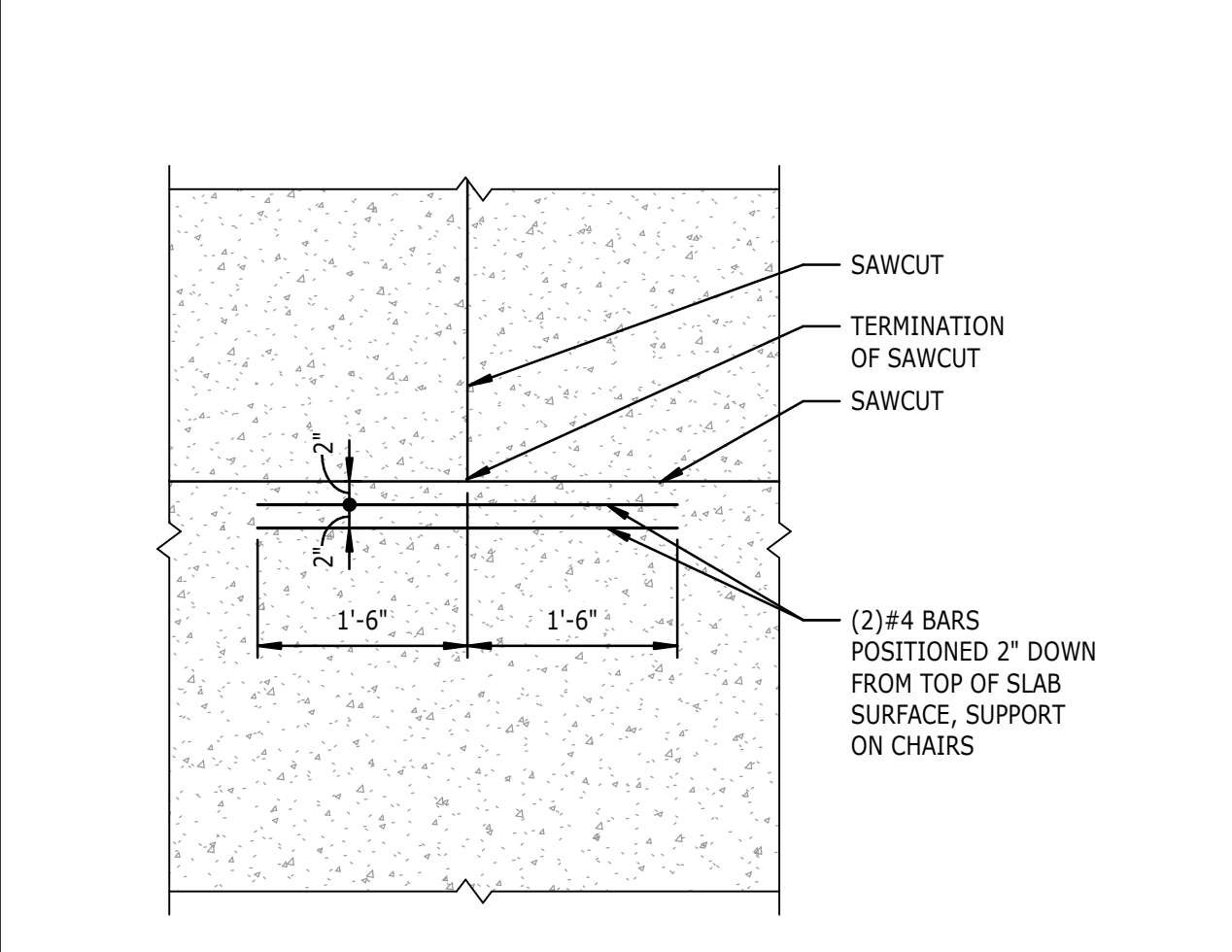
**8 TYPICAL TURNDOWN DETAIL**  
 S301 NTS



**1 TYPICAL STEP IN SLAB ON GRADE**  
 S301 NTS



**2 TYPICAL SLAB AT CORNERS**  
 S301 NTS

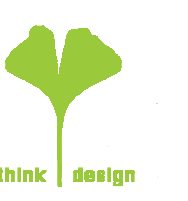


**3 TYPICAL AT CONTROL JOINT TERMINATION**  
 S301 NTS

BAR SIZE	CONCRETE REINFORCING SPLICES		
	f <sub>c</sub> = 3,000 PSI	f <sub>c</sub> = 4,000 PSI	f <sub>c</sub> = 5,000 PSI
#3	1'-10"	1'-7"	1'-5"
#4	2'-4"	2'-1"	1'-10"
#5	3'-0"	2'-7"	2'-4"
#6	3'-7"	3'-1"	2'-9"
#7	5'-2"	4'-6"	4'-1"
#8	5'-11"	5'-2"	4'-8"
#9	6'-6"	5'-10"	5'-3"
#10	7'-6"	6'-6"	5'-10"
#11	8'-4"	7'-3"	6'-6"

- NOTES:  
 1. FOR CLASS B LAP SPLICE, SPLICE LENGTH = 1.3 x DEVELOPMENT LENGTH.  
 2. APPLIES TO BOTTOM BARS ONLY (LESS THAN 12" OF FRESH CONCRETE BELOW BAR).  
 3. APPLIES WHERE THE CLEAR COVER IS GREATER THAN THE BAR DIAMETER.  
 4. WHEN MORE THAN 12" OF FRESH CONCRETE BELOW SPLICE, THEN INCREASE SPLICE TO 1.3 x SPLICE LENGTH.

**4 CONCRETE REINFORCING SPLICE SCHEDULE**  
 S301 NTS



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 RUM Engineering  
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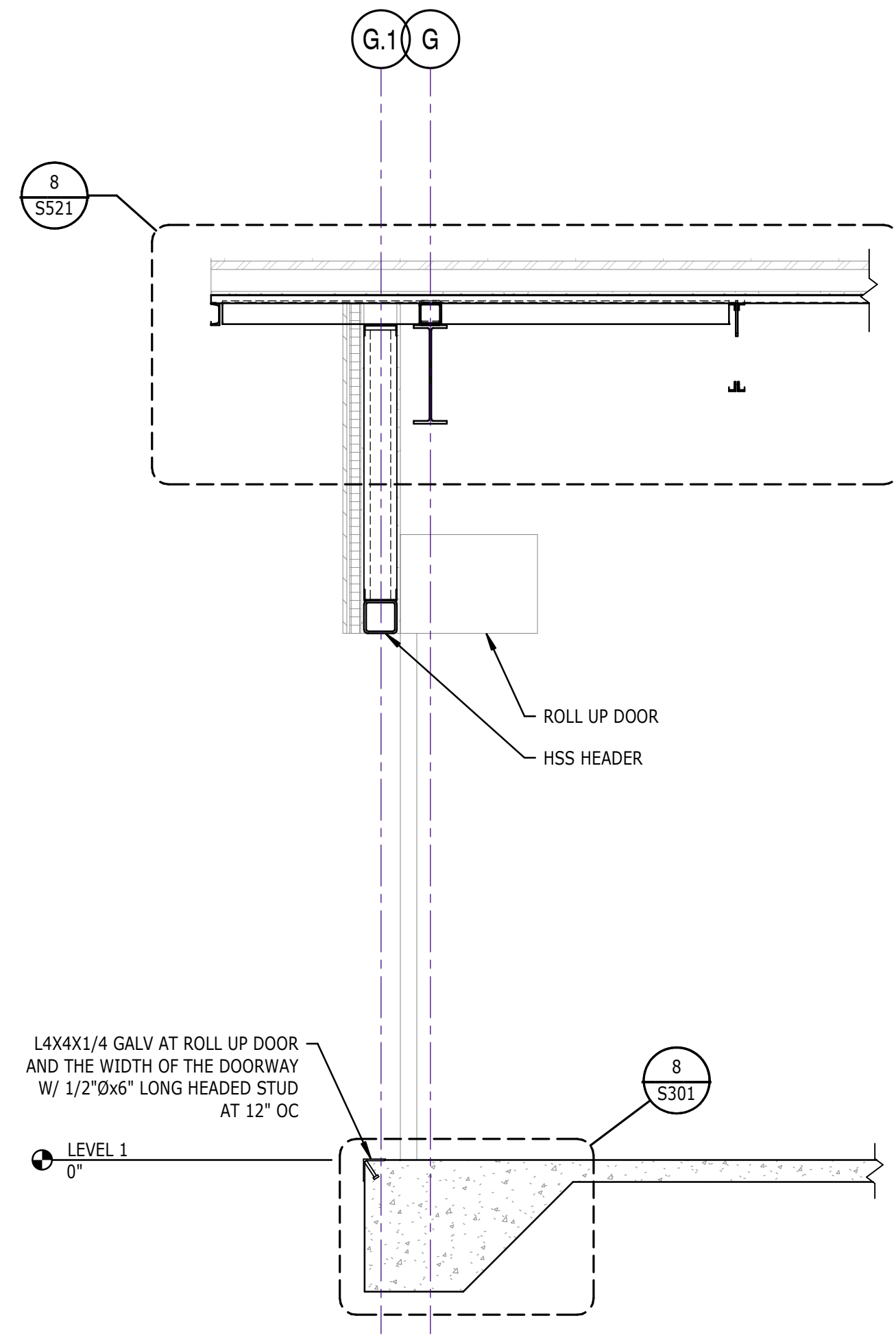
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**SLAB ON GRADE AND FOUNDATION DETAILS**

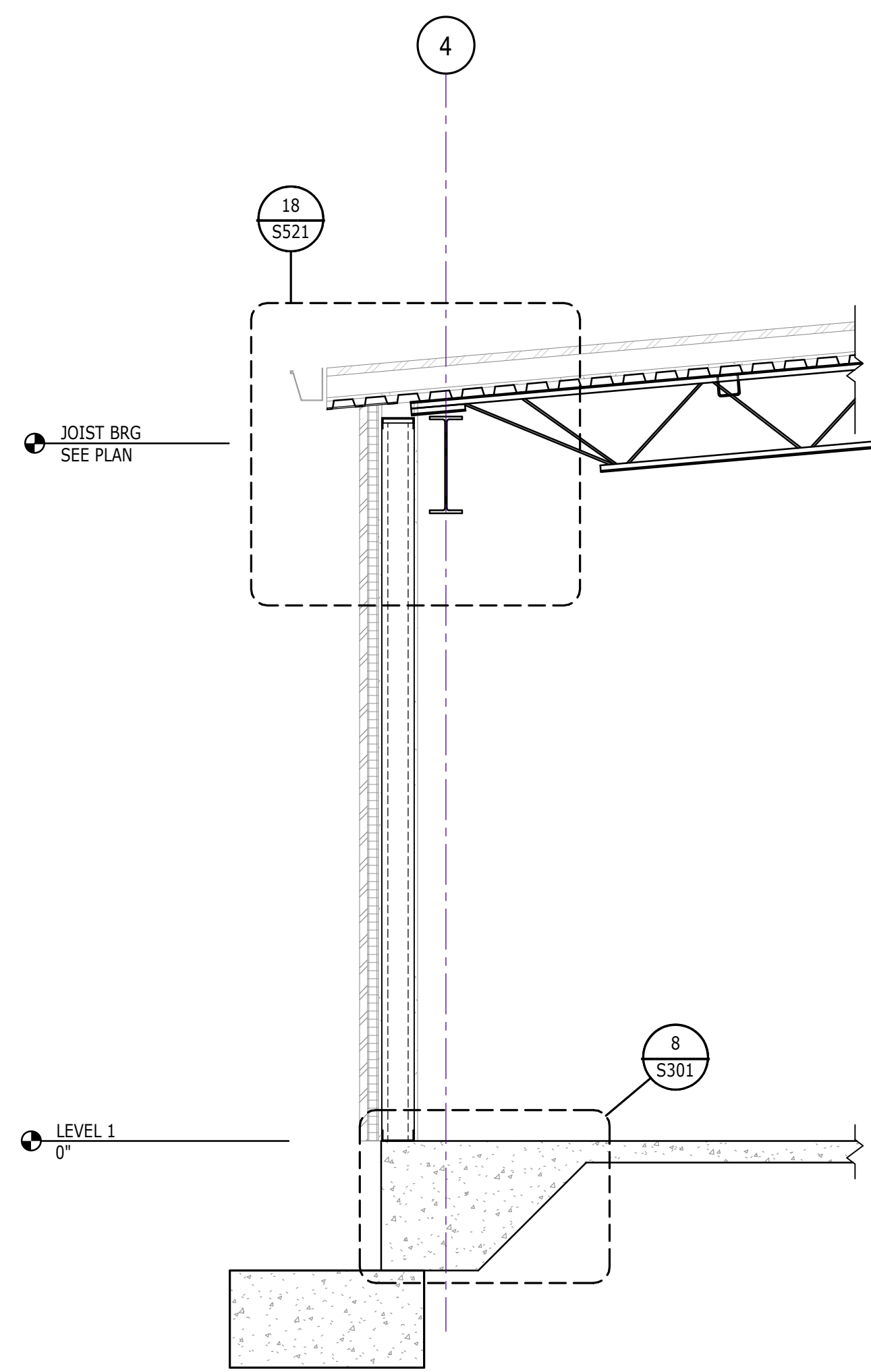
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**S301**

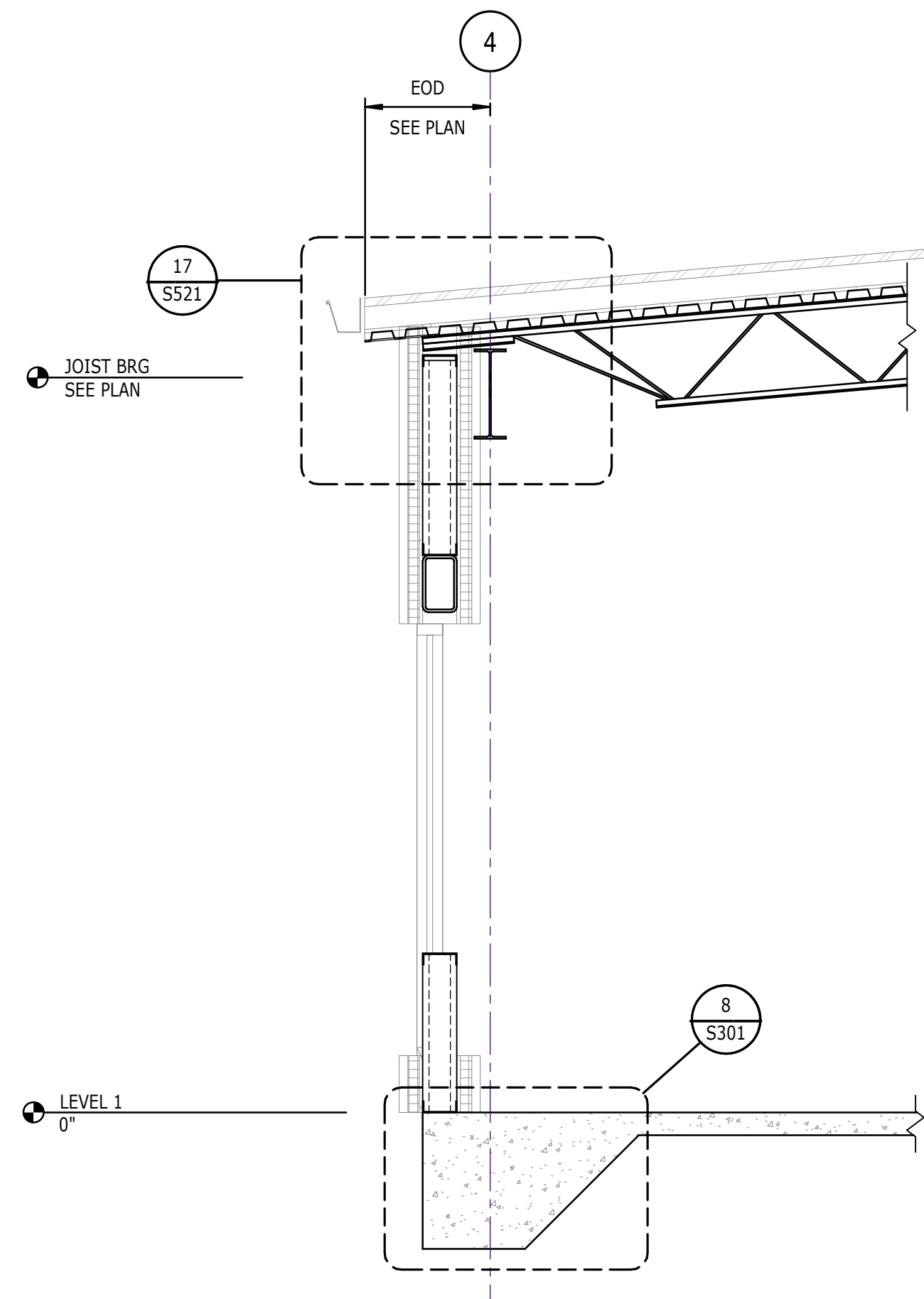
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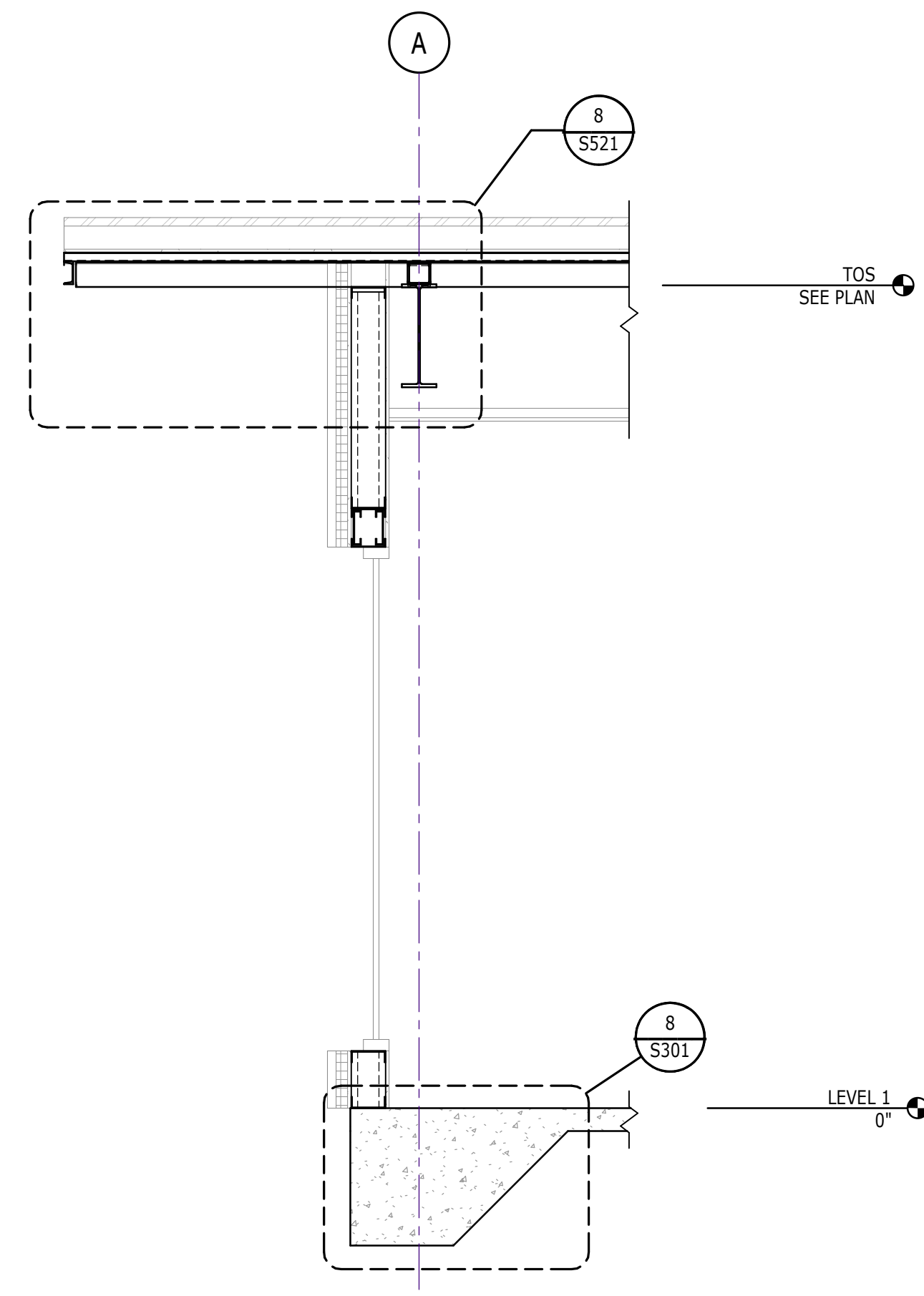
17 SECTION  
S311 1/2" = 1'-0"



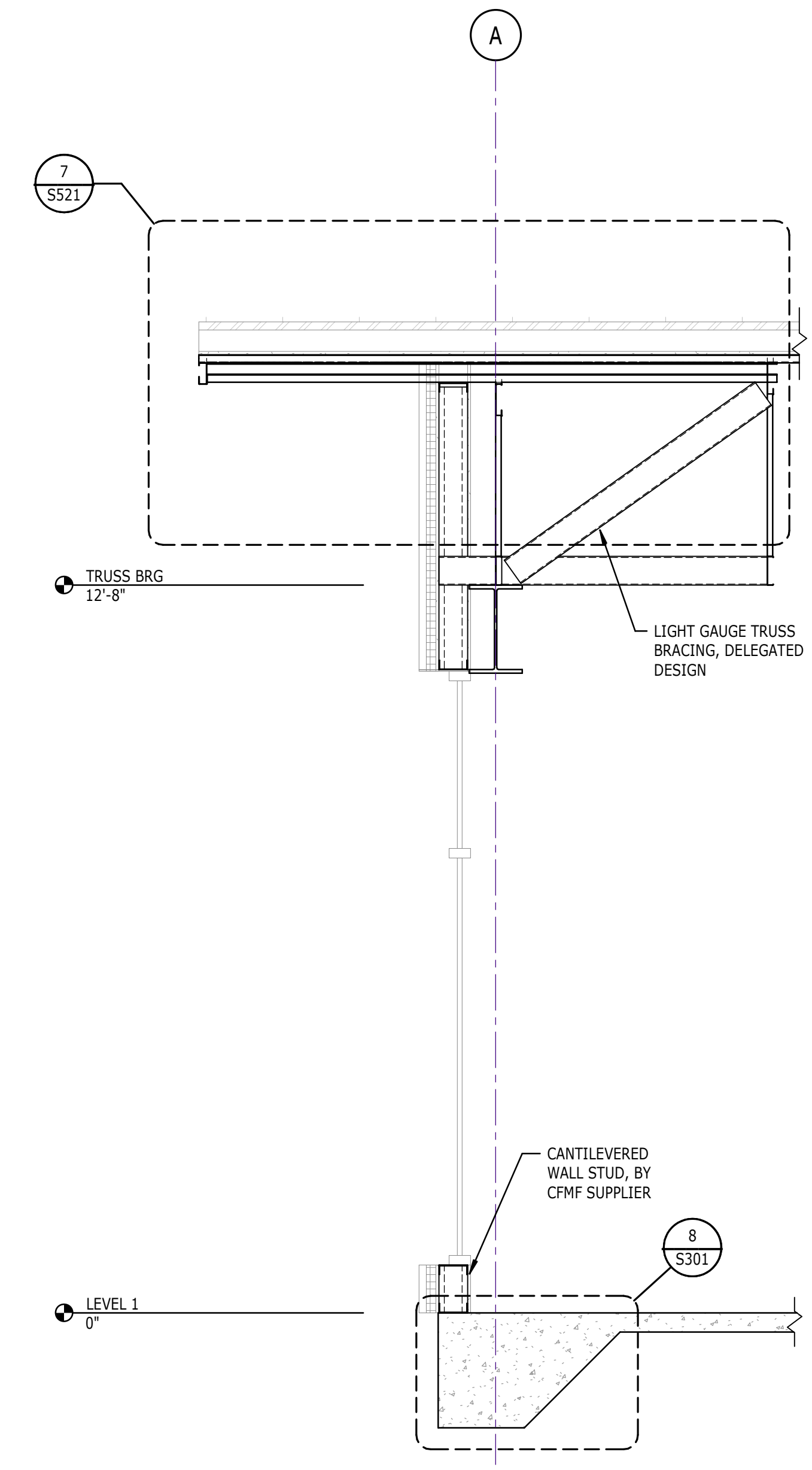
13 SECTION  
S311 1/2" = 1'-0"



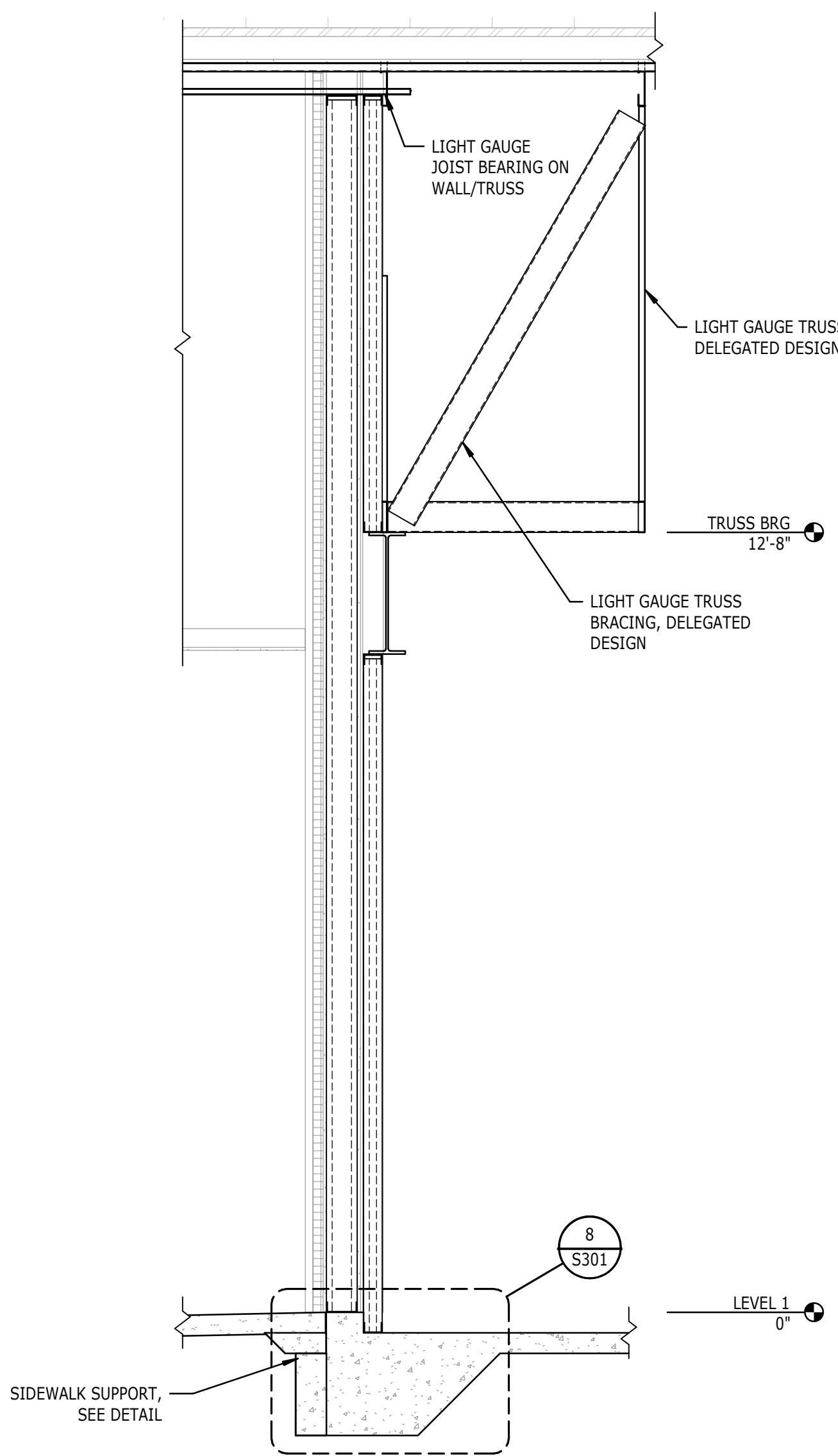
9 SECTION  
S311 1/2" = 1'-0"



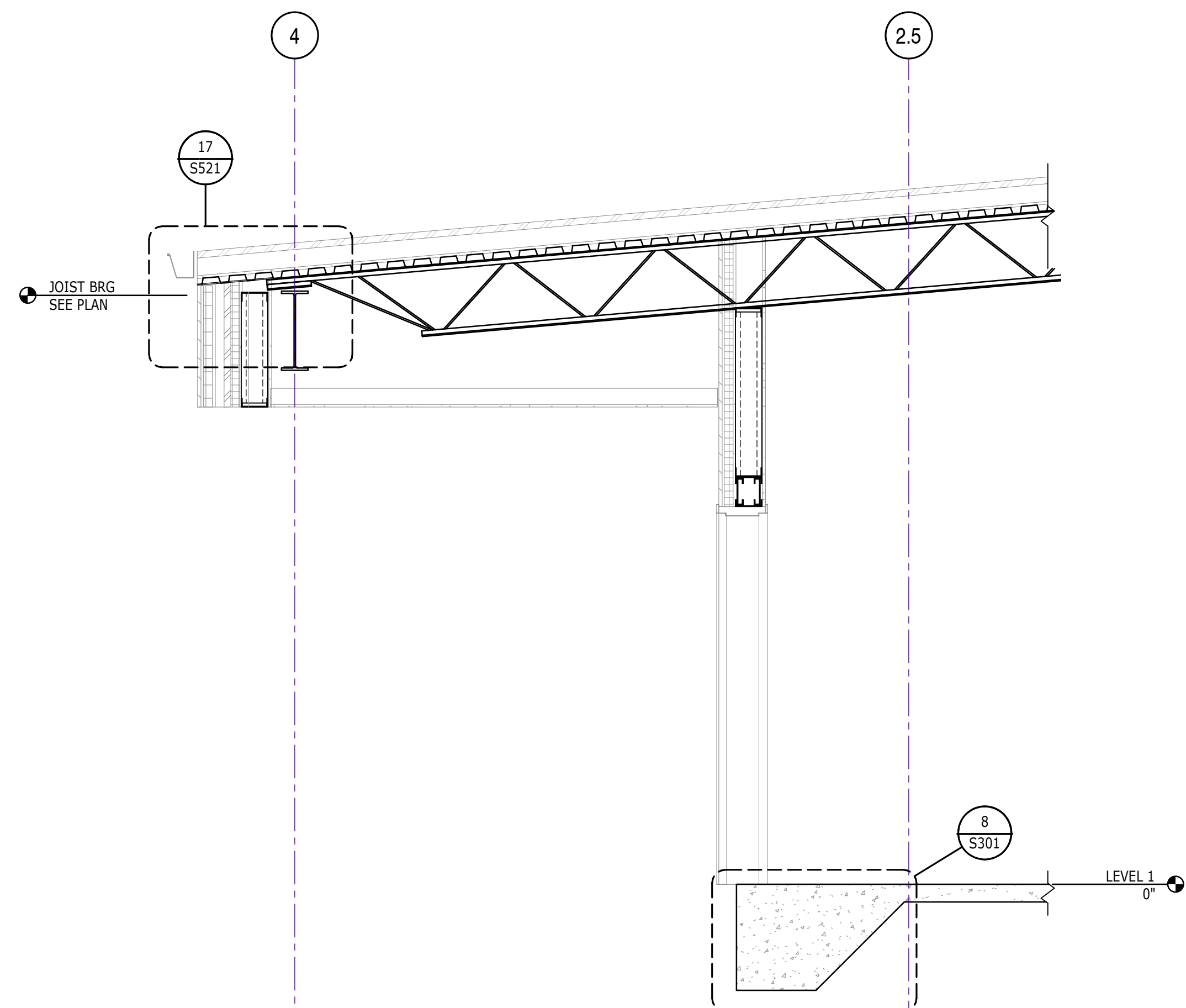
5 SECTION  
S311 1/2" = 1'-0"



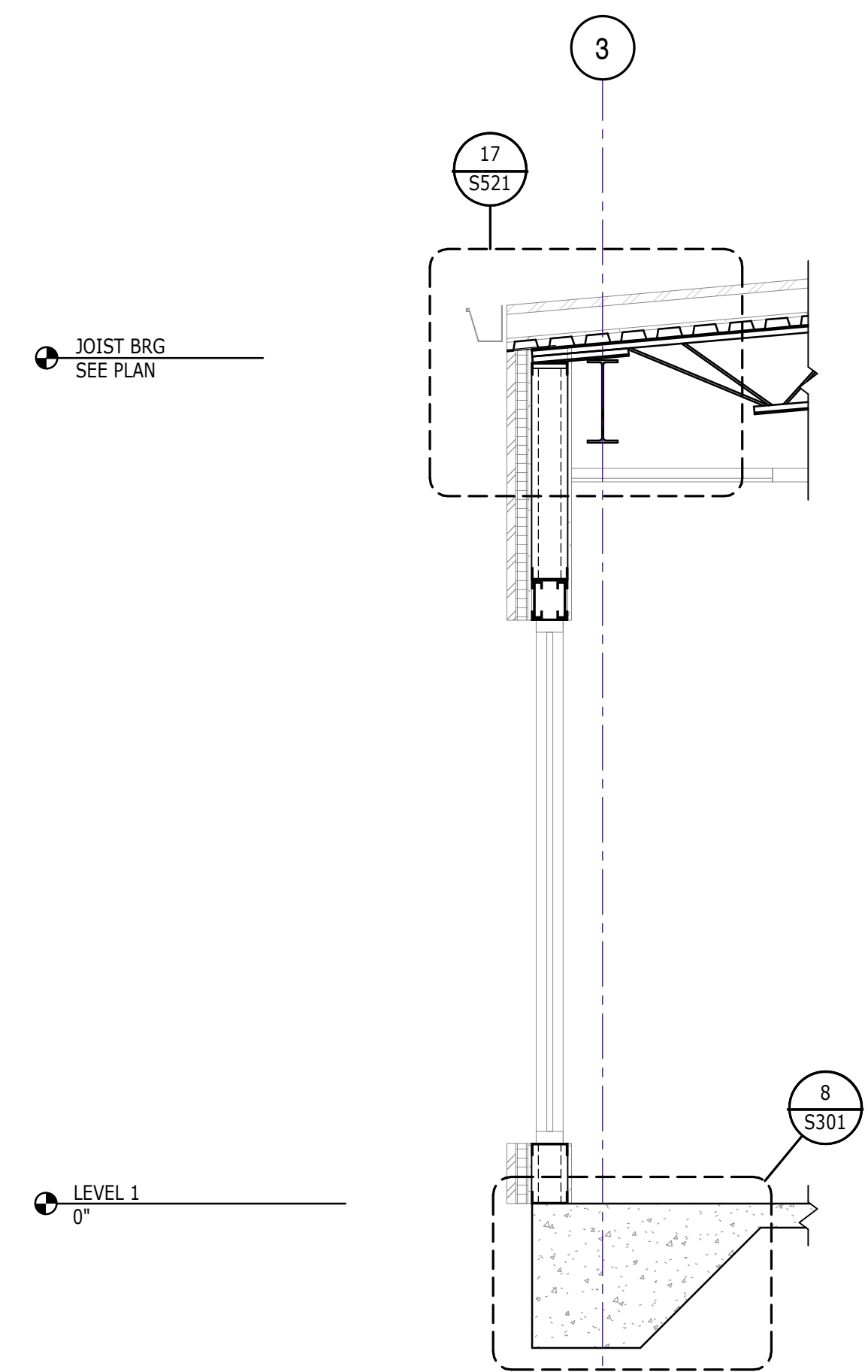
1 SECTION  
S311 1/2" = 1'-0"



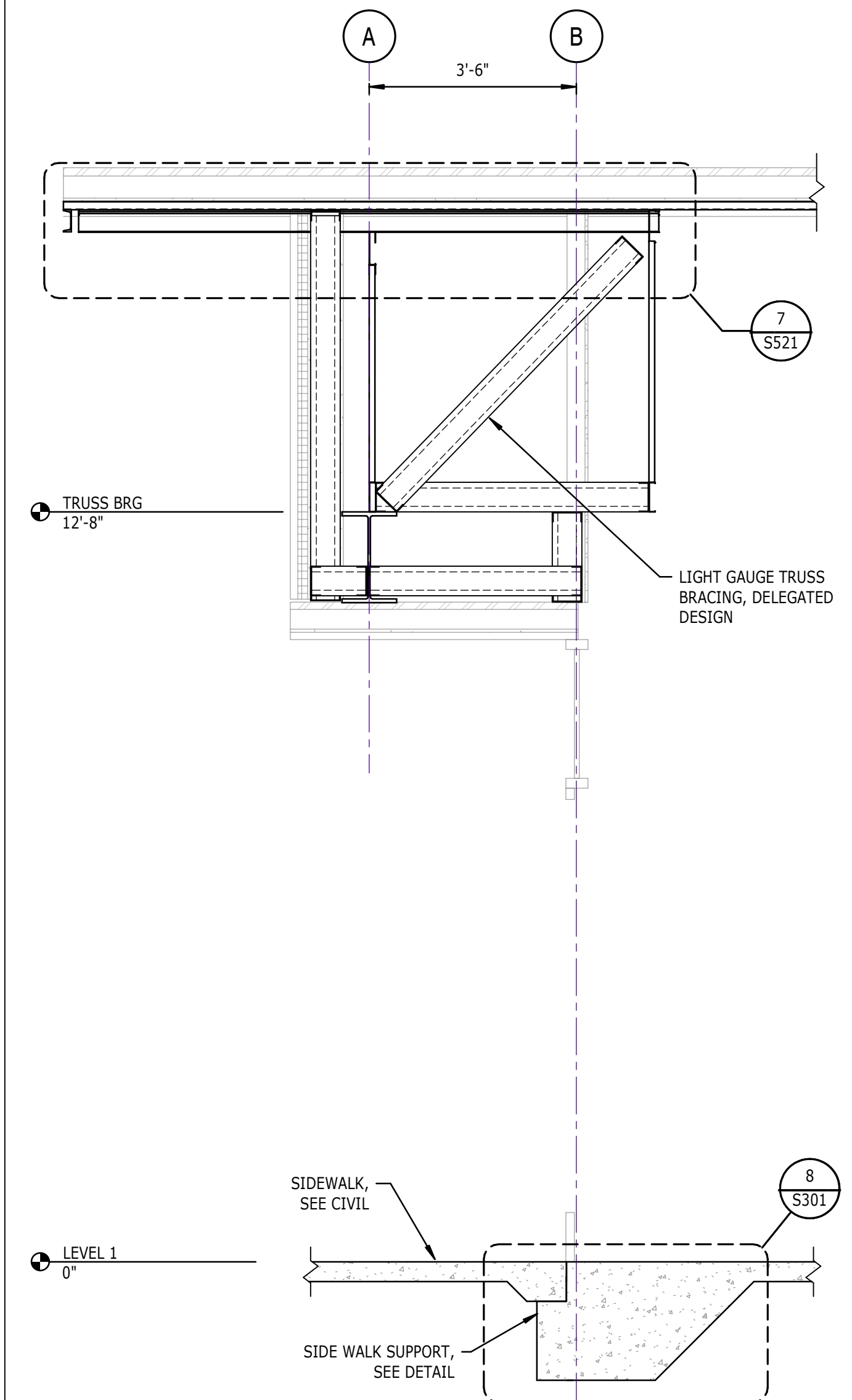
19 SECTION  
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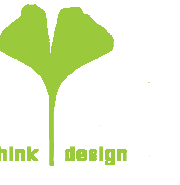
11 SECTION  
S311 1/2" = 1'-0"



7 SECTION  
S311 1/2" = 1'-0"



3 SECTION  
S311 1/2" = 1'-0"

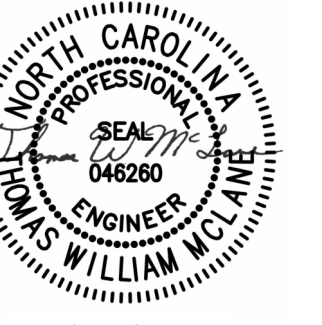


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01/10/2025

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Date: 01/10/2025

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NCSU Apiculture Facility

Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

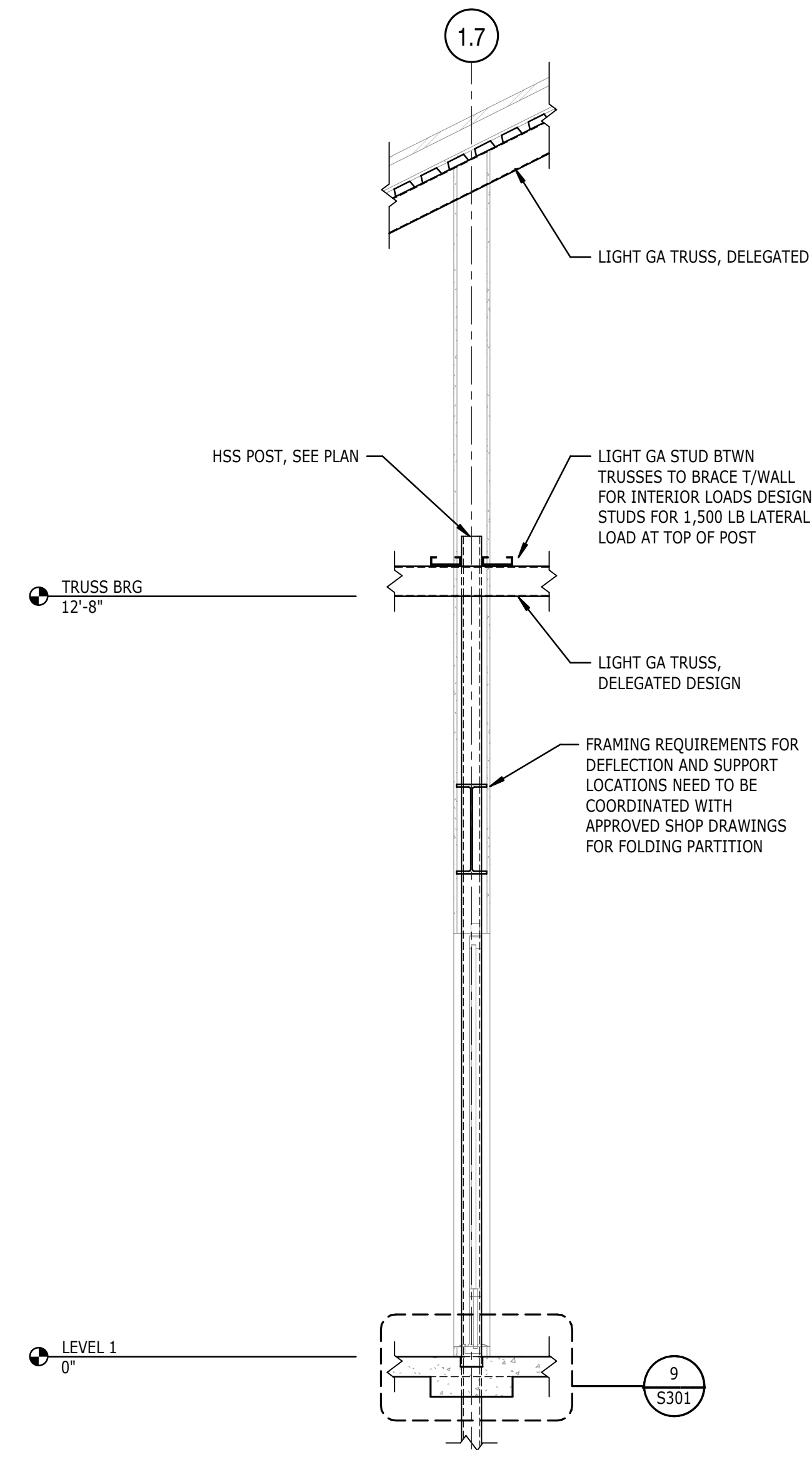
Project Number 132

SECTIONS

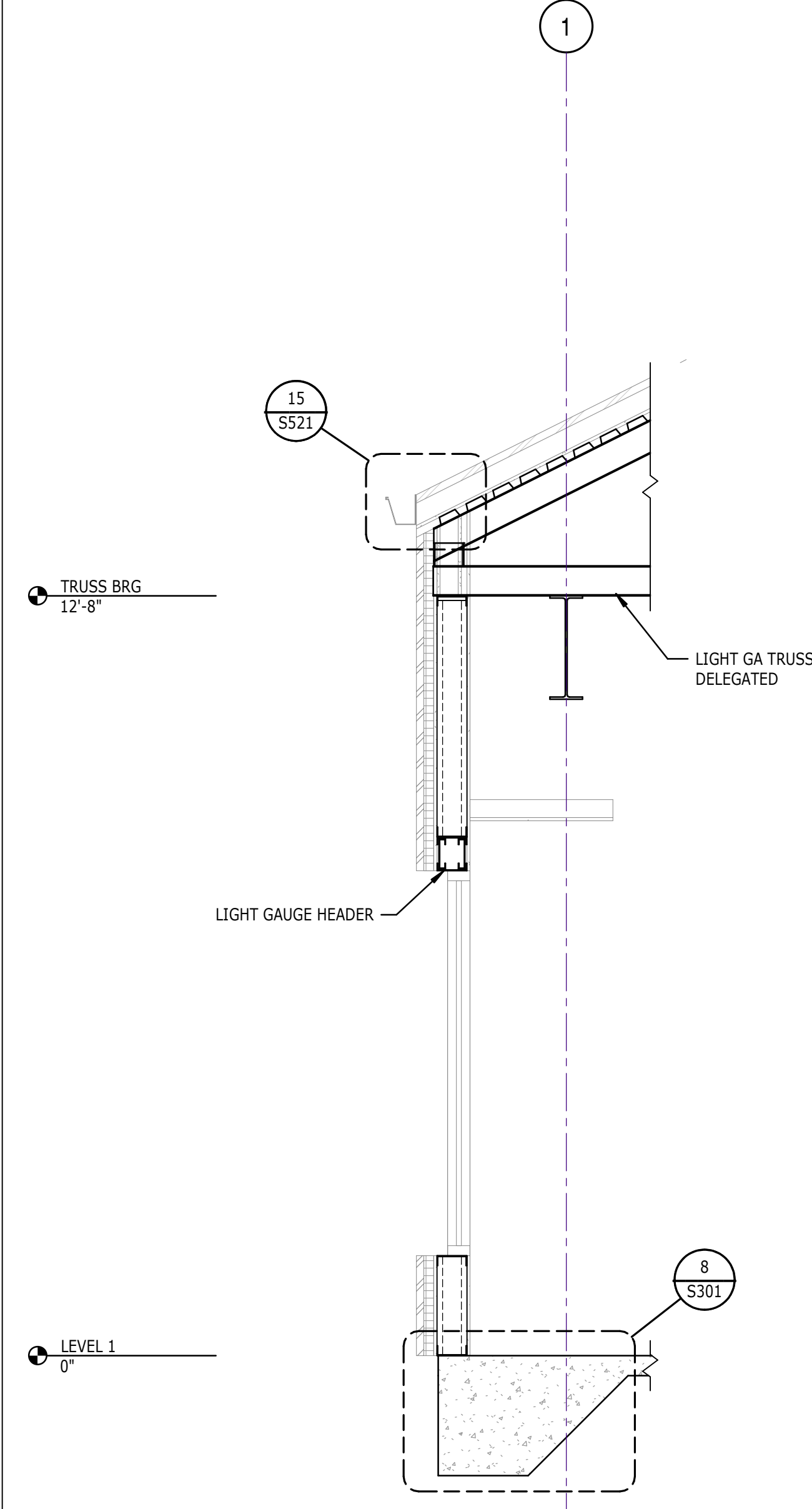
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S311

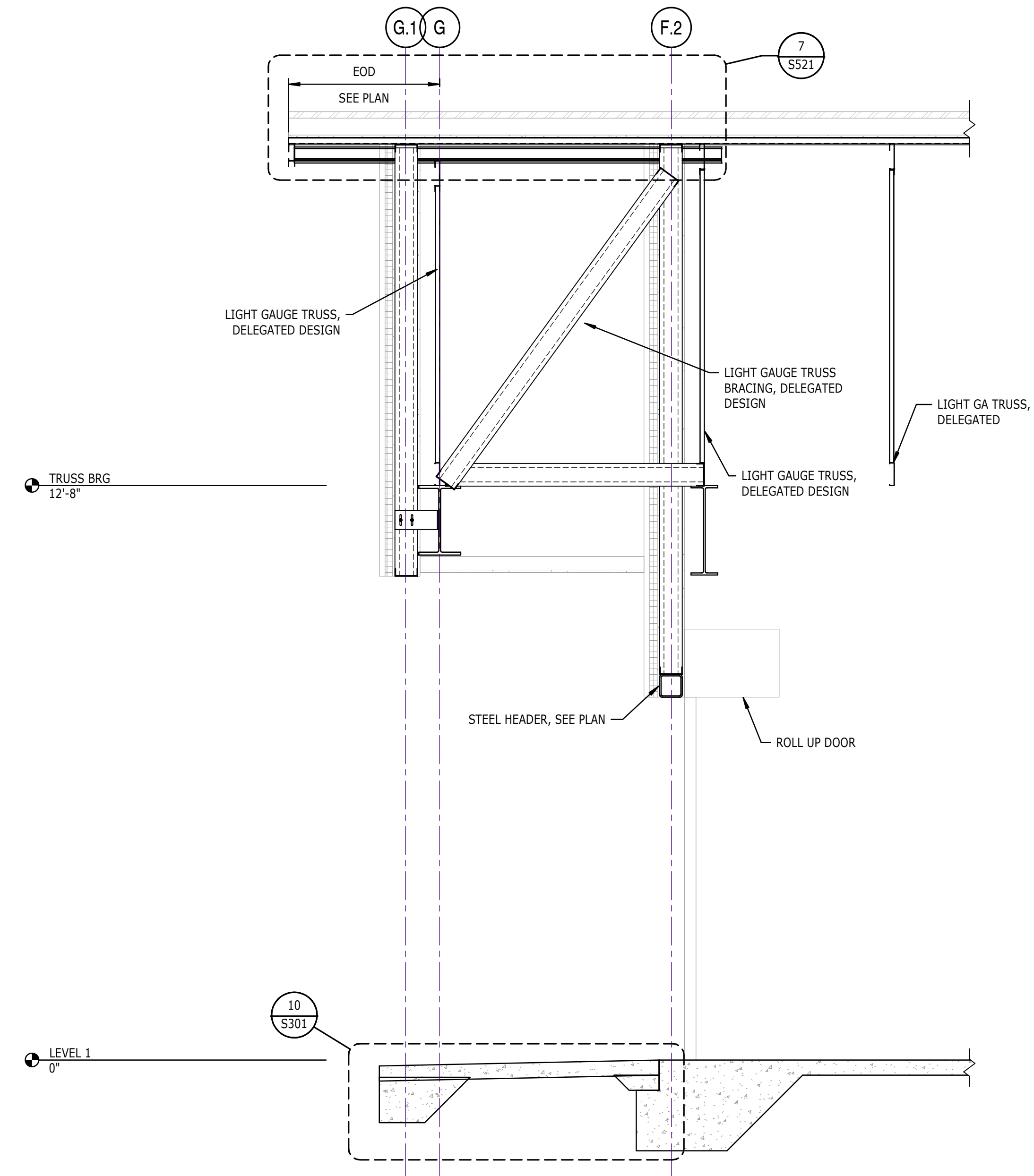
Plate



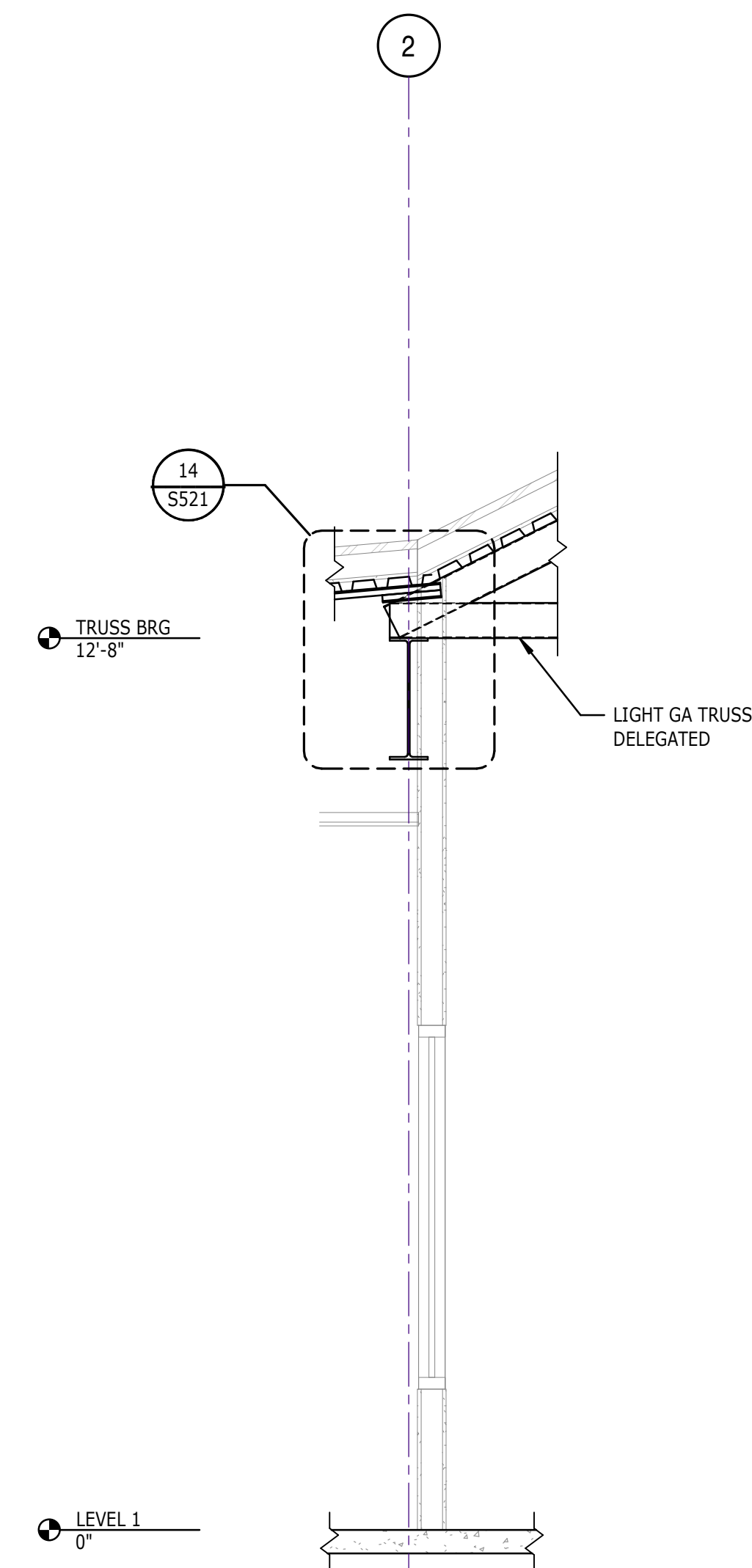
13 SECTION  
S312 1/2" = 1'-0"



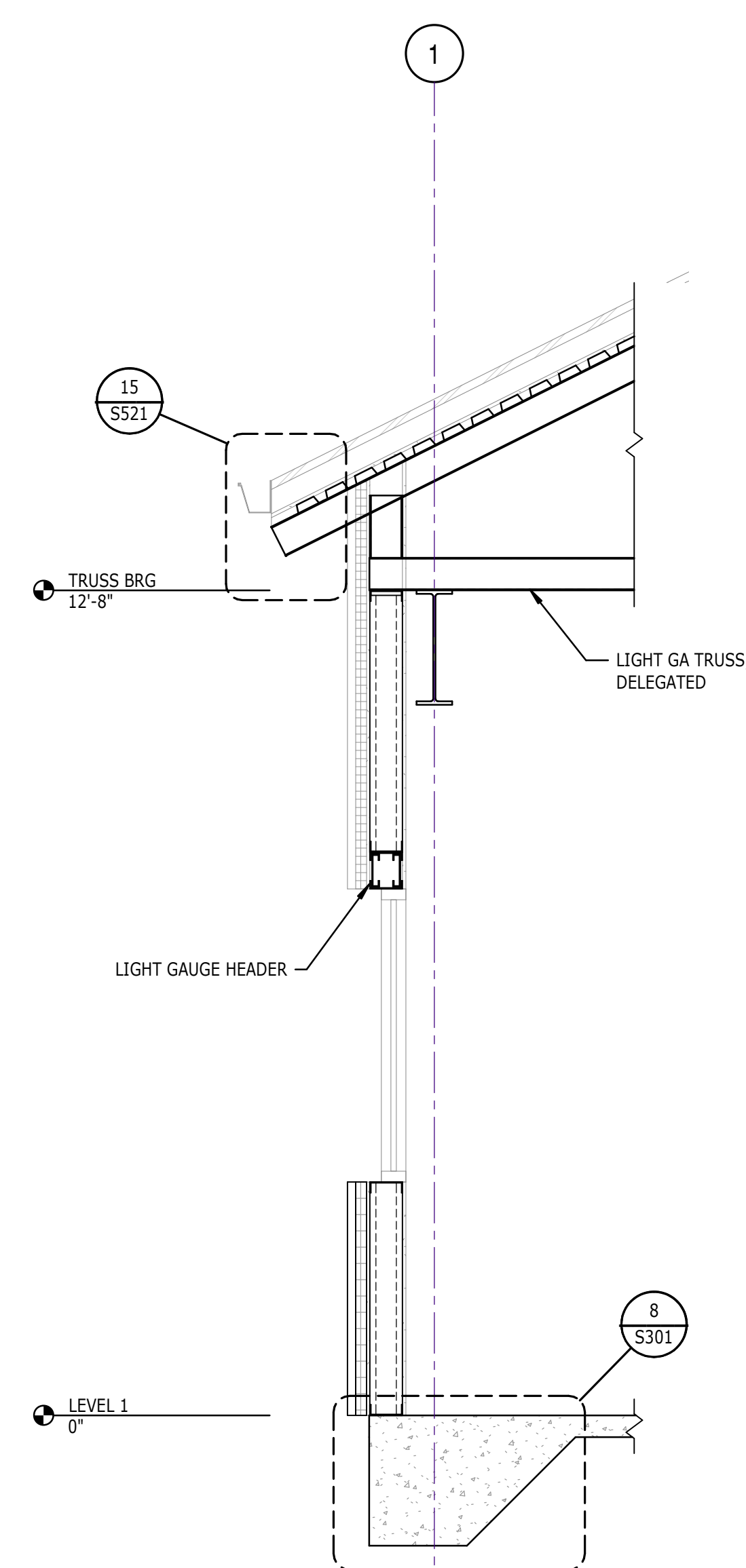
9 SECTION  
S312 1/2" = 1'-0"



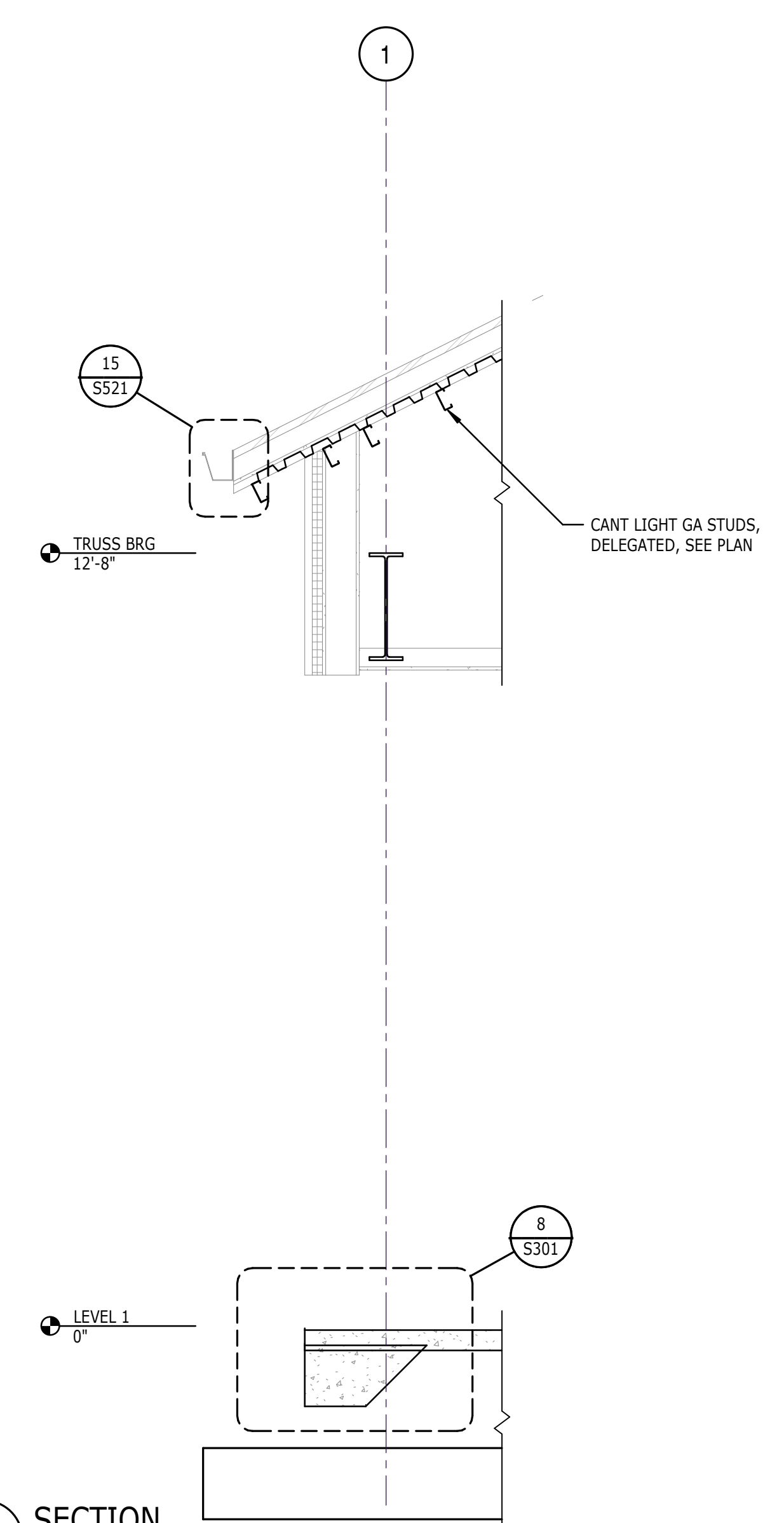
1 SECTION  
S312 1/2" = 1'-0"



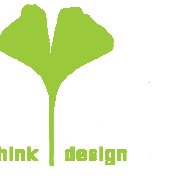
11 SECTION  
S312 1/2" = 1'-0"



7 SECTION  
S312 1/2" = 1'-0"



3 SECTION  
S312 1/2" = 1'-0"

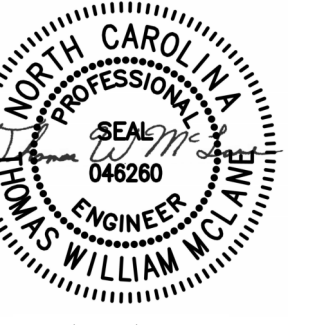


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SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
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Project Number 132

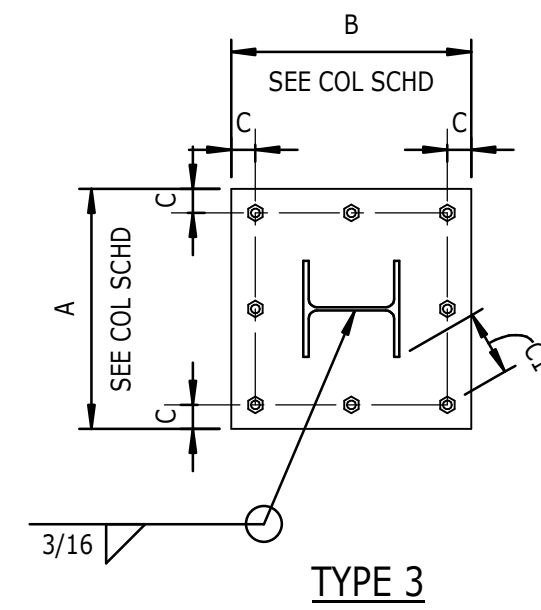
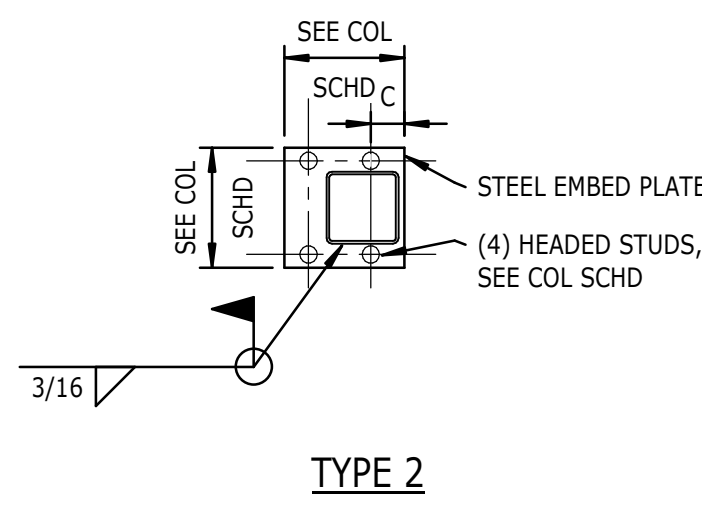
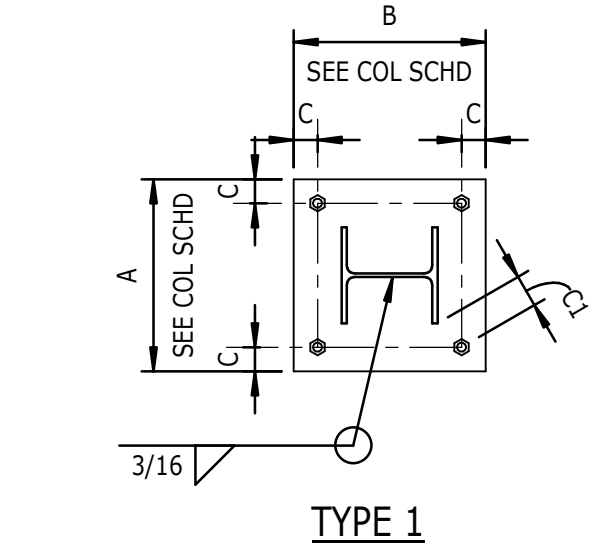
Title  
**SECTIONS**

Sheet

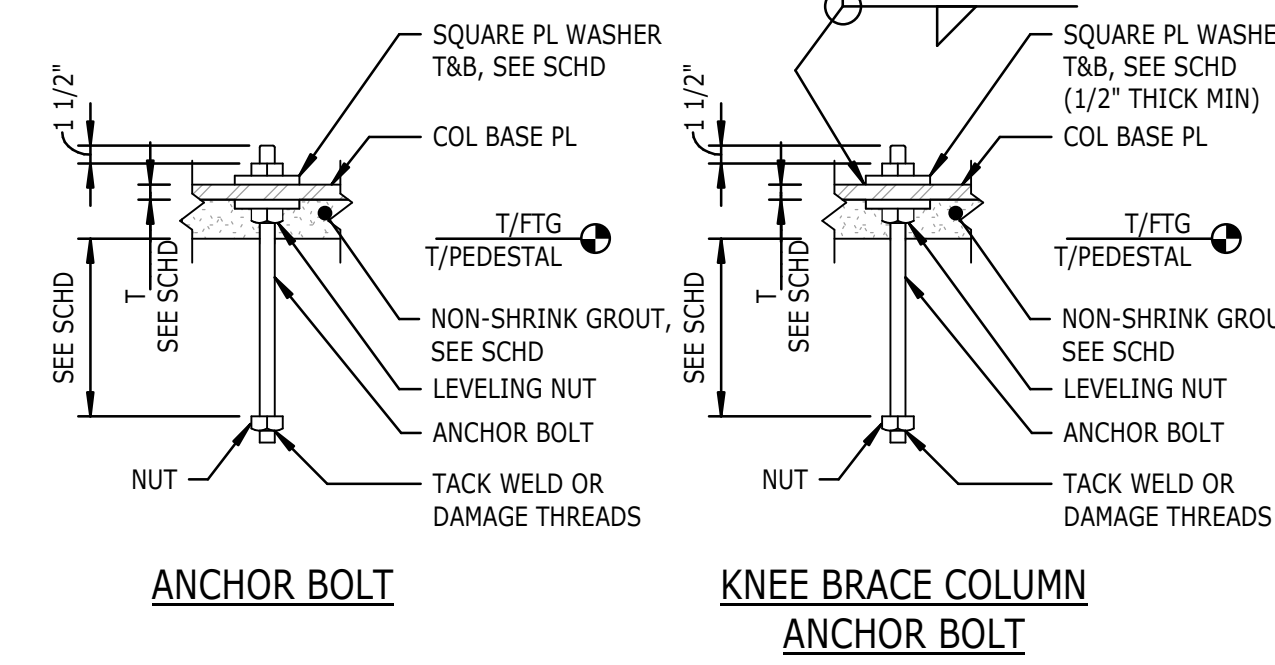
**S312**

Plate

STEEL COLUMN SCHEDULE												
TRUSS BRG												TRUSS BRG
12'-8"												12'-8"
LEVEL 1	W10x33	W10x45	W10x45	HSS4x4x3/8	W10x54	W10x54	W10x45	W10x54	W10x45	HSS6x6x1/4	HSS6x6x1/4	LEVEL 1
0"												0"
Column Locations	A-1, D-1	A-2	A-3	B-1.7, C.1-1.7	C-2	C-4, E-4, G-4	E-1	E-2, G-2	F-1	F.2-1.5	G.1-2.5	



STEEL COLUMN BASE PLATE SCHEDULE						
LOCATION	SIZE	BASE PLATE SIZE	ANCHOR BOLTS	PATTERN TYPE	EMBEDMENT DEPTH	
A-1	W10x33	1'x16"x16"	(4)3/4"Ø	1	9"	
A-2	W10x45	1'x18"x18"	(8)1"Ø	3	9"	
A-3	W10x45	1'x18"x18"	(8)1"Ø	3	9"	
B-1.7	HSS4x4x3/8	1'x10"x10"	(4)3/4"Ø	1	7"	
C-2	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
C-4	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
C.1-1.7	HSS4x4x3/8	1'x10"x10"	(4)3/4"Ø	1	7"	
D-1	W10x33	1'x16"x16"	(4)3/4"Ø	1	9"	
E-1	W10x45	1'x18"x18"	(8)1"Ø	3	9"	
E-2	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
E-4	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
F-1	W10x45	1'x18"x18"	(8)1"Ø	3	9"	
F.2-1.5	HSS6x6x1/4	1/2"x10"x10"	(4)3/4"Ø	2	6"	
G-2	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
G-4	W10x54	1'x18"x18"	(8)1"Ø	3	9"	
G.1-2.5	HSS6x6x1/4	1/2"x10"x10"	(4)3/4"Ø	2	6"	

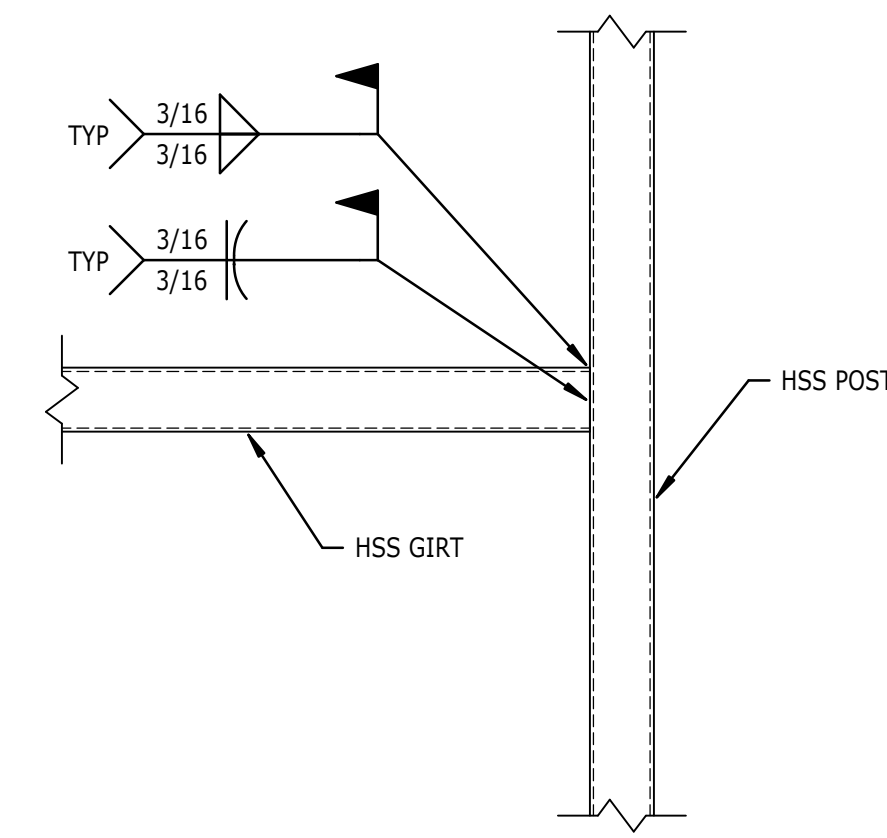


BOLT SIZE	3/4"Ø	1"Ø
BOLT GRADE	36 KSI	36 KSI
DIMENSION "C"	1 1/2"	2"
SQUARE PL WASHER SIZE	1/4"x2"	3/8"x3"
GROUT THICKNESS	2"	2"
TIGHTENING CLEARANCE "C1"	1 3/16"	1 3/8"

NOTE:  
1. "C1" DIMENSION IS MINIMUM FOR BASE PLATE SIZE. DETAIL TO LAYOUT ANCHOR BOLTS BASED ON "C" DIMENSION FROM EDGE OF BASE PLATE DIMENSION IN COLUMN SCHEDULE.

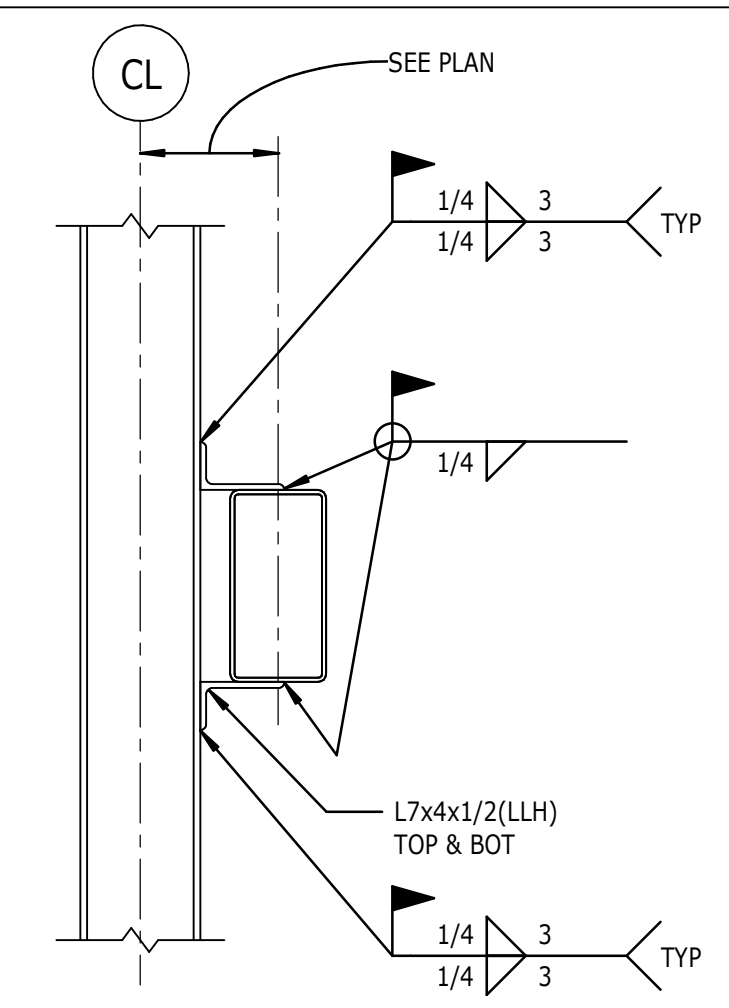
**1 STEEL COLUMN BASE PLATE SCHEDULE**

S501 NTS



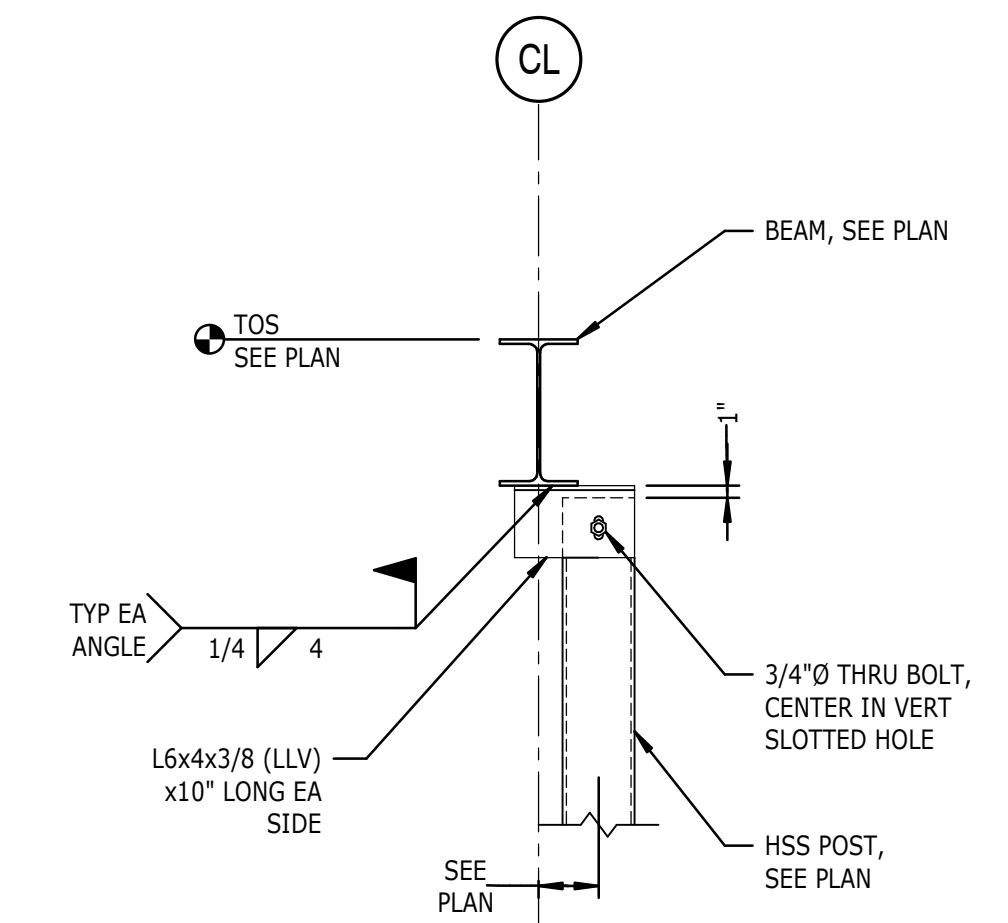
**7 HSS GIRT TO HSS COL CONNECTION**

S501 NTS



**3 HSS TO COLUMN CONNECTION**

S501 NTS

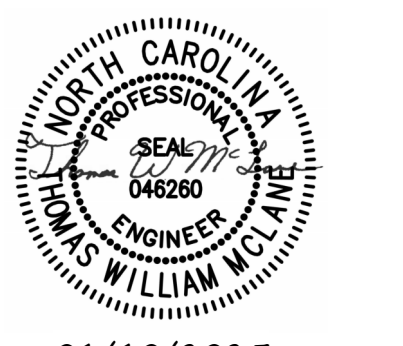


NOTES:  
1. DO NOT WELD CLIP ANGLES TO HSS POST.

**4 HSS TO BEAM CONNECTION**

S501 NTS

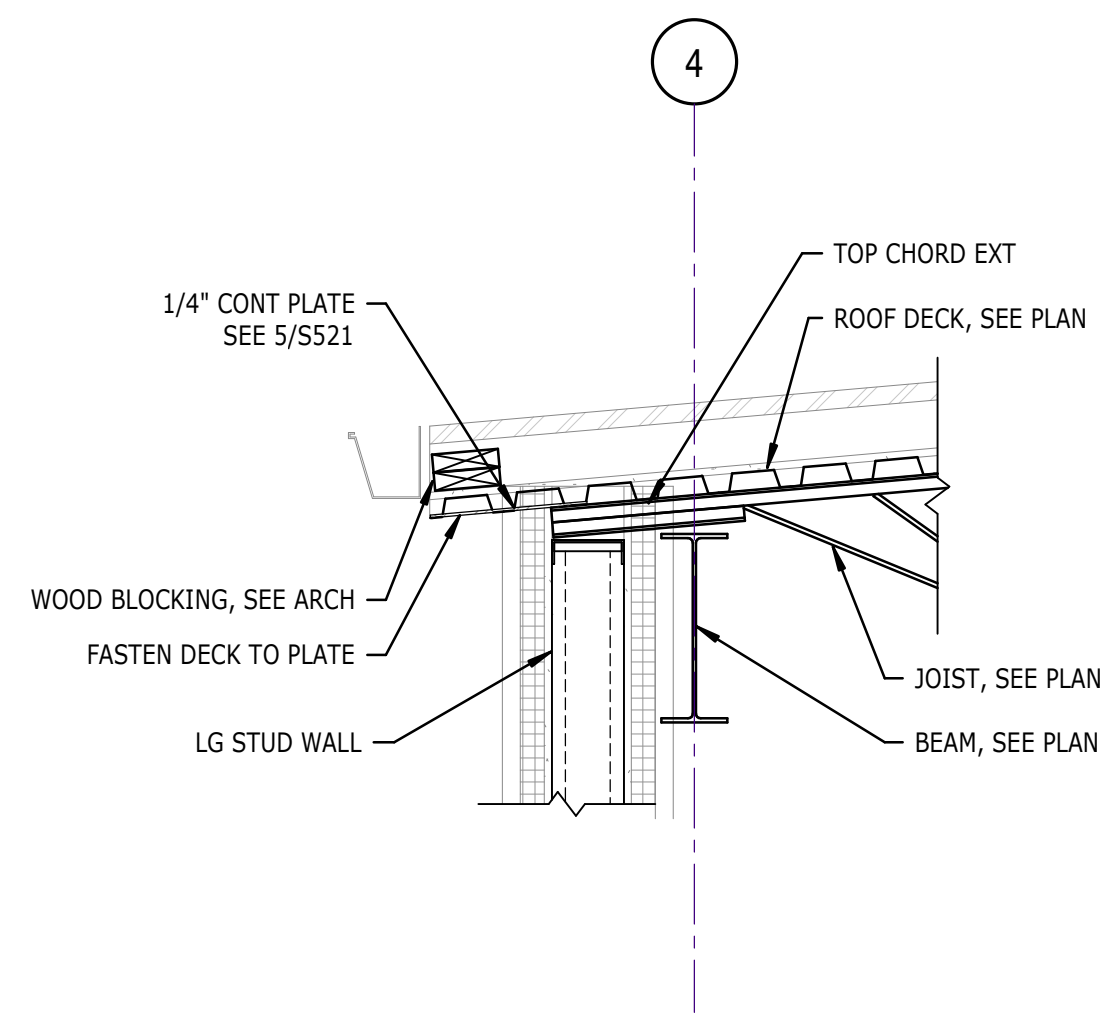
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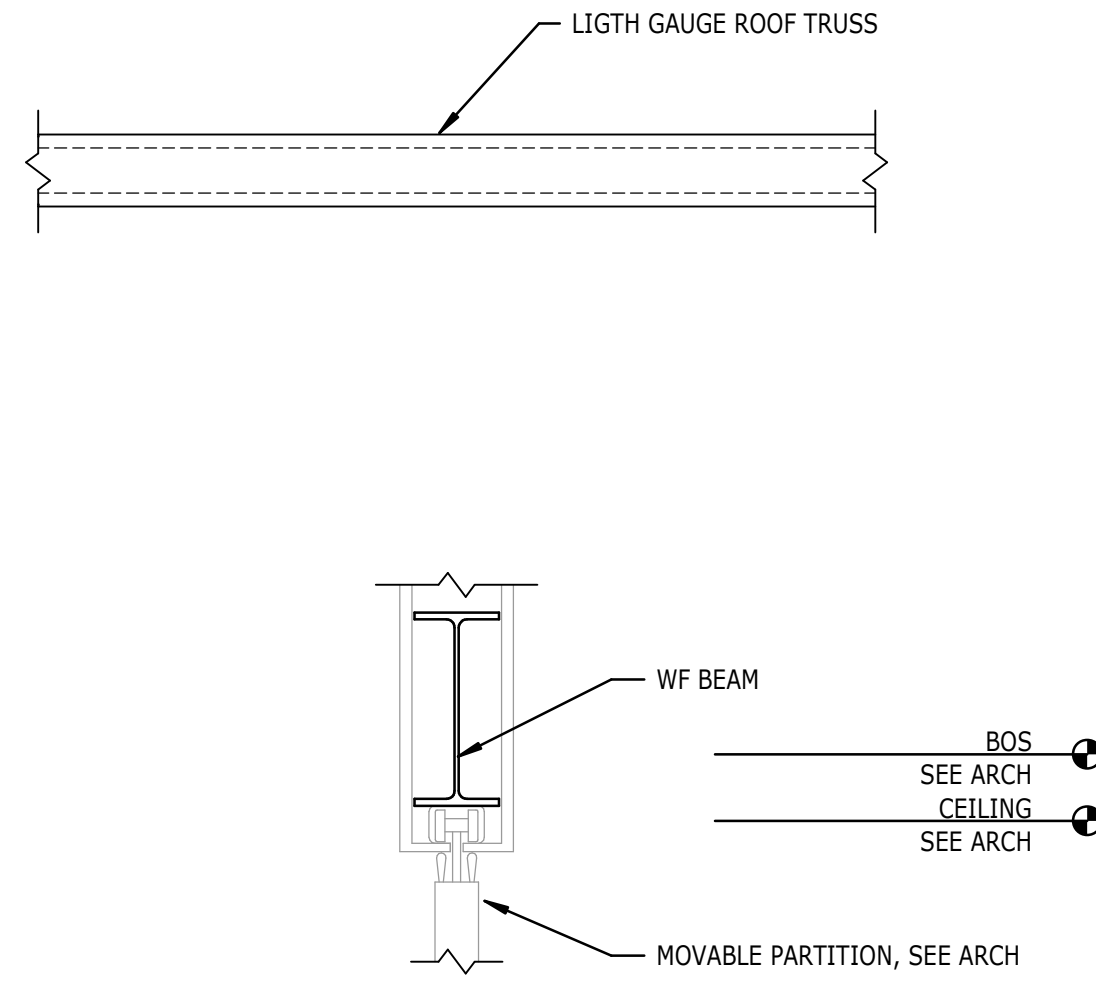
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Date: 01/10/2025

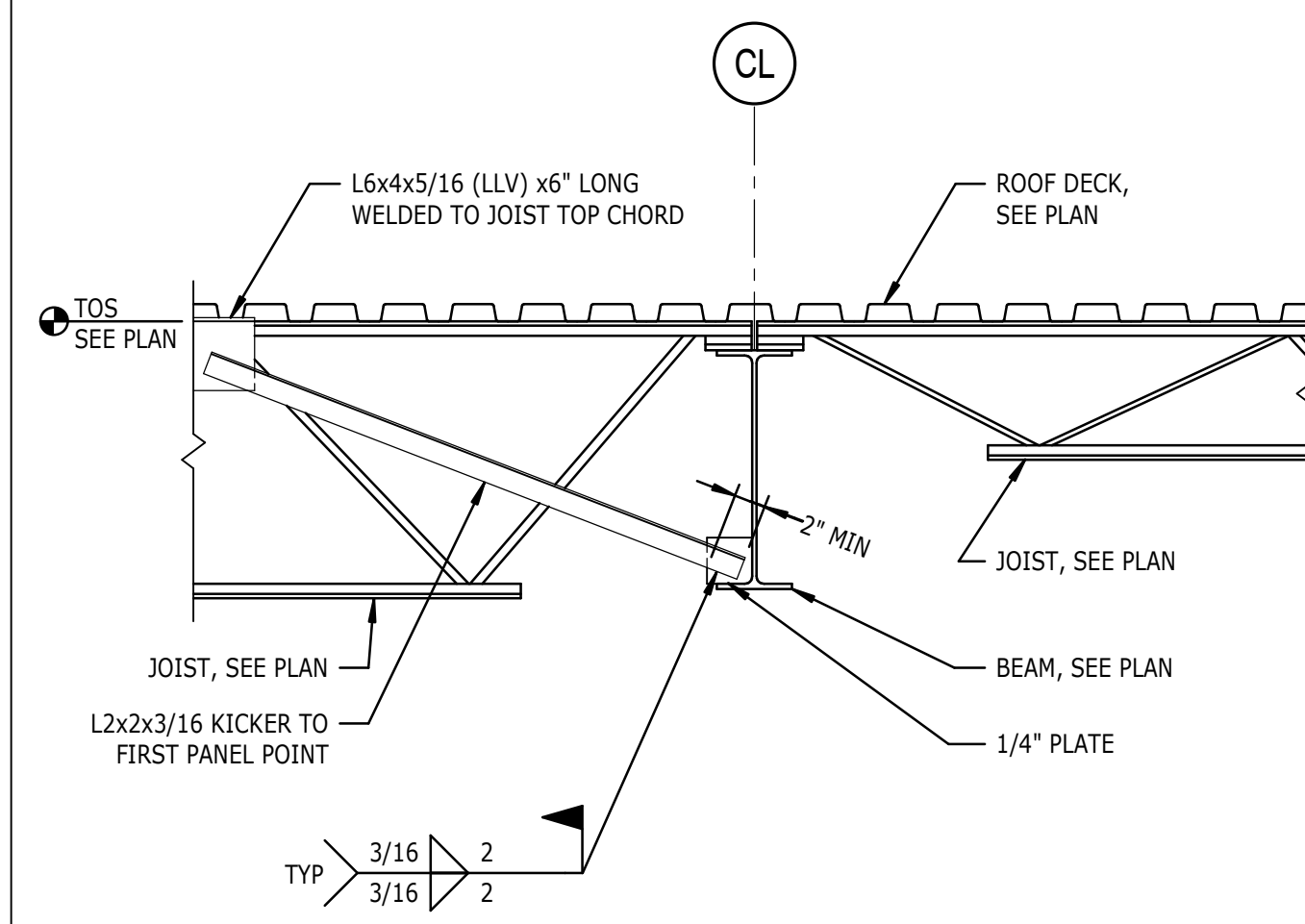
Revisions



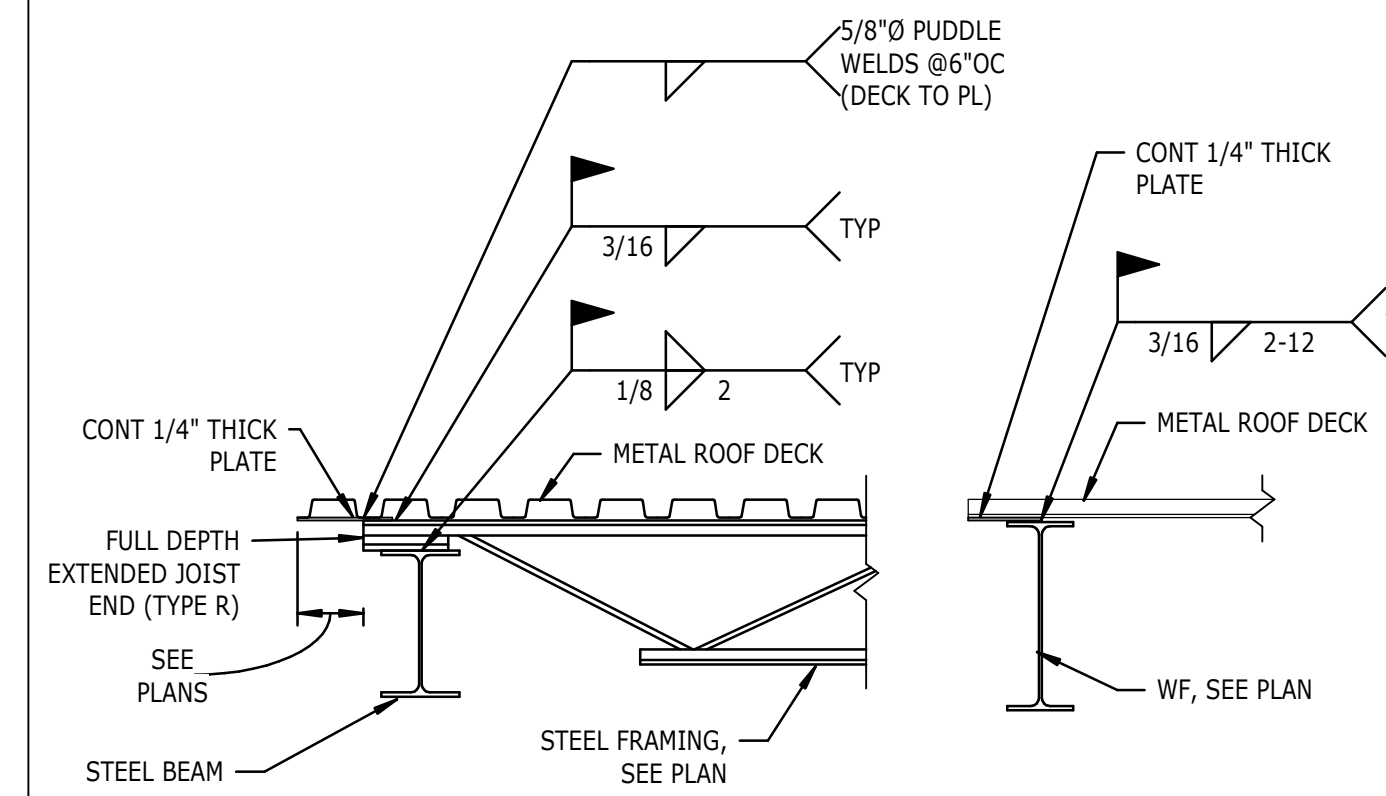
**17** TYPICAL LOW ROOF EDGE SECTION  
S521 3/4" = 1'-0"



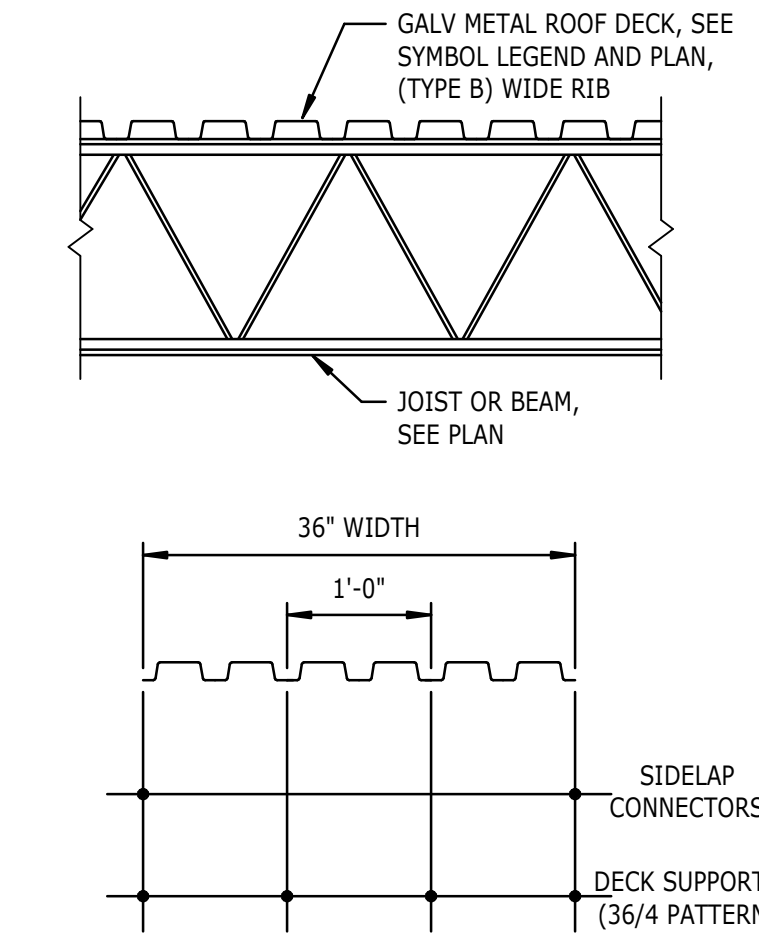
**13** TYPICAL MOVABLE PARTITION SECTION  
S521 3/4" = 1'-0"



**9** TYPICAL BEAM BOTTOM FLANGE BRACING  
S521 NTS



**5** TYPICAL EDGE OF DECK  
S521 NTS

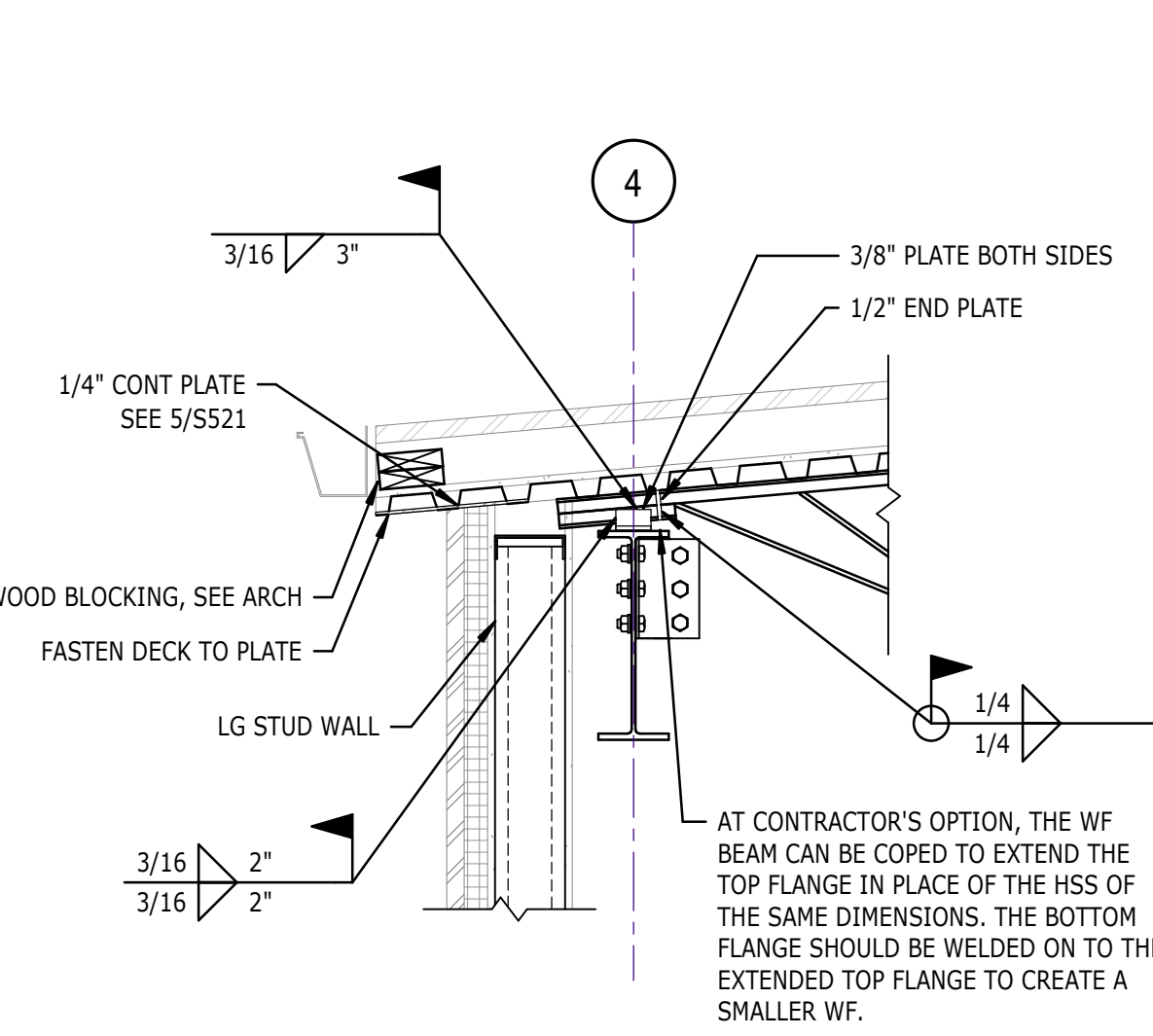


**ROOF DECK ATTACHMENT DETAIL**

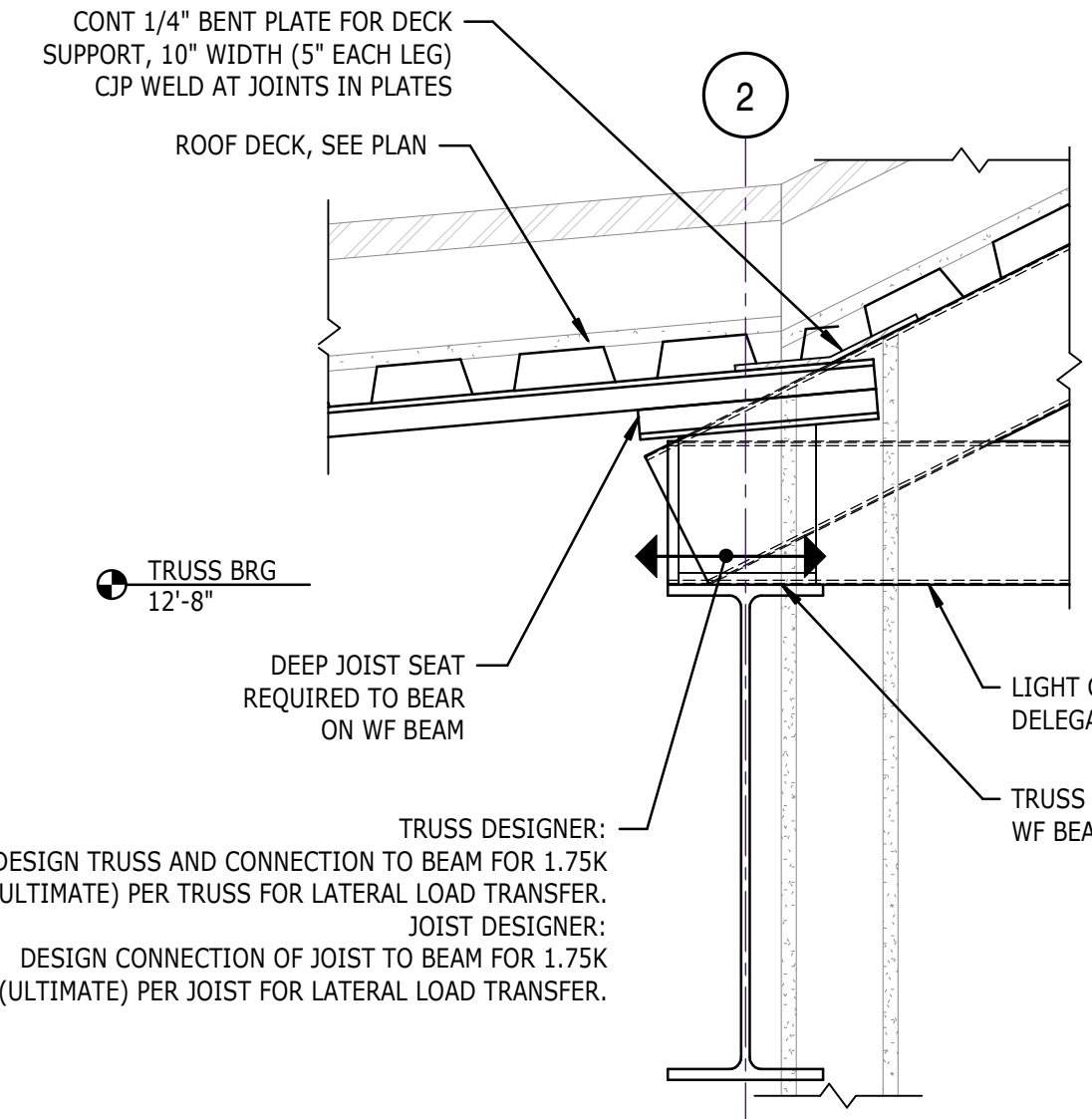
- NOTES:  
 1. ATTACH DECK TO SUPPORTING MEMBERS WITH SELF-DRILLING SELF-TAPPING HEX WASHER HEAD SCREWS, USE #12-24 FOR DECK ATTACHMENT TO SUPPORTS AND #10-16 FOR SIDELAP ATTACHMENT.  
 2. AT DECK BEARING SUPPORTS, PROVIDE SCREWS @12"OC (36/4 PATTERN).  
 3. AT SUPPORTS PARALLEL TO DECK SPAN, PROVIDE SCREWS @12"OC, TYPICAL.  
 4. AT DECK SIDELAPS/PERIMETER EDGE, PROVIDE SCREWS @12"OC, TYPICAL. WELDING OF SIDELAPS IS NOT PERMITTED FOR 22GA DECK.  
 5. ALL DECK ENDS TO BE LAPED ON BOTH ENDS. DO NOT BUTT JOINTS.  
 6. DECK SECTION MINIMUM PROPERTIES: SEE TABLE BELOW.  
 7. DECK SHALL BE CONTINUOUS OVER (2) OR MORE SPANS, TYPICAL.  
 8. 5/8"Ø PUDDLE WELDS MAY BE USED FOR DECK ATTACHMENT TO SUPPORTS AT SAME SPACING SPECIFIED ABOVE. SIDELAP FASTENING MUST BE SCREENED AS DESCRIBED ABOVE.  
 9. CONTRACTOR OPTION TO SUBMIT MECHANICAL FASTENERS BY HILTI, SIMPSON STRONG-TIE, OR APPROVED EQUAL. SUBSTITUTION REQUESTS FOR PRODUCTS MAY BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD (EOR) FOR REVIEW. SUBSTITUTIONS WILL ONLY BE CONSIDERED FOR PRODUCTS THAT MEET THE CODE REQUIREMENTS FOR DECK ATTACHMENT, POSSESS A FM GLOBAL APPROVAL AND POSSESS A CODE REPORT (ICC-ES) RECOGNIZING THE PRODUCT FOR THE APPROPRIATE APPLICATION. SUBSTITUTION REQUESTS SHALL INCLUDE CALCULATIONS THAT DEMONSTRATE THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE EQUIVALENT PERFORMANCE VALUES OF THE DESIGN BASIS PRODUCT. CONTRACTOR SHALL CONTACT MANUFACTURER'S REPRESENTATIVE FOR PRODUCT INSTALLATION TRAINING AND A LETTER SHALL BE SUBMITTED TO THE EOR INDICATING TRAINING HAS TAKEN PLACE. FASTENERS SHALL BE COLLATED AND INSTALLED USING THE MANUFACTURER'S DELIVERY TOOL AND FOLLOWING MANUFACTURER'S INSTRUCTIONS.

DECK TYPE	DESIGN THICKNESS (in)	DECK WEIGHT (psf)	$I_x$ (in <sup>4</sup> /ft)	$S_x$ (in <sup>3</sup> /ft)	$I_y$ (in <sup>4</sup> /ft)	$S_y$ (in <sup>3</sup> /ft)	$V_x$ (lbs/ft)	$F_y$ (ksi)
B24	0.0239	1.46	0.107	0.120	0.135	0.131	2634	60
B22	0.0295	1.78	0.155	0.186	0.183	0.192	1818	33
B20	0.0358	2.14	0.201	0.234	0.222	0.247	2193	33
B19	0.0418	2.49	0.246	0.277	0.260	0.289	2546	33
B18	0.0474	2.82	0.289	0.318	0.295	0.327	2870	33
B16	0.0598	3.54	0.373	0.408	0.373	0.411	3578	33

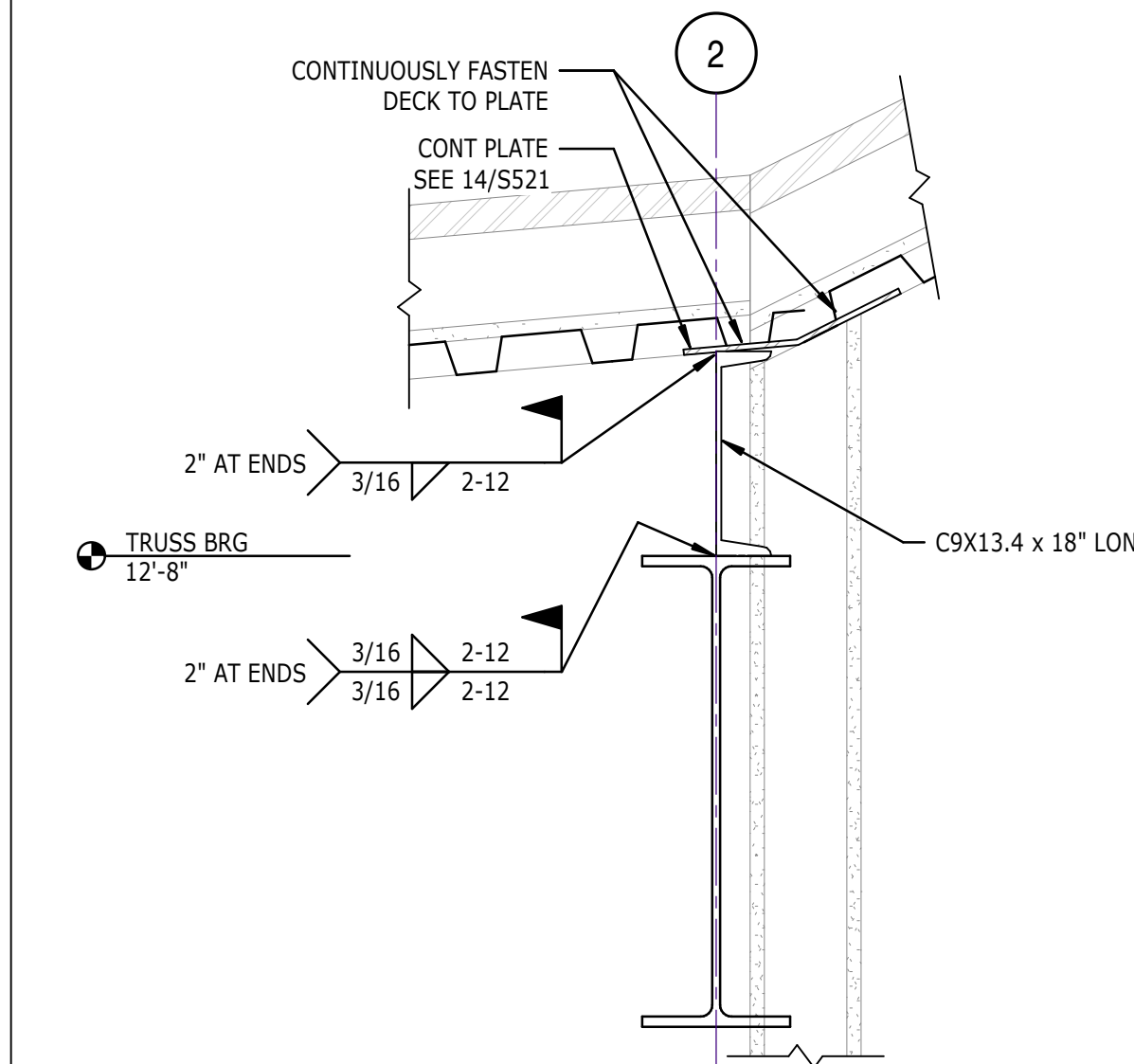
**1** TYPICAL 1/2" METAL ROOF DECK  
S521 NTS



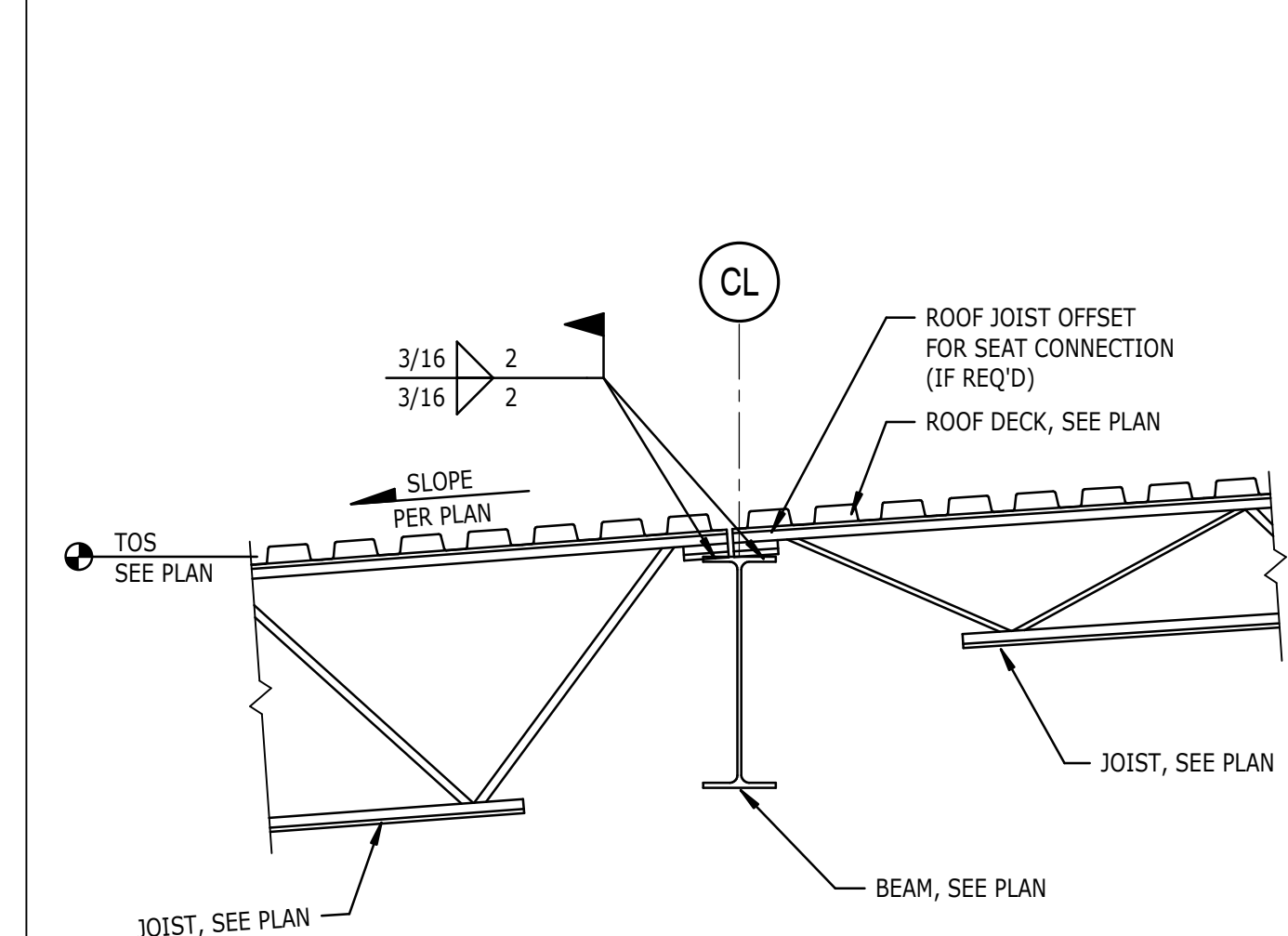
**18** TYPICAL CANTILEVER HSS OVER ROOF BEAM  
S521 3/4" = 1'-0"



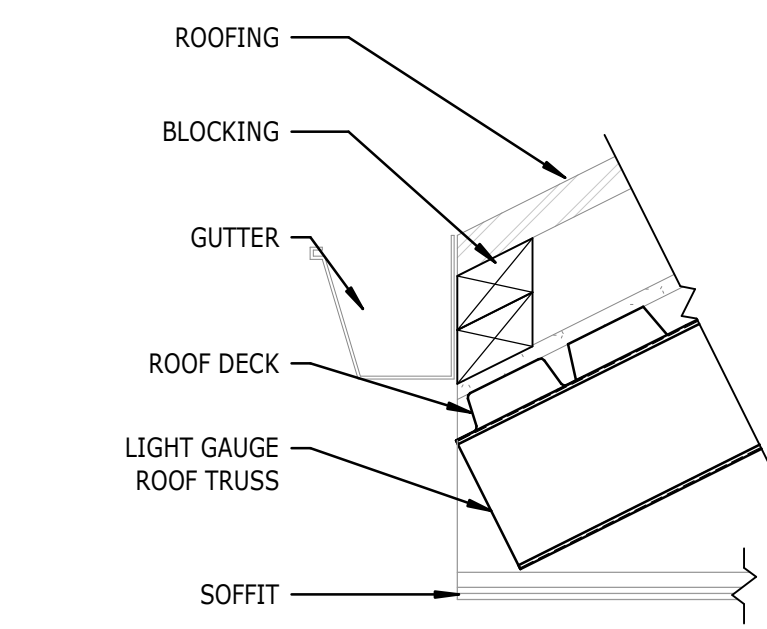
**14** SECTION AT ROOF TRANSITION  
S521 1 1/2" = 1'-0"



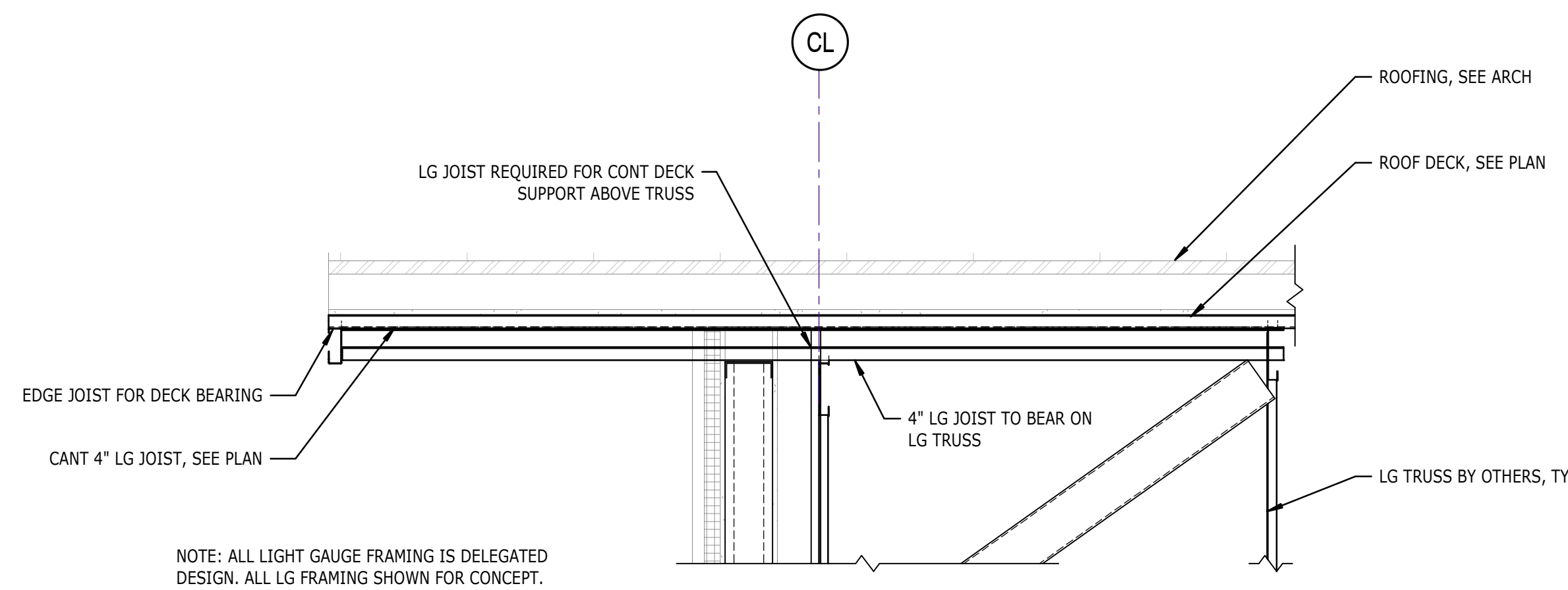
**10** SECTION AT ROOF TRANSITION LATERAL CONN  
S521 1 1/2" = 1'-0"



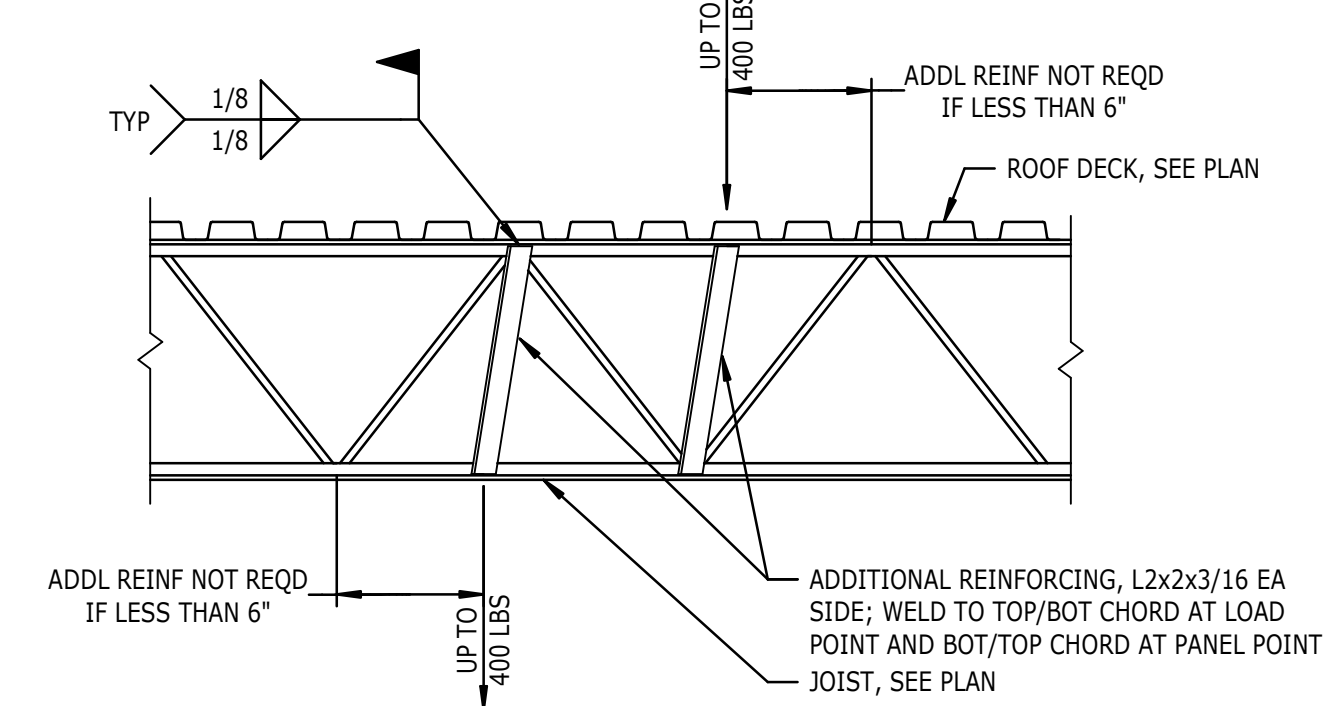
**6** TYPICAL JOIST BEARING AT GIRDER  
S521 NTS



**15** TYPICAL ROOF DECK EDGE AT TRUSS  
S521 1 1/2" = 1'-0"

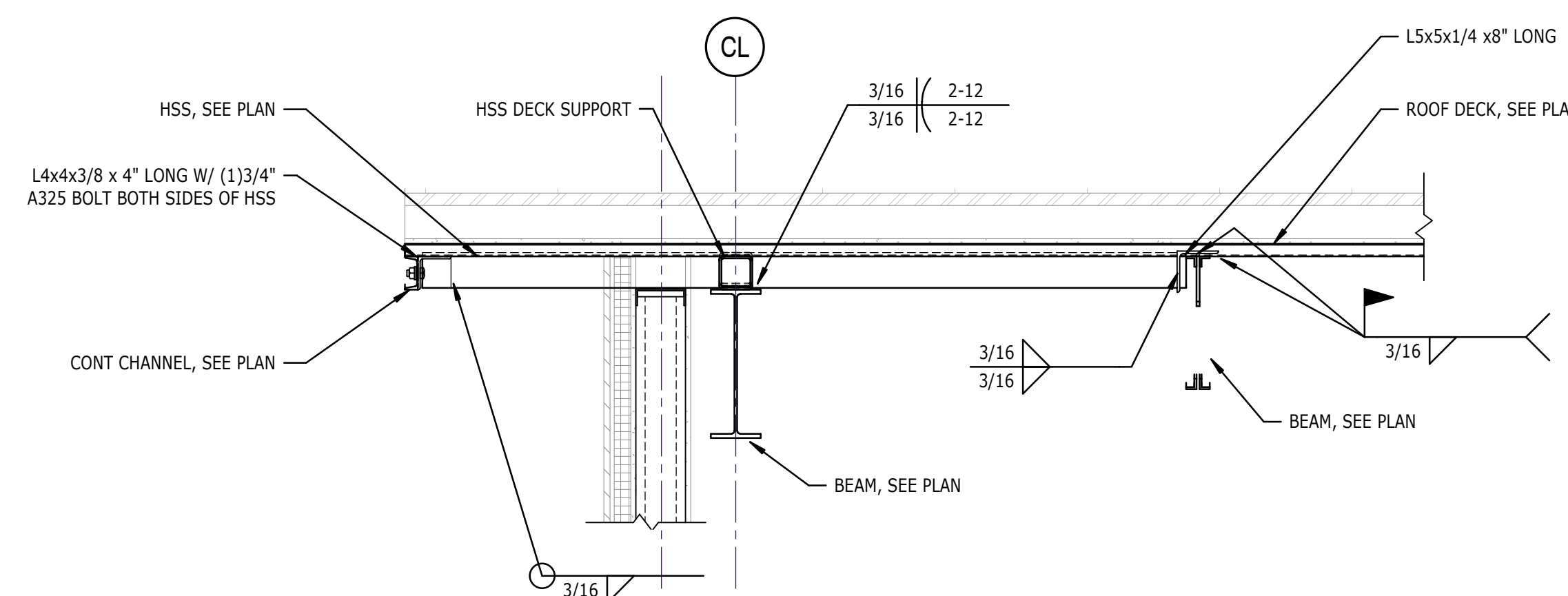


**7** SECTION AT TYPICAL GABLE ROOF OVERHANG  
S521 3/4" = 1'-0"

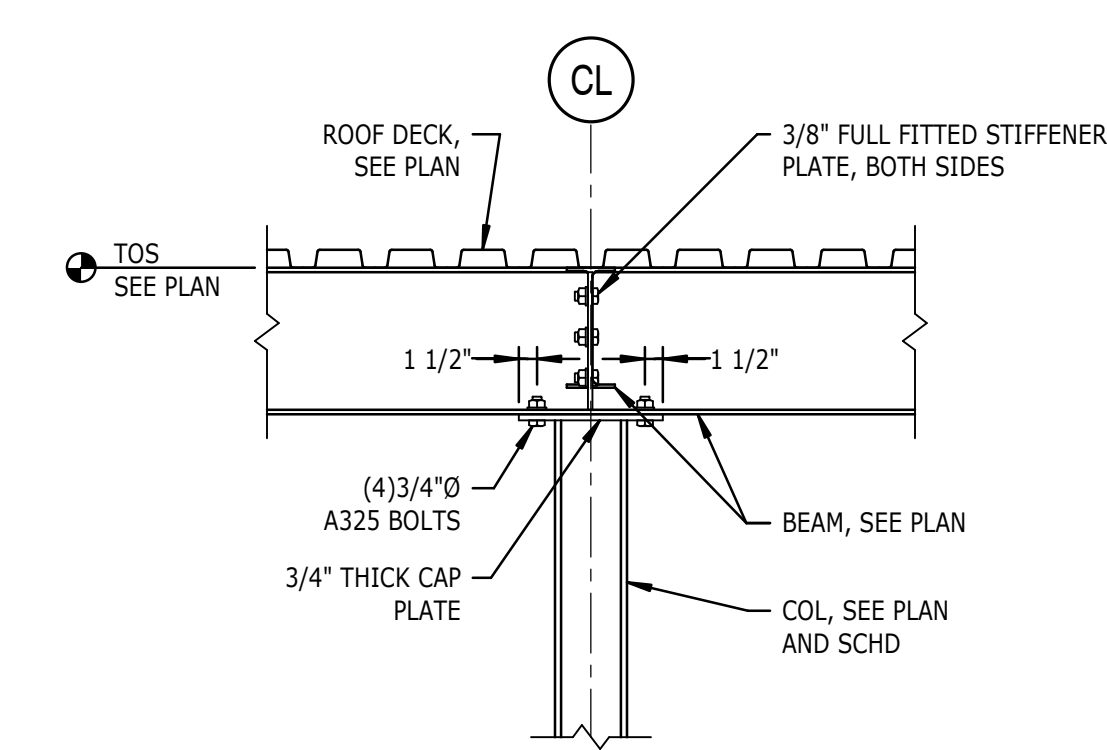


- NOTES:  
 1. WHERE POSSIBLE, ALL LOADS ARE TO BE SUPPORTED FROM PANEL POINTS. WHERE NOT POSSIBLE, PROVIDE REINFORCEMENT AS DETAILED.  
 2. LOADS LESS THAN 100 LBS REQUIRE NO ADDITIONAL REINFORCING. LOADS LARGER THAN 400 LBS PER JOIST REQUIRE SPECIAL SUPPORT CONDITIONS TO BE APPROVED BY THE ENGINEER OF RECORD.  
 3. BOTTOM CHORDS EXTENDING UNSUPPORTED PAST THE FIRST BOTTOM PANEL POINT TOWARD JOIST BEARING LOCATION ARE NOT TO BE USED TO SUPPORT ANY LOAD WITHOUT WRITTEN PERMISSION FROM THE ENGINEER OF RECORD.

**3** TYPICAL JOIST REINFORCING AT POINT LOADS  
S521 NTS



**8** SECTION AT TYPICAL LOW ROOF OVERHANG  
S521 3/4" = 1'-0"



**4** TYPICAL BEAM CANTILEVERED OVER COLUMN  
S521 NTS

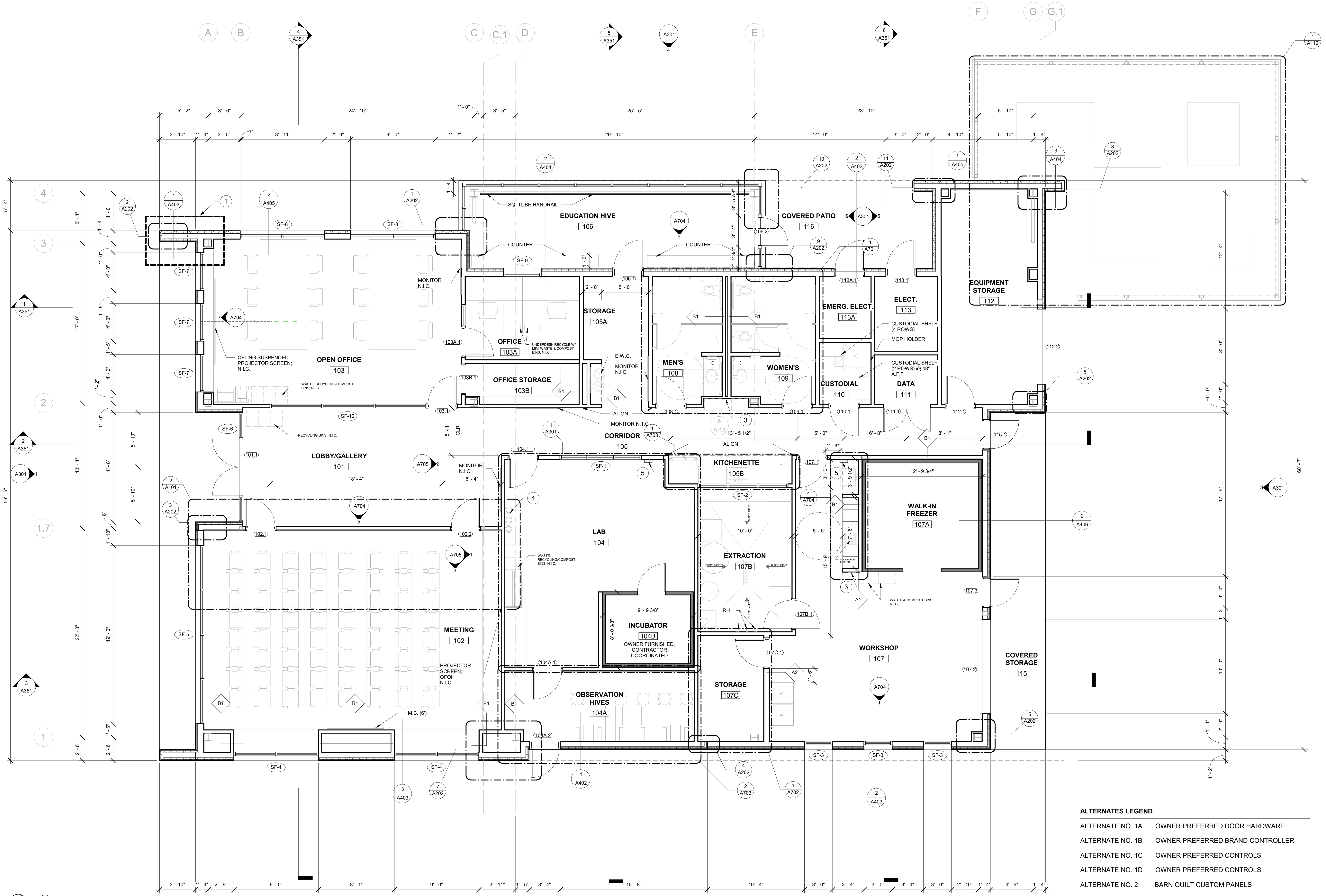
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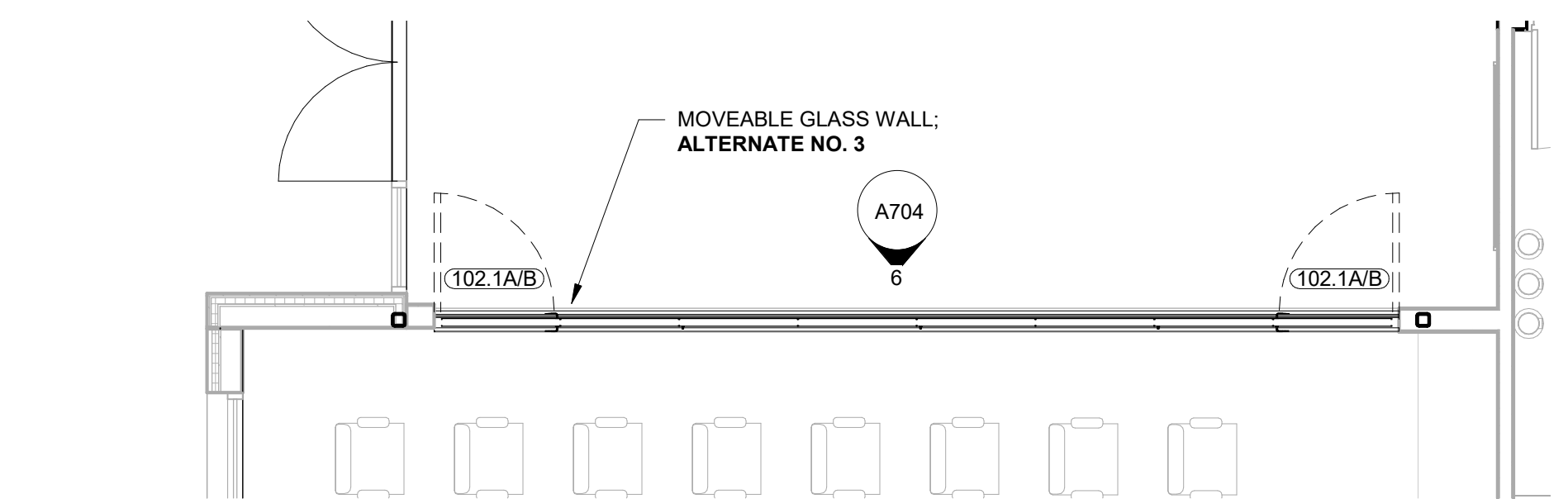
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1 FLOOR PLAN - BASE BID  
1/4" = 1'-0"



2 FLOOR PLAN - ALTERNATE NO. 3  
1/4" = 1'-0"

**GENERAL FLOOR PLAN NOTES**

- DIMENSIONS ARE TO COLUMN CENTERLINES OR FINISH FACE OF PARTITION UNLESS OTHERWISE NOTED. SEE SHEET A201 FOR TYPES AND THICKNESSES.
- ALL PARTITION TYPES ARE TO BE "A1" UNLESS OTHERWISE NOTED. SEE SHEET A201 FOR TYPES AND THICKNESSES.
- SEE ENLARGED PLANS FOR PARTITION TYPES NOT SHOWN ON FLOOR PLAN.

**GENERAL FLOOR PLAN LEGEND**

(B1) PARTITION TYPE (SEE SHEET A201)

(101) DOOR NUMBER (SEE SHEET A251)

(SF-#) STOREFRONT TYPE

M.B. (#) MARKERBOARD (LENGTH)

NEW WORK KEYNOTES	
NUMBER	DESCRIPTION
1	INTEGRATED EXTERIOR MOCKUP TO INCLUDE WALL SYSTEM, FENESTRATION, FINISHES, ROOF AND SOFFIT
2	UNDER BASE BID, INFILL WITH 5/8" GYP. BD. ON 2 1/2" STUDS
3	RECESSED FIRE EXTINGUISHER CABINET
4	NEW WALL MOUNT CYLINDER RACK (USA SAFETY # GB401FS OR APPROVED EQUAL)
5	GLOVE DISPENSER

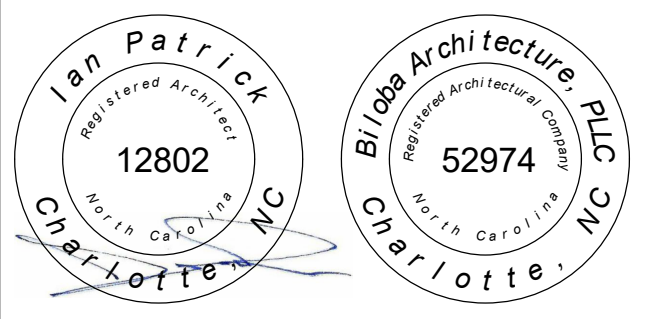
**ALTERNATES LEGEND**

ALTERNATE NO. 1A	OWNER PREFERRED DOOR HARDWARE
ALTERNATE NO. 1B	OWNER PREFERRED BRAND CONTROLLER
ALTERNATE NO. 1C	OWNER PREFERRED CONTROLS
ALTERNATE NO. 1D	OWNER PREFERRED CONTROLS
ALTERNATE NO. 2	BARN QUILT CUSTOM PANELS
ALTERNATE NO. 3	MOVEABLE GLASS WALL
ALTERNATE NO. 4	CERAMIC WALL TILE (BASE BID - HIGH PERFORMANCE COATING HPC-1)
ALTERNATE NO. 5	TOILET ROOM 107C (BASE BID - STORAGE ROOM 107C)
ALTERNATE NO. 6	EMERGENCY GENERATOR
ALTERNATE NO. 7	POLISHED CONCRETE (BASE BID - UNPOLISHED CONCRETE)
ALTERNATE NO. 8	FRP AND PVC ROLL PRODUCT FLOORING (BASE BID - HIGH PERFORMANCE COATING HPC-1 AND UNPOLISHED CONCRETE FLOOR CON-1)
ALTERNATE NO. 9	AHU SCREENING (BASE BID- OMIT SCREENING)
ALTERNATE NO. 10	EXISTING HOUSE & SEPTIC DEMOLITION
ALTERNATE NO. 11	LAB CASEWORK (BASE BID - OMIT LAB CASEWORK)

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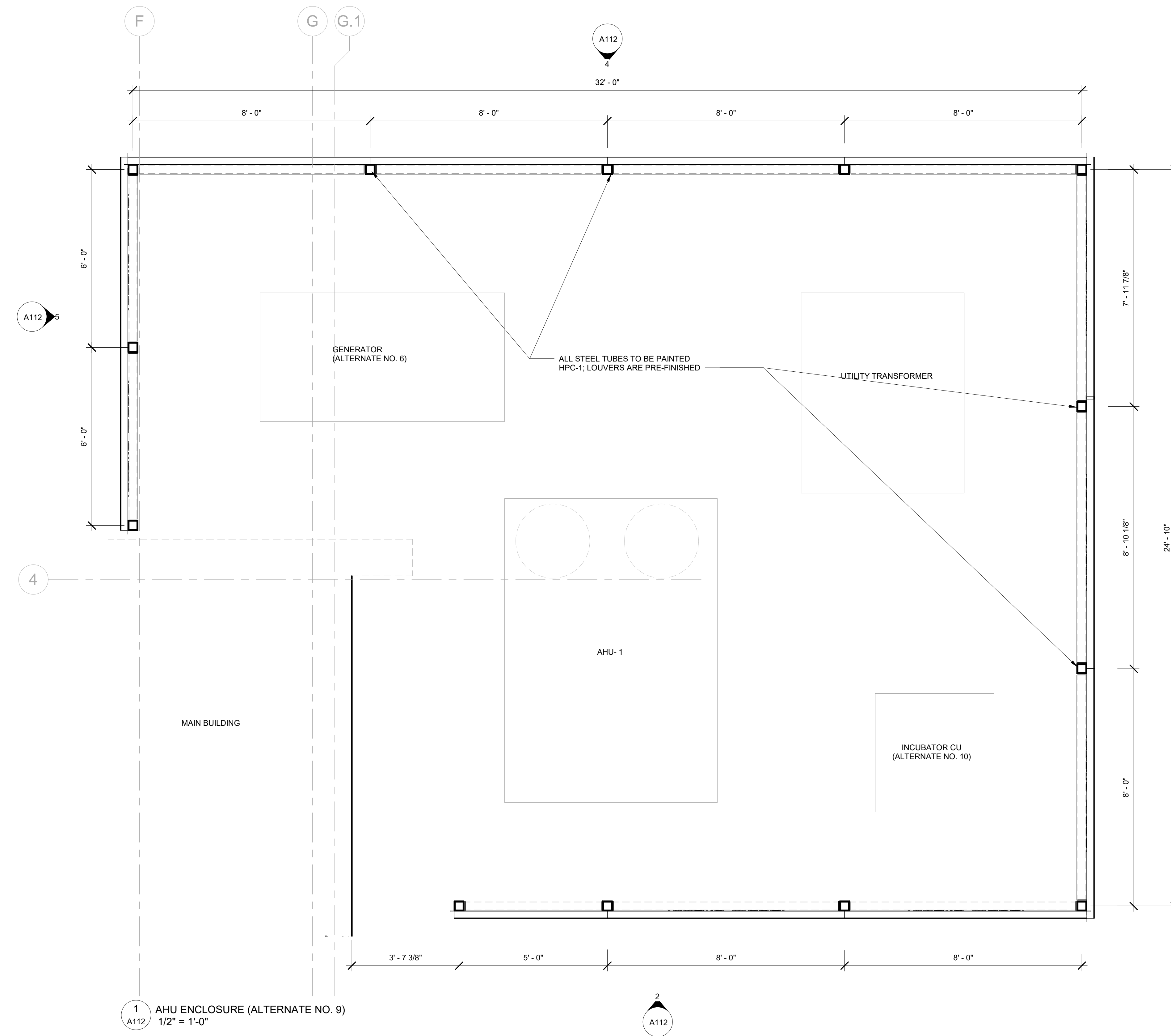
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 Raleigh, NC  
 SCO ID No.: 22-24494-01A  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132  
 Title

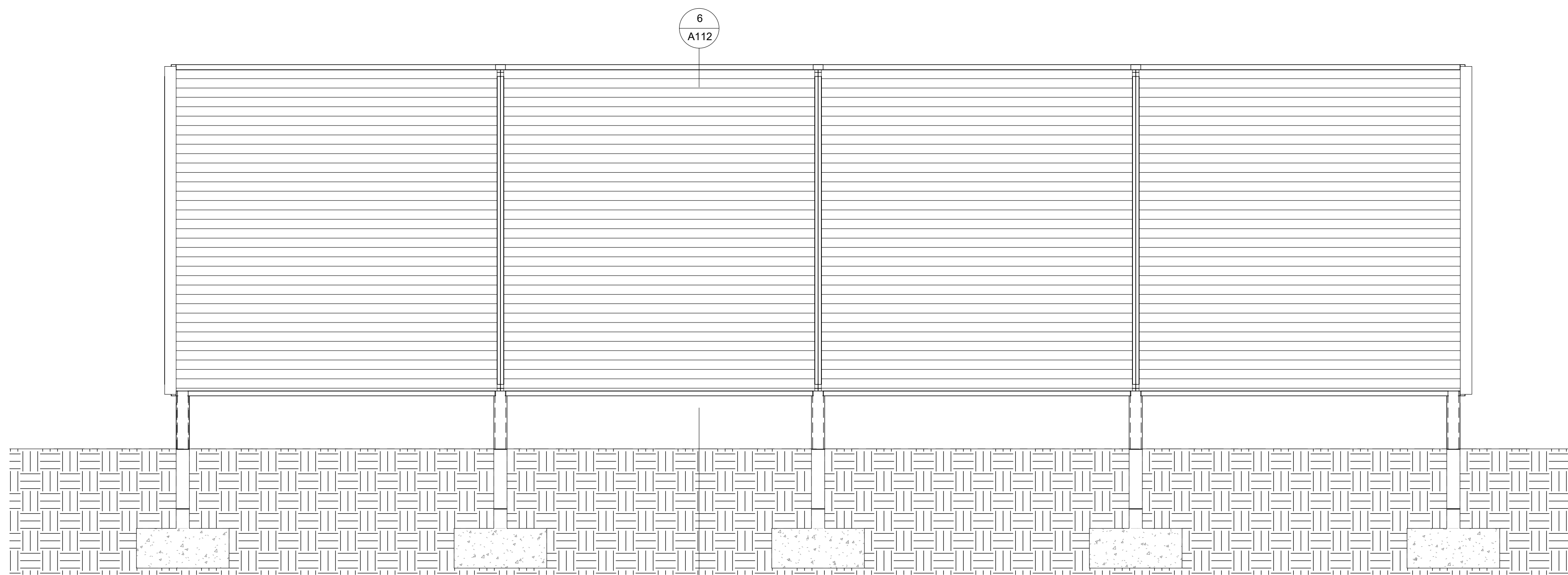
**First Floor Plan**

Sheet  
**A101**  
 Plate

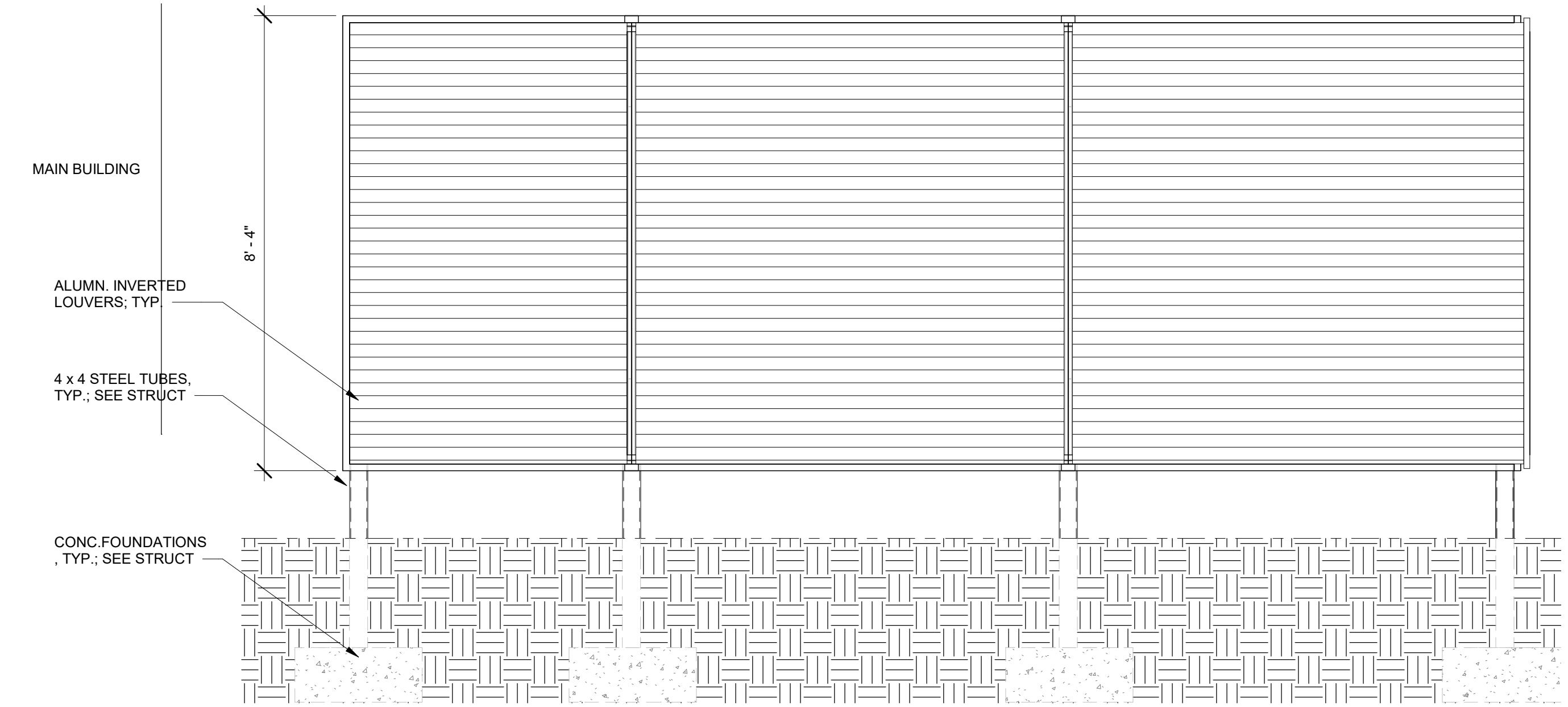




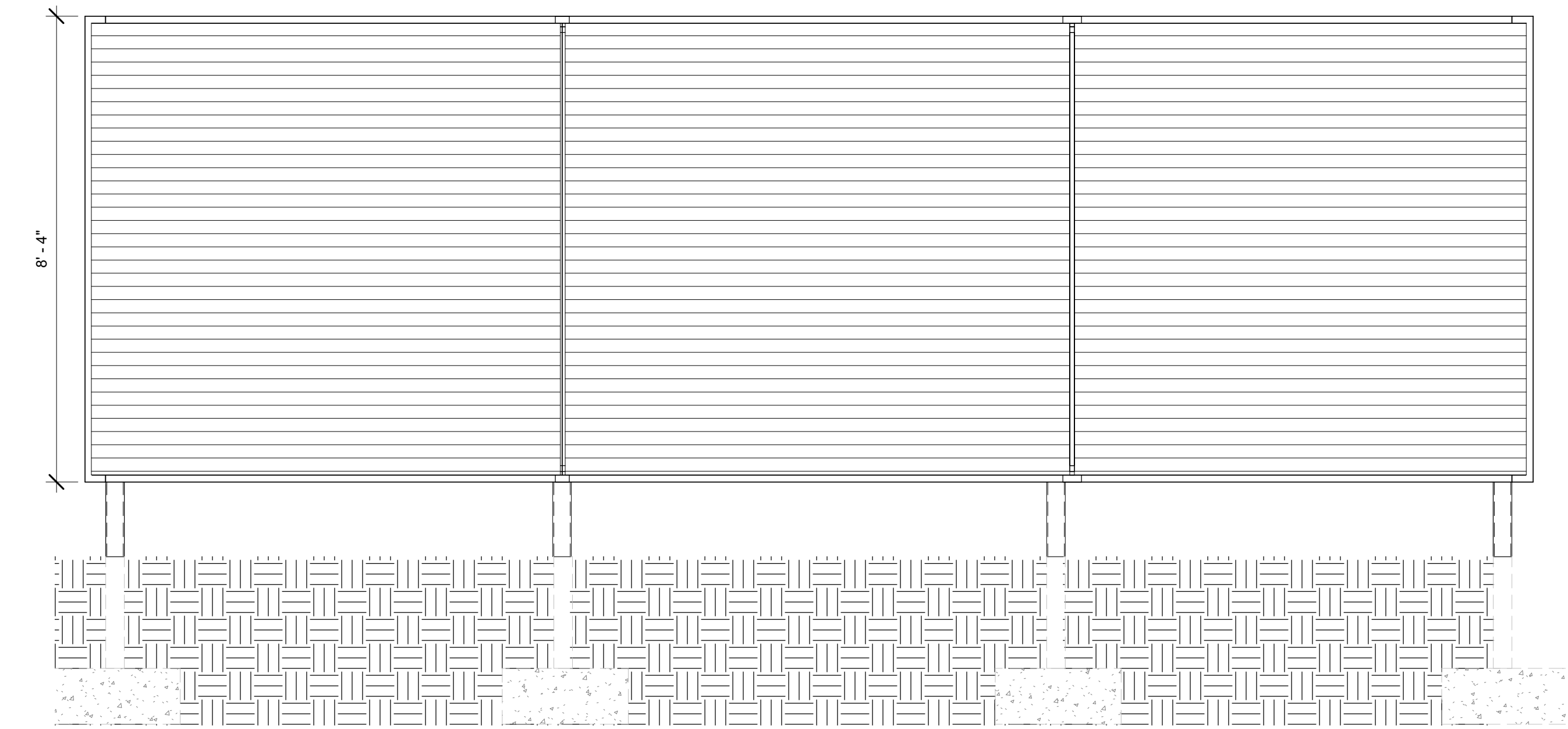
1 AHU ENCLOSURE (ALTERNATE NO. 9)  
A112 1/2" = 1'-0"



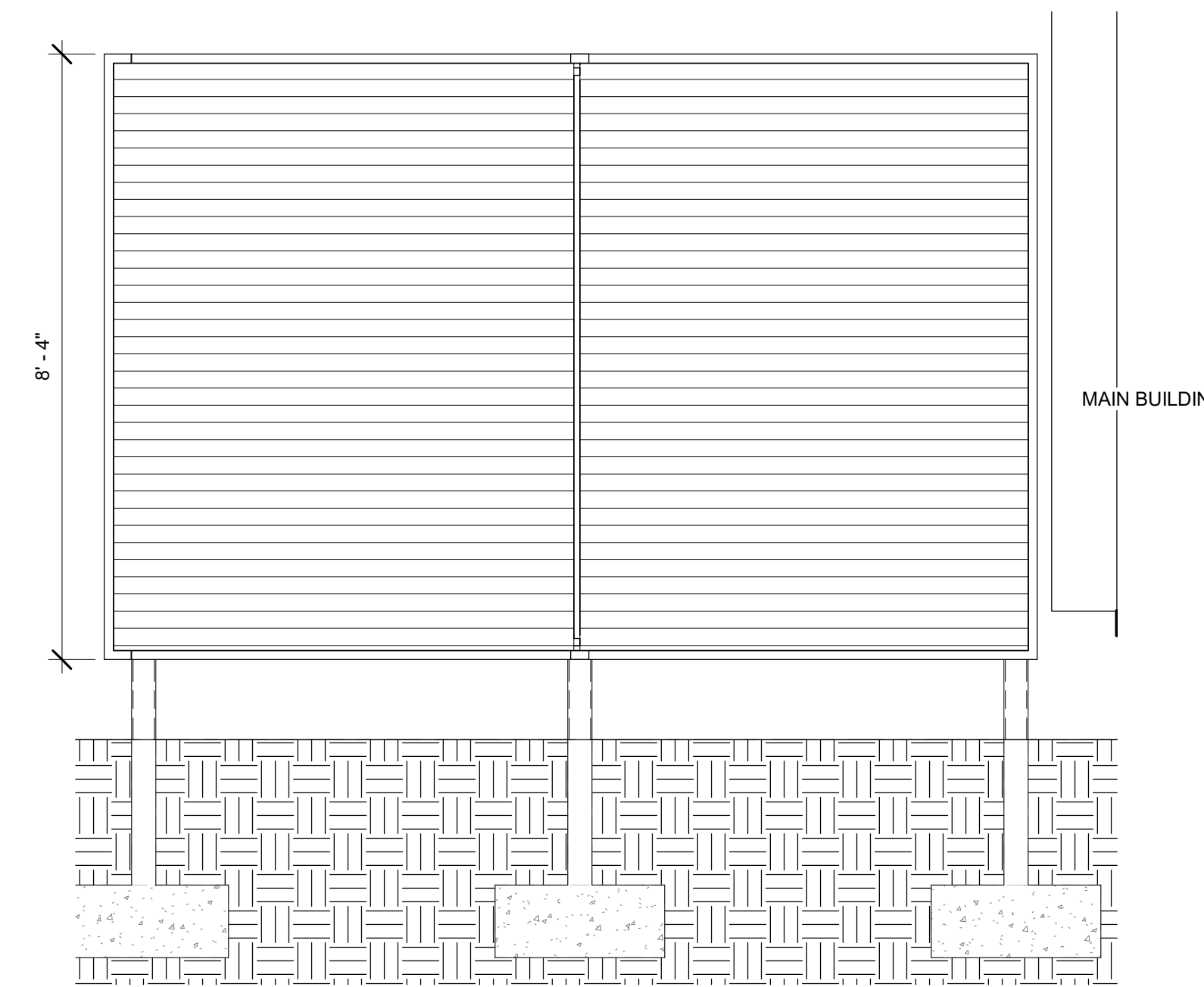
4 ELEVATION (ALTERNATE NO. 9)  
A112 1/2" = 1'-0"



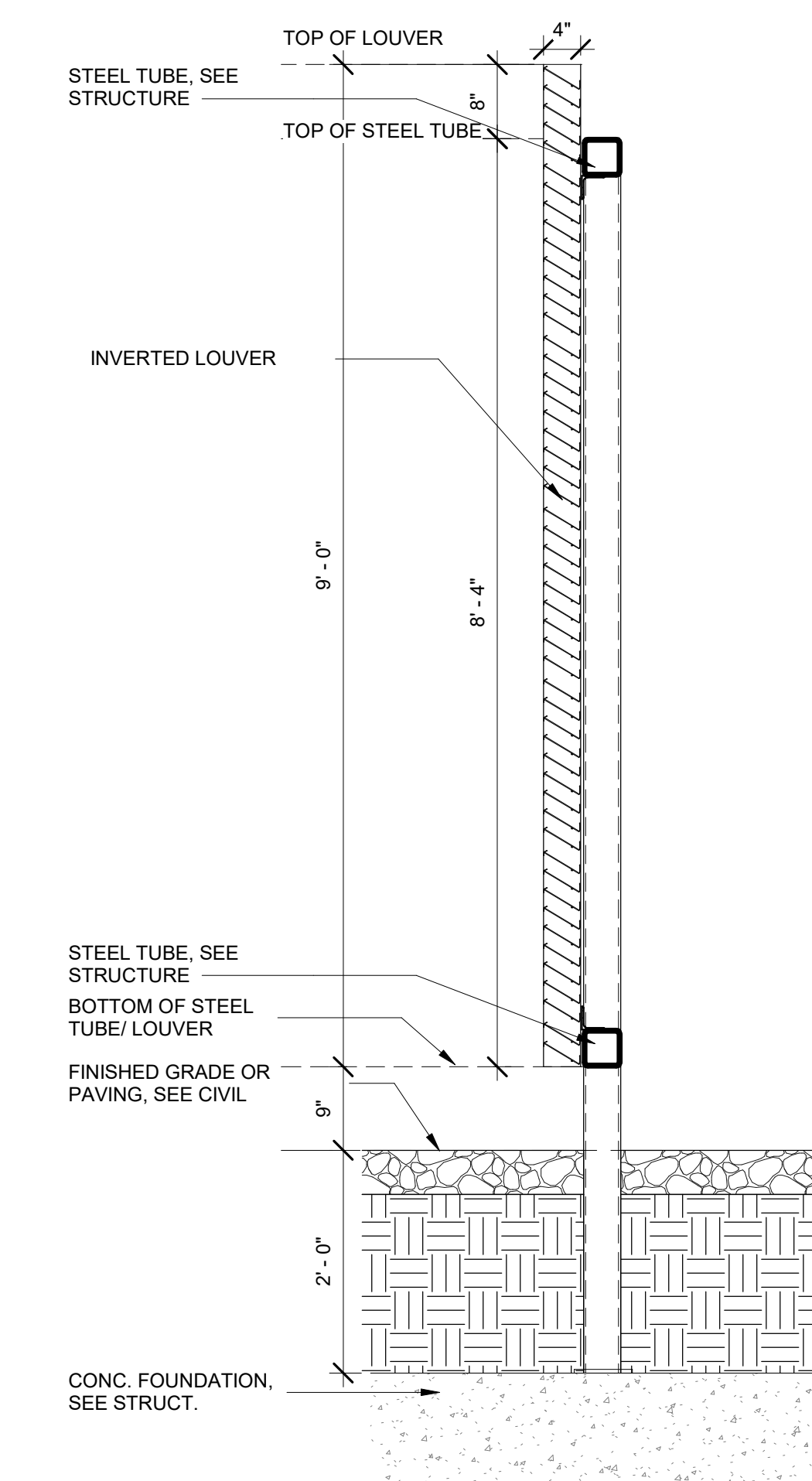
2 ELEVATION  
A112 1/2" = 1'-0"



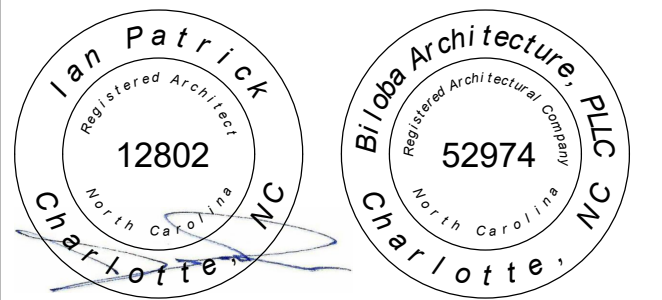
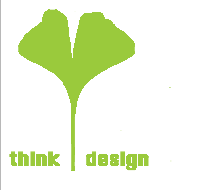
3 ELEVATION (ALTERNATE NO. 9)  
A112 1/2" = 1'-0"



5 ELEVATION (ALTERNATE NO. 9)  
A112 1/2" = 1'-0"



6 LOUVER DETAIL (ALTERNATE NO. 9)  
A112 3/4" = 1'-0"



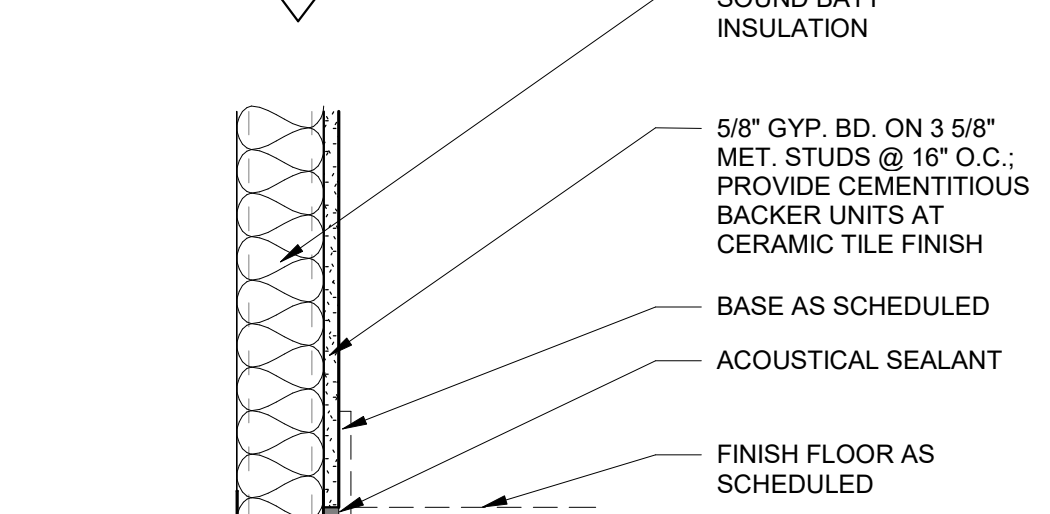
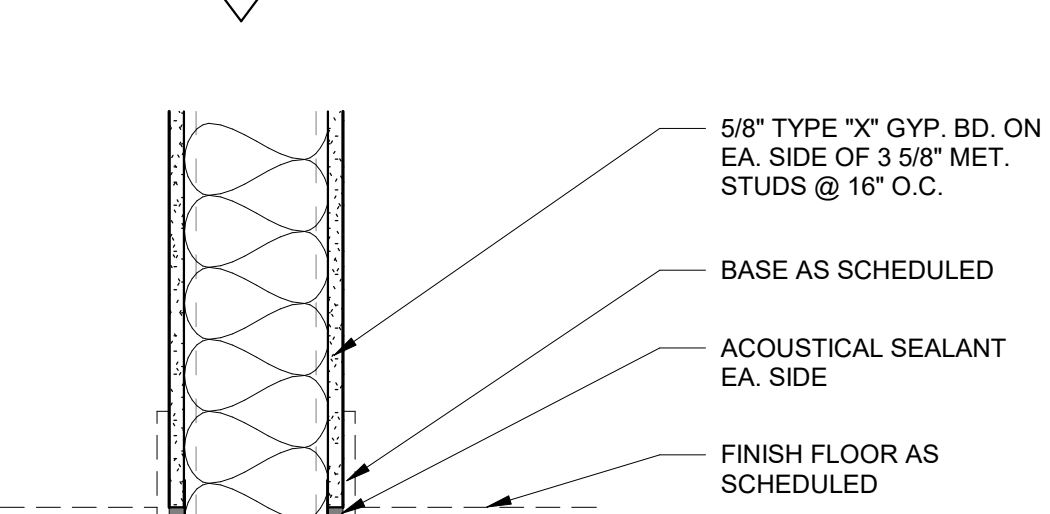
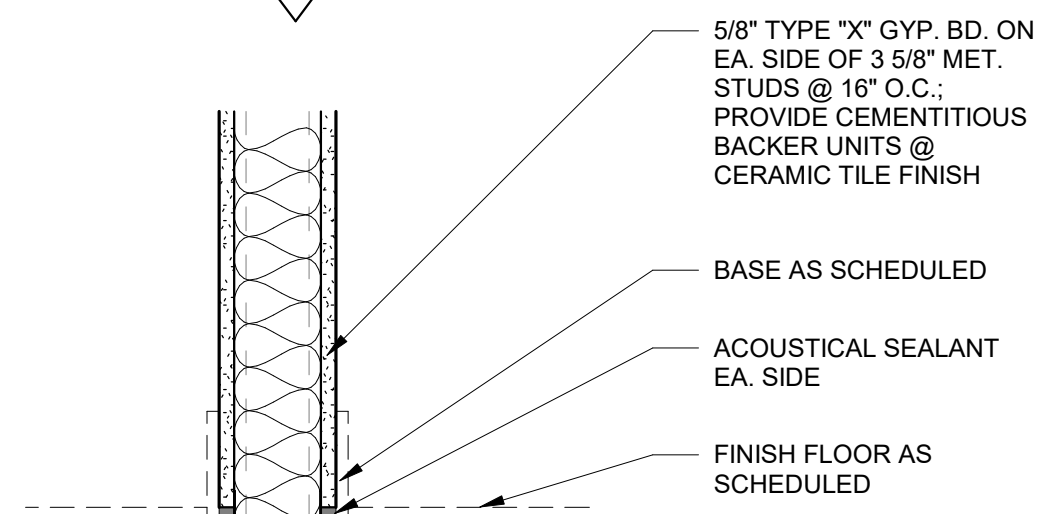
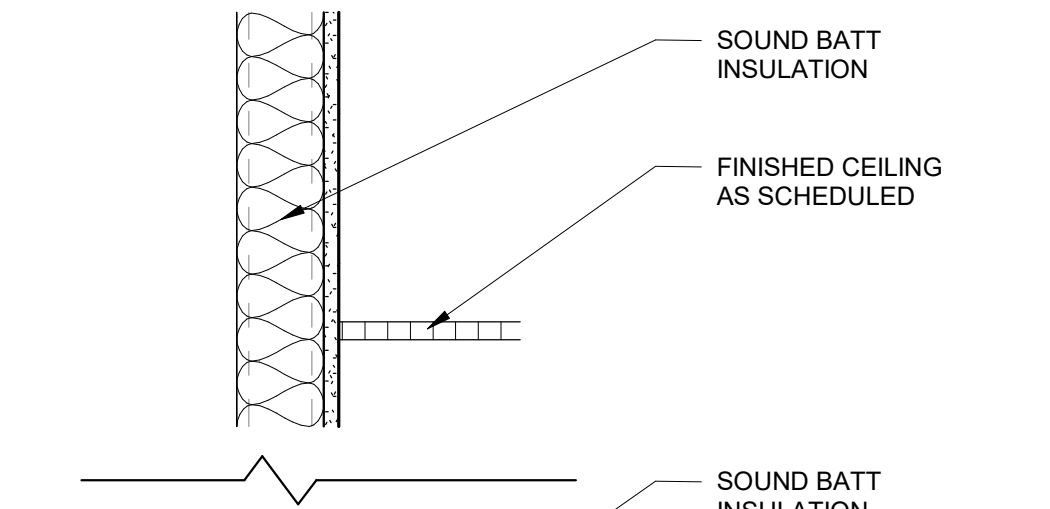
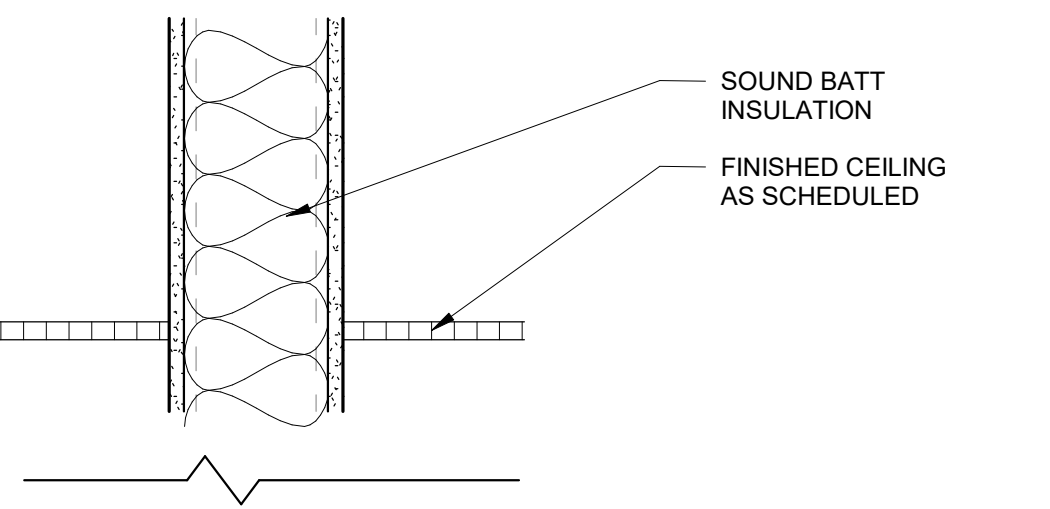
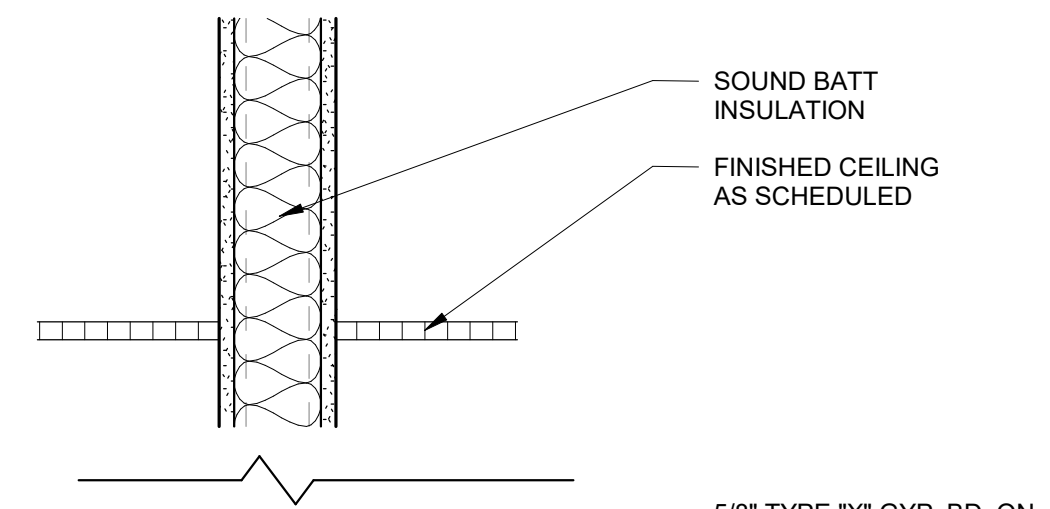
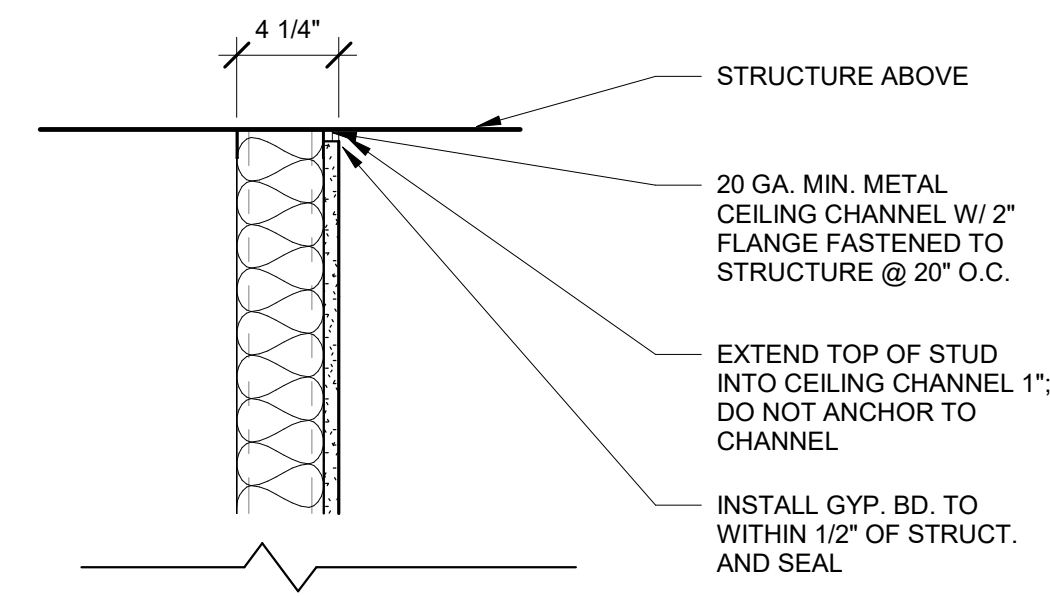
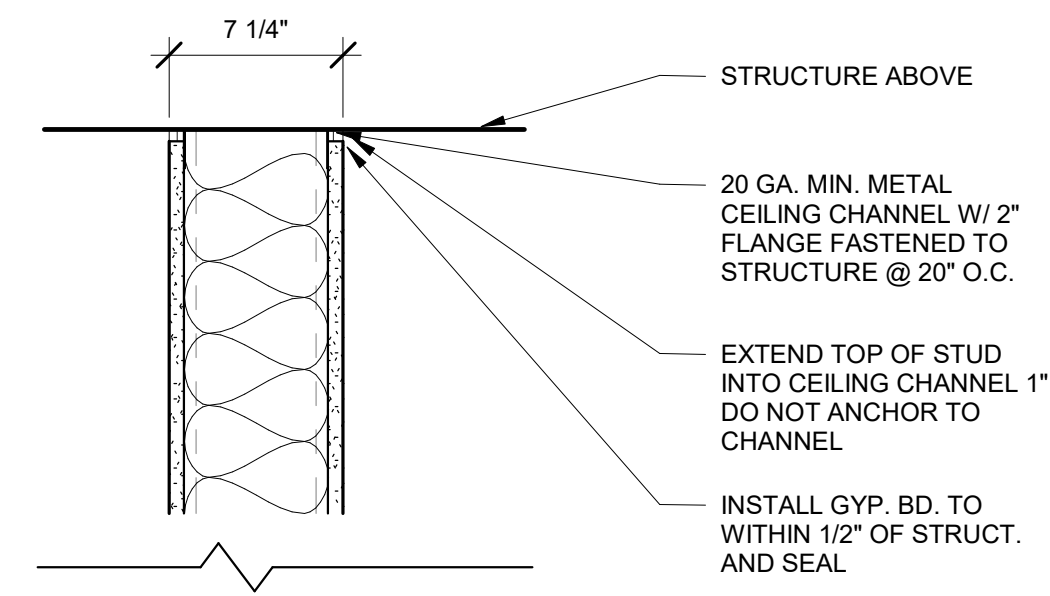
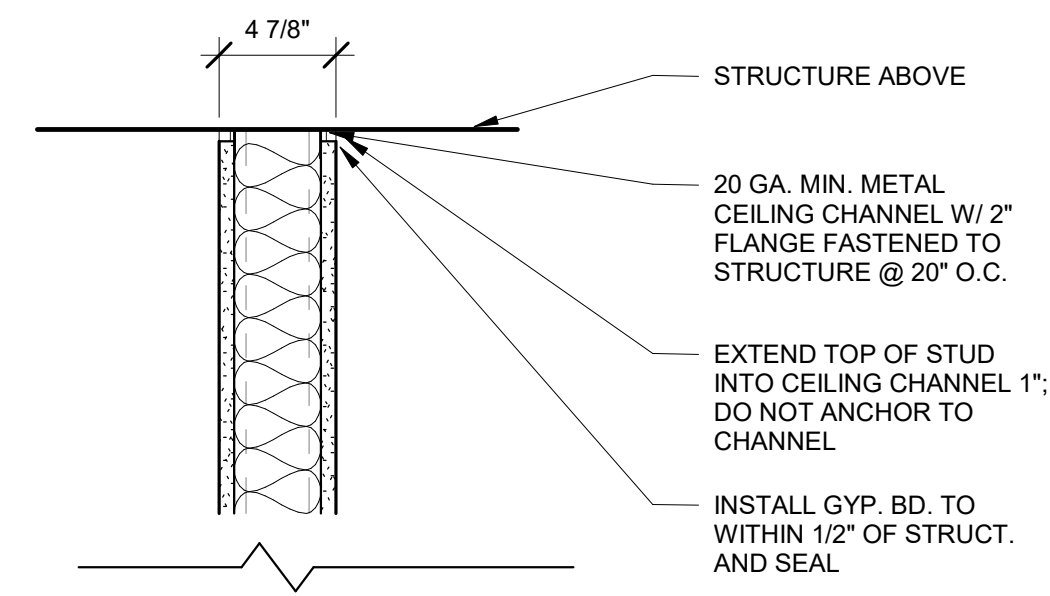
01.10.2025

Drawn Author

Checked Checker

Date 01/10/2025

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**TYPE "A1" NON-RATED PARTITION**

**STC RATING: 44**

**TYPE "A2" NON-RATED PARTITION: SAME AS "A1" EXCEPT USE 6" MET. STUDS IN LIEU OF 3 5/8" MET. STUDS**

**TYPE "A2" NON-RATED PARTITION**

**STC RATING: 44**

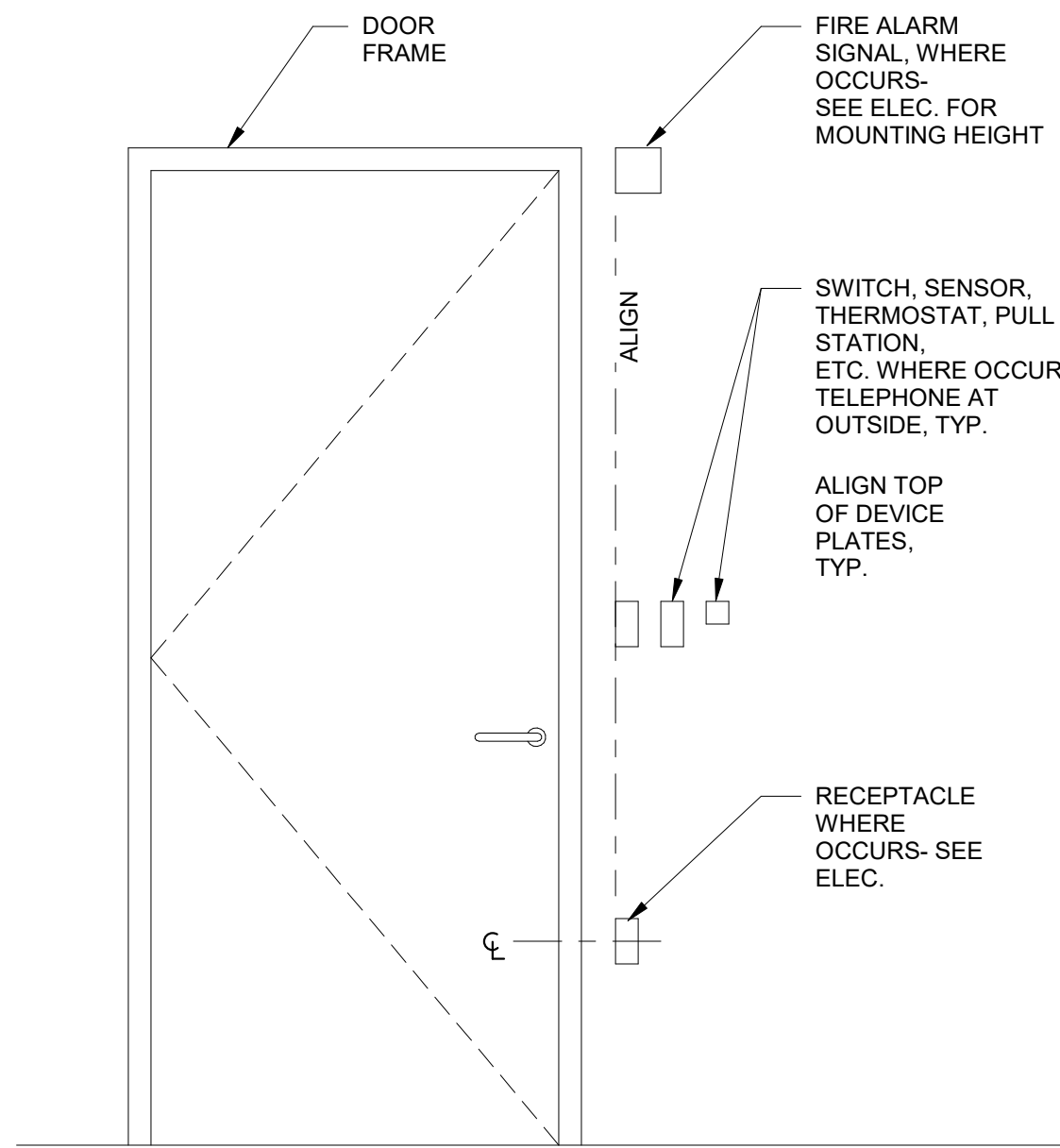
**TYPE "B1" NON-RATED PARTITION**

**TYPE "B2" NON-RATED PARTITION: SAME AS B1 EXCEPT USE 1 5/8" MET. STUDS IN LIEU OF 3 5/8" MET. STUDS**

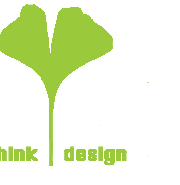
**LEGEND:**

**A1** PARTITION TYPE DESIGNATIONS AS INDICATED ON FLOOR PLANS

**1** PARTITION TYPES  
A201 1 1/2" = 1'-0"



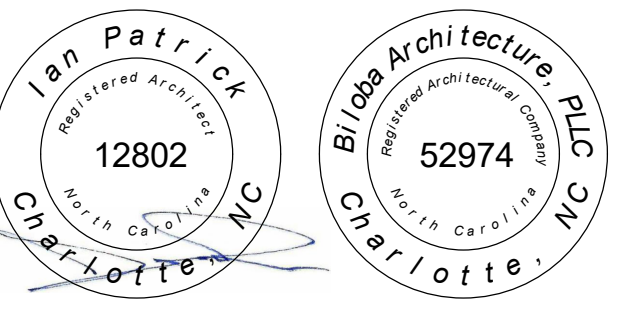
**2** TYPICAL DEVICE LOCATIONS  
A201 3/4" = 1'-0"



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Code: 42124 Item: 315  
NCSU: 202220007

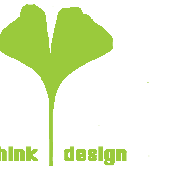
Project Number 132

Title  
**Partition Types**

Sheet

**A201**

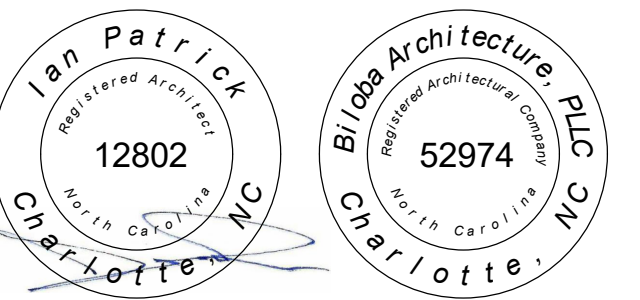
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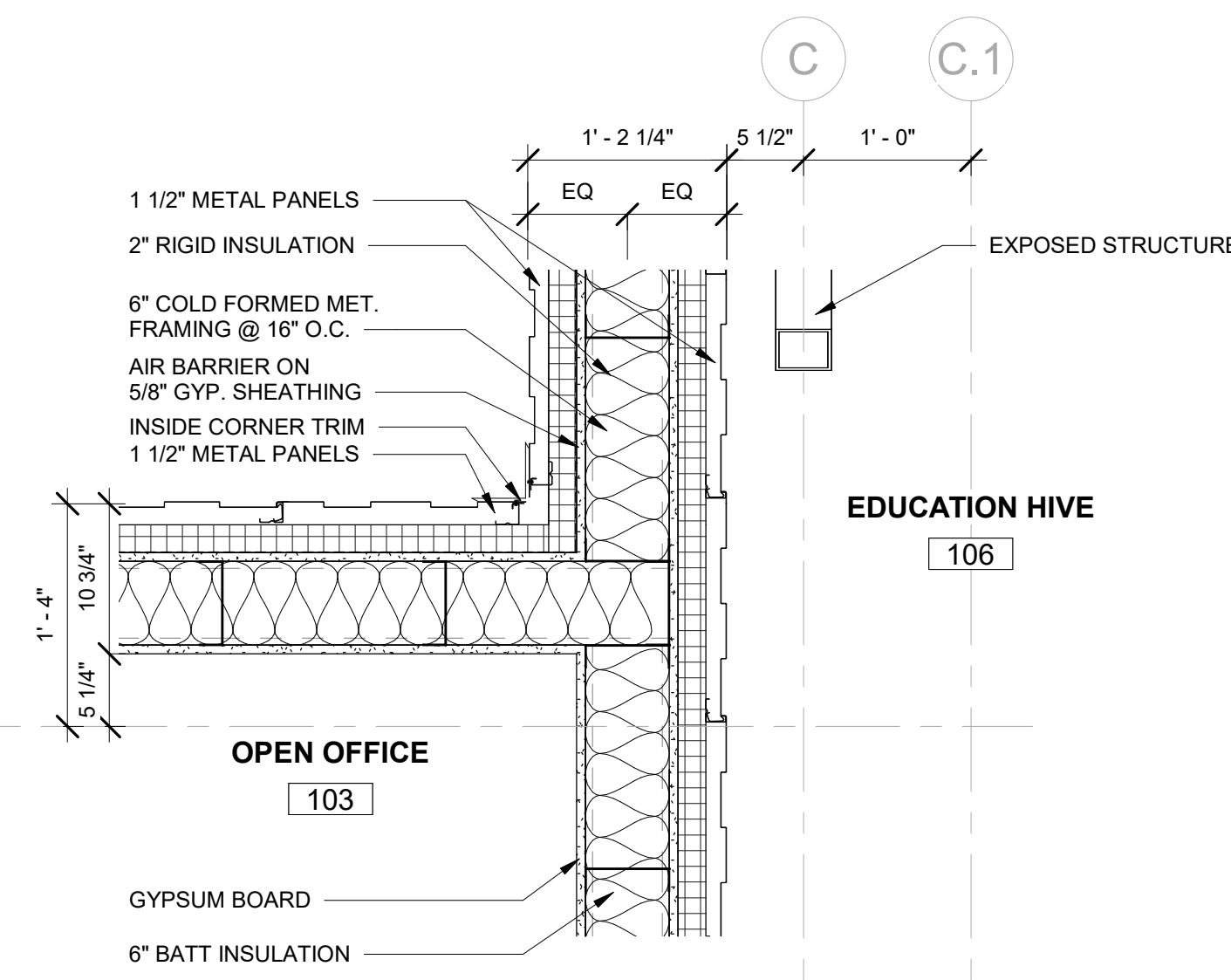
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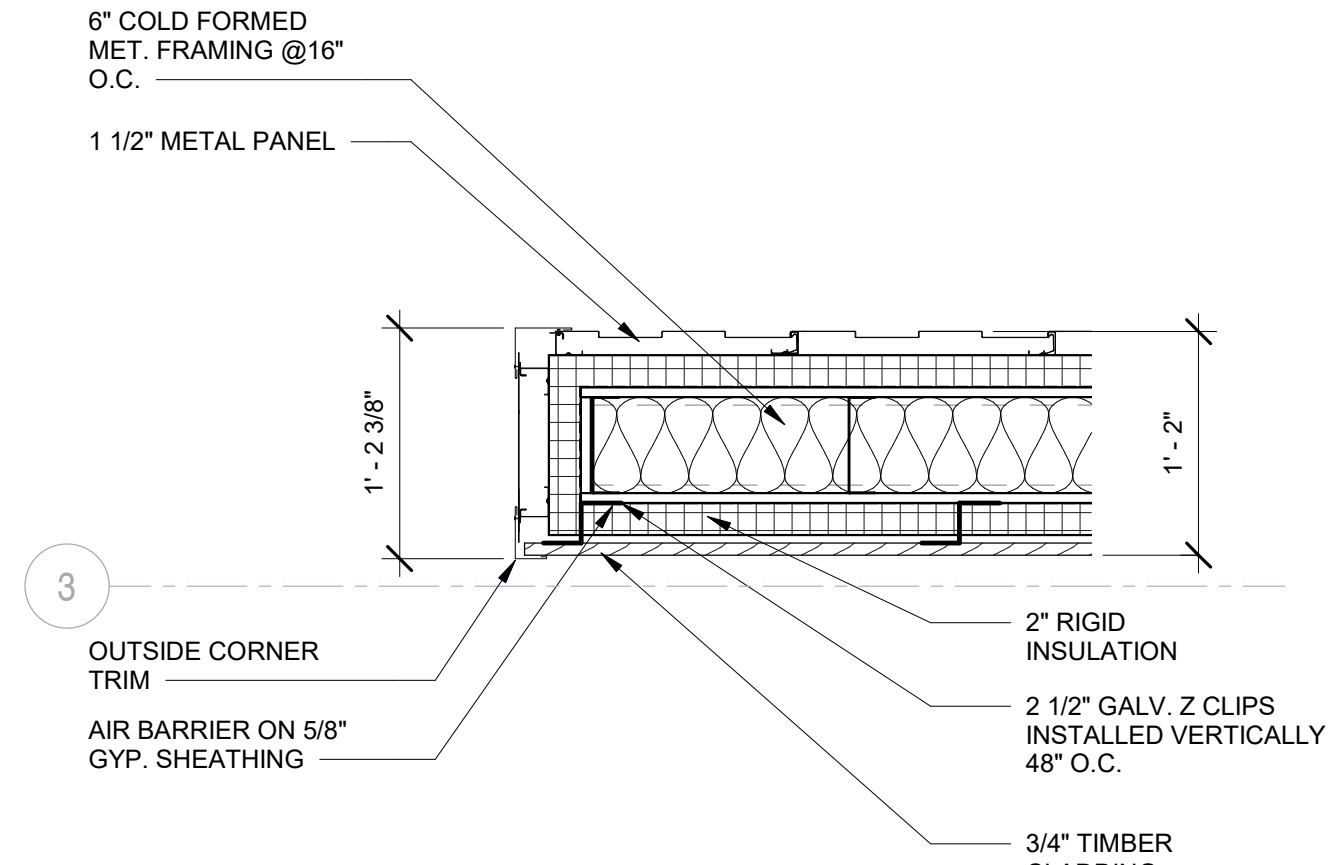
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**A202**

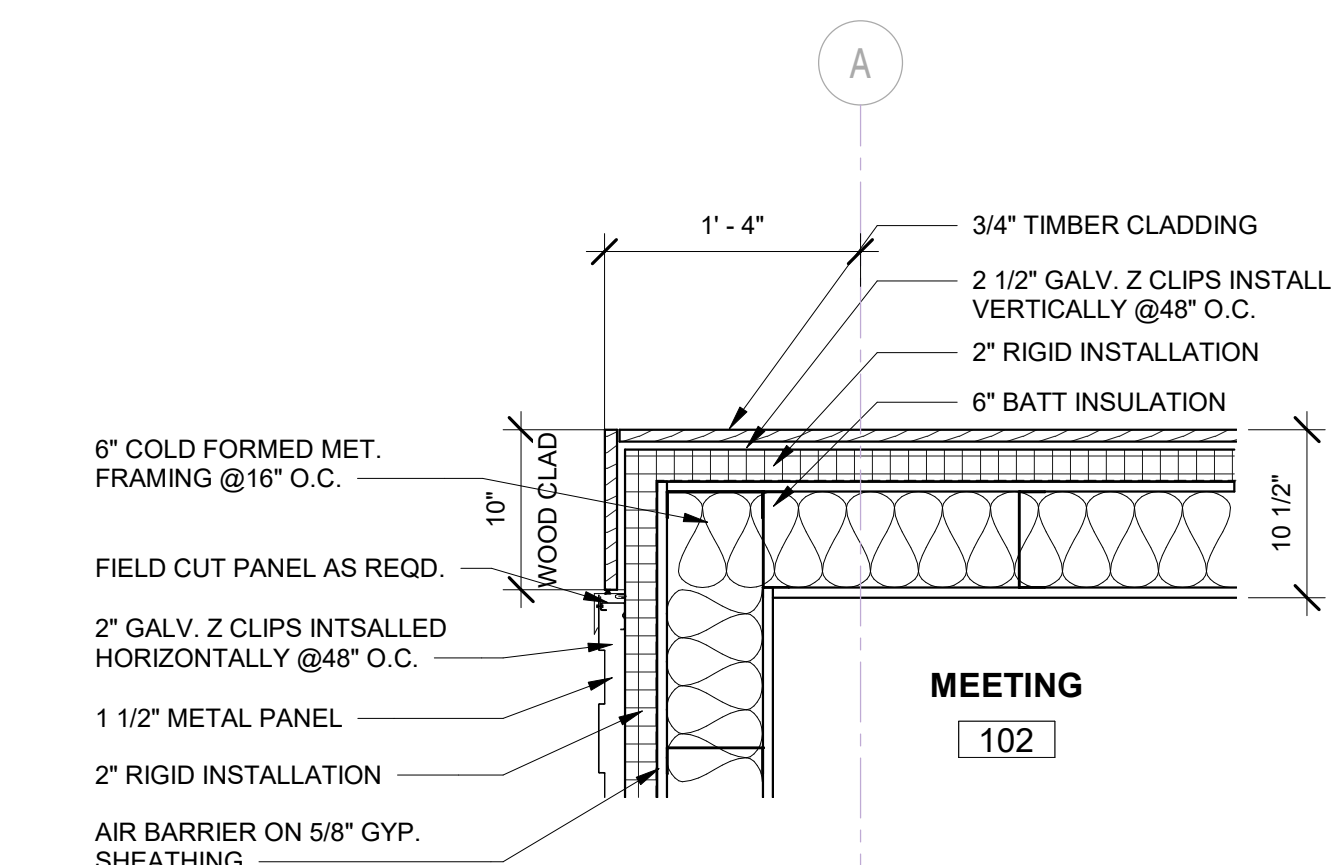
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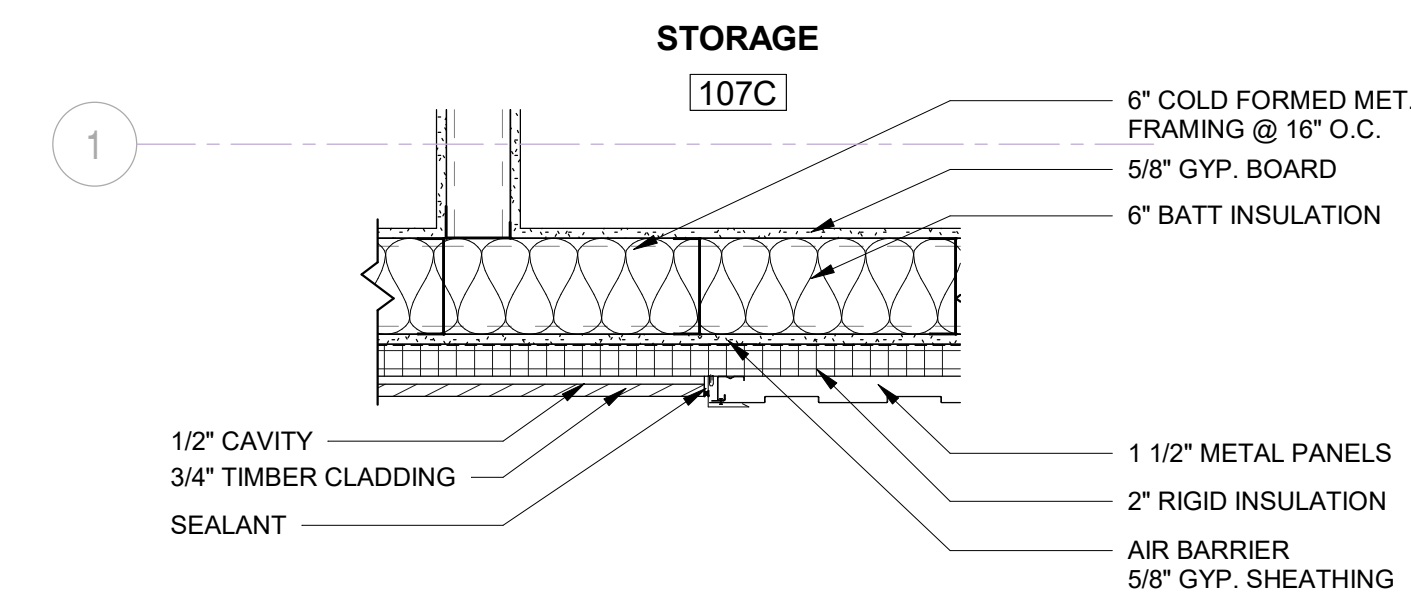
1 PLAN DETAIL  
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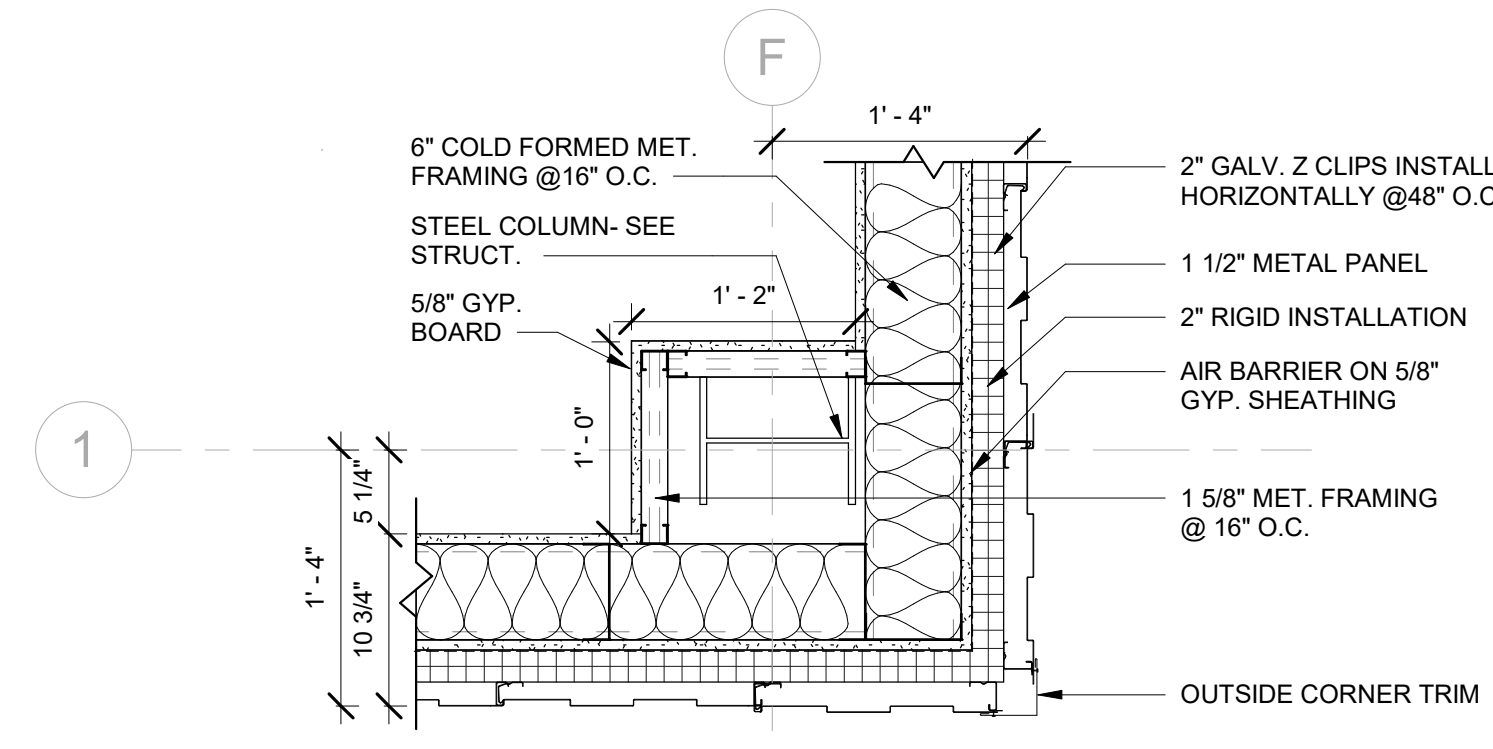
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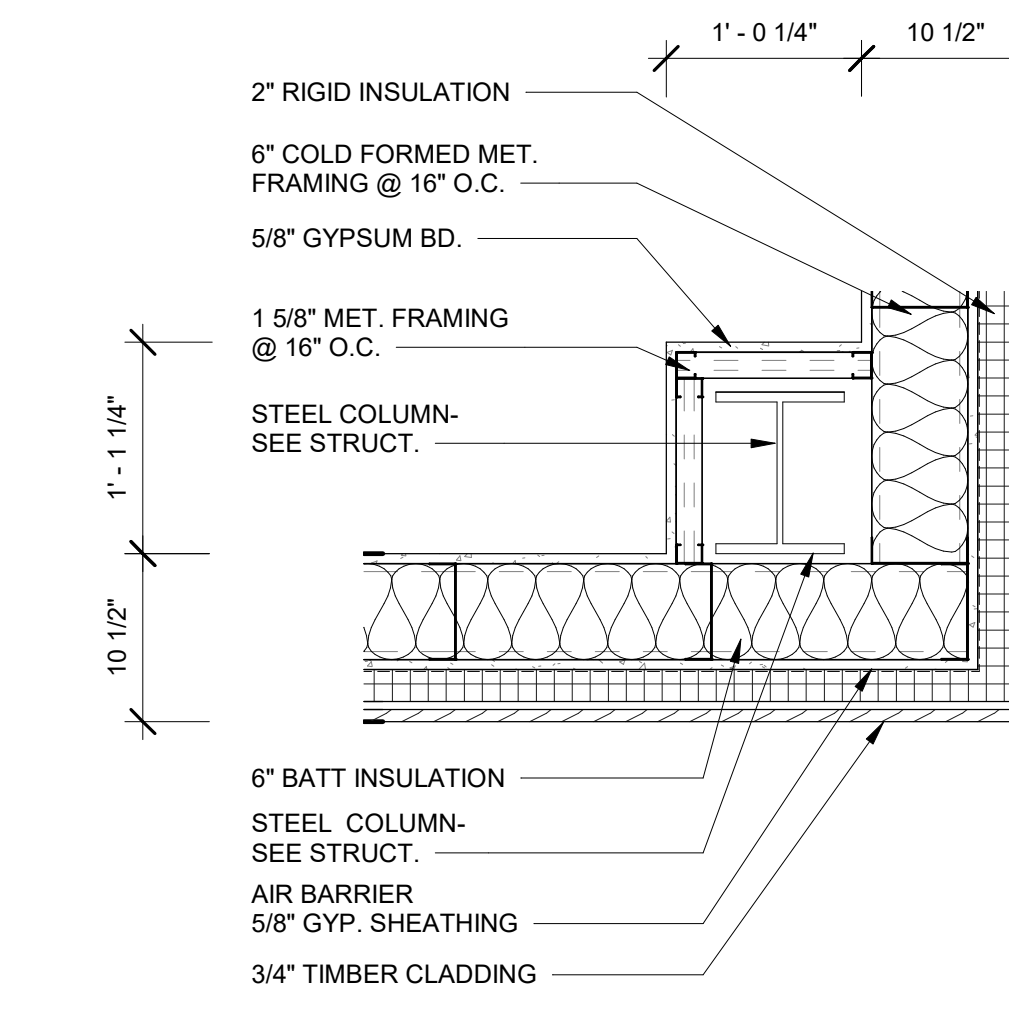
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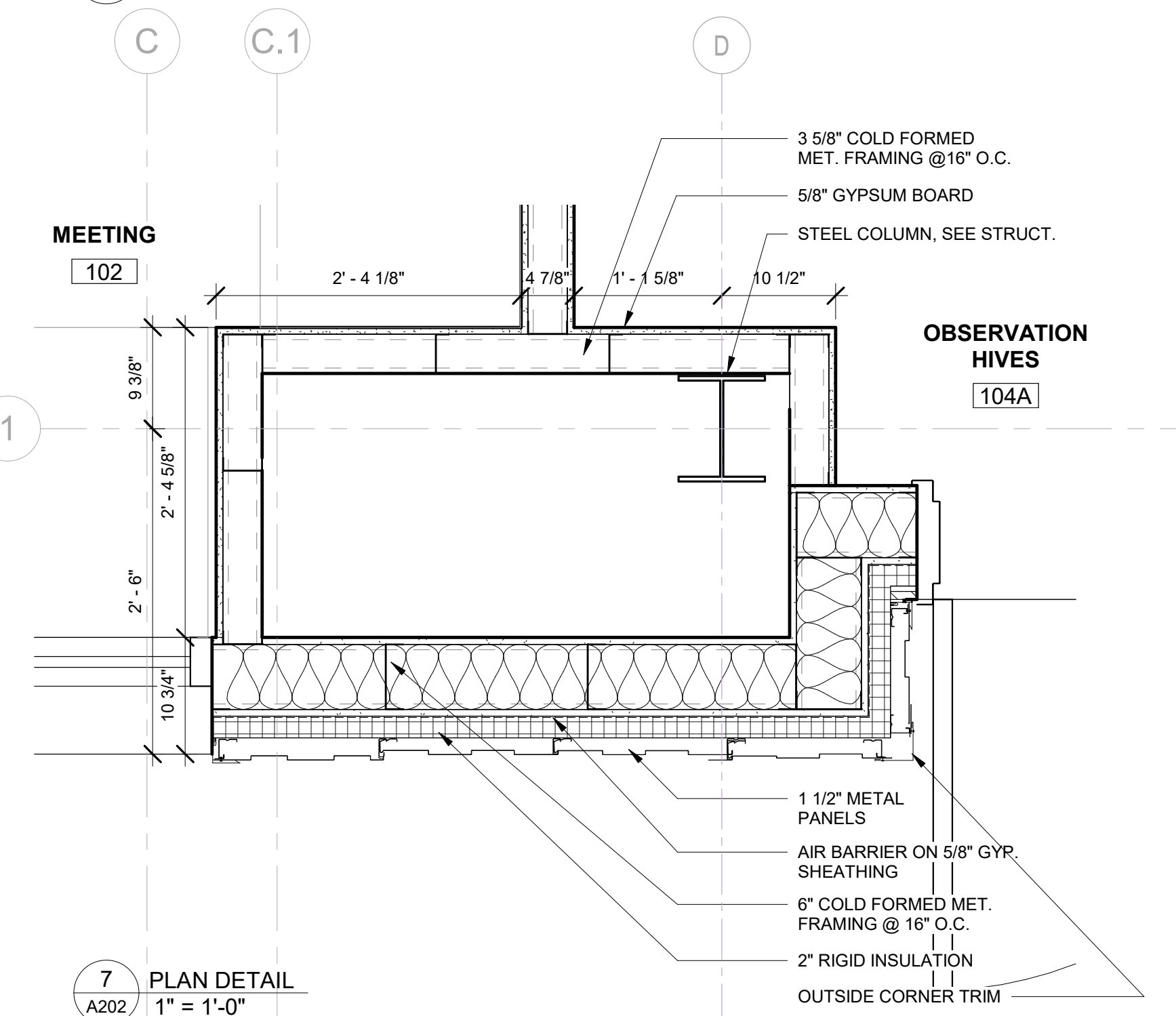
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A202 1" = 1'-0"



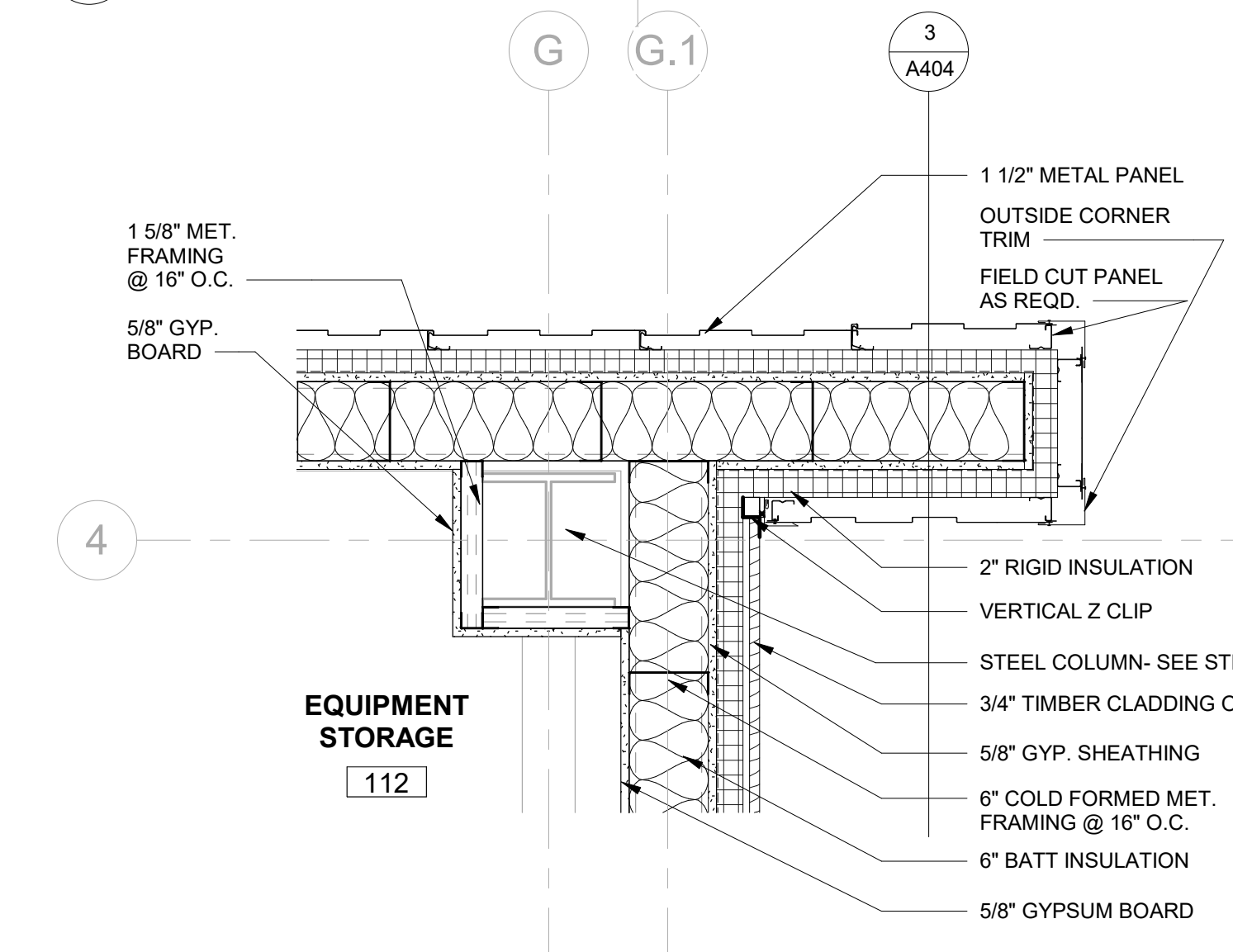
5 PLAN DETAIL  
A202 1" = 1'-0"



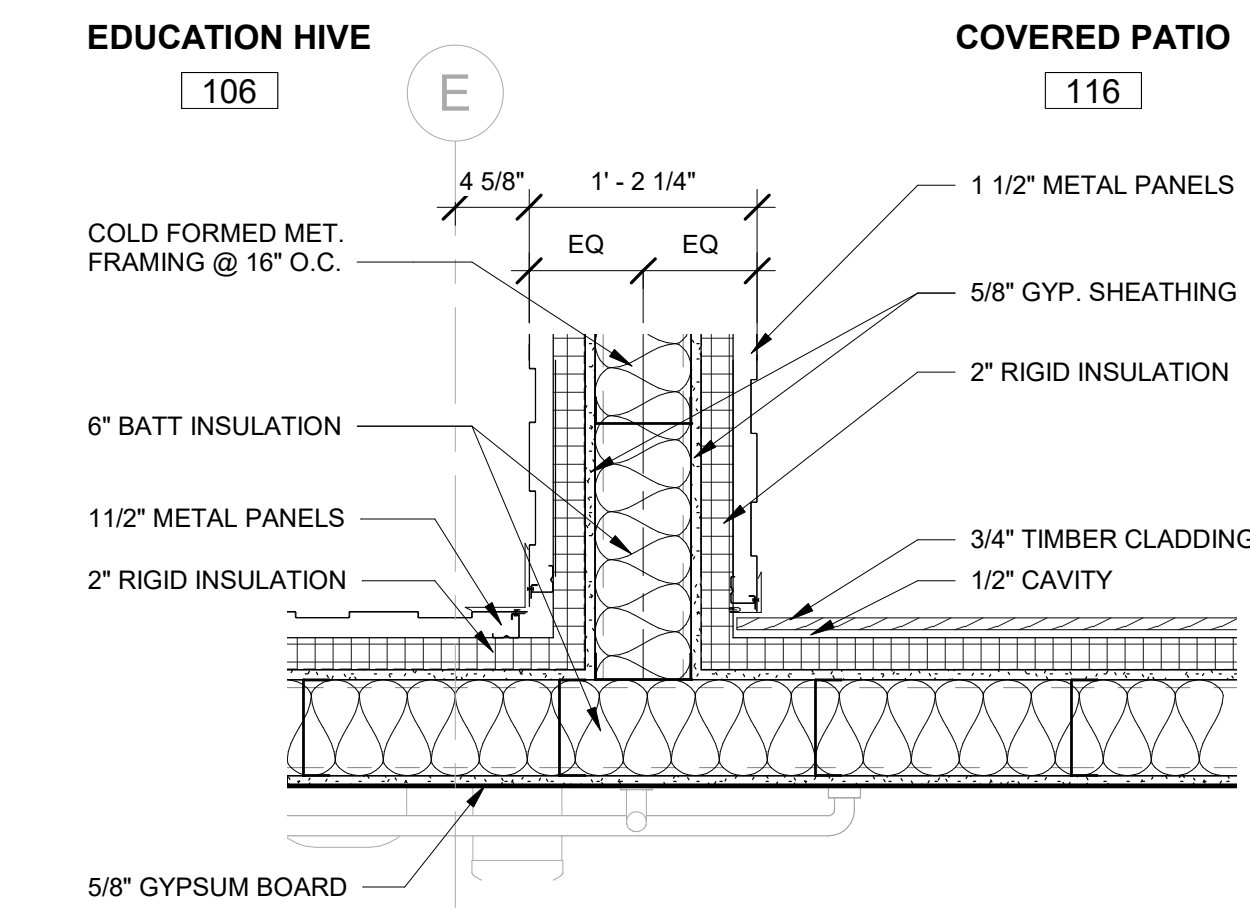
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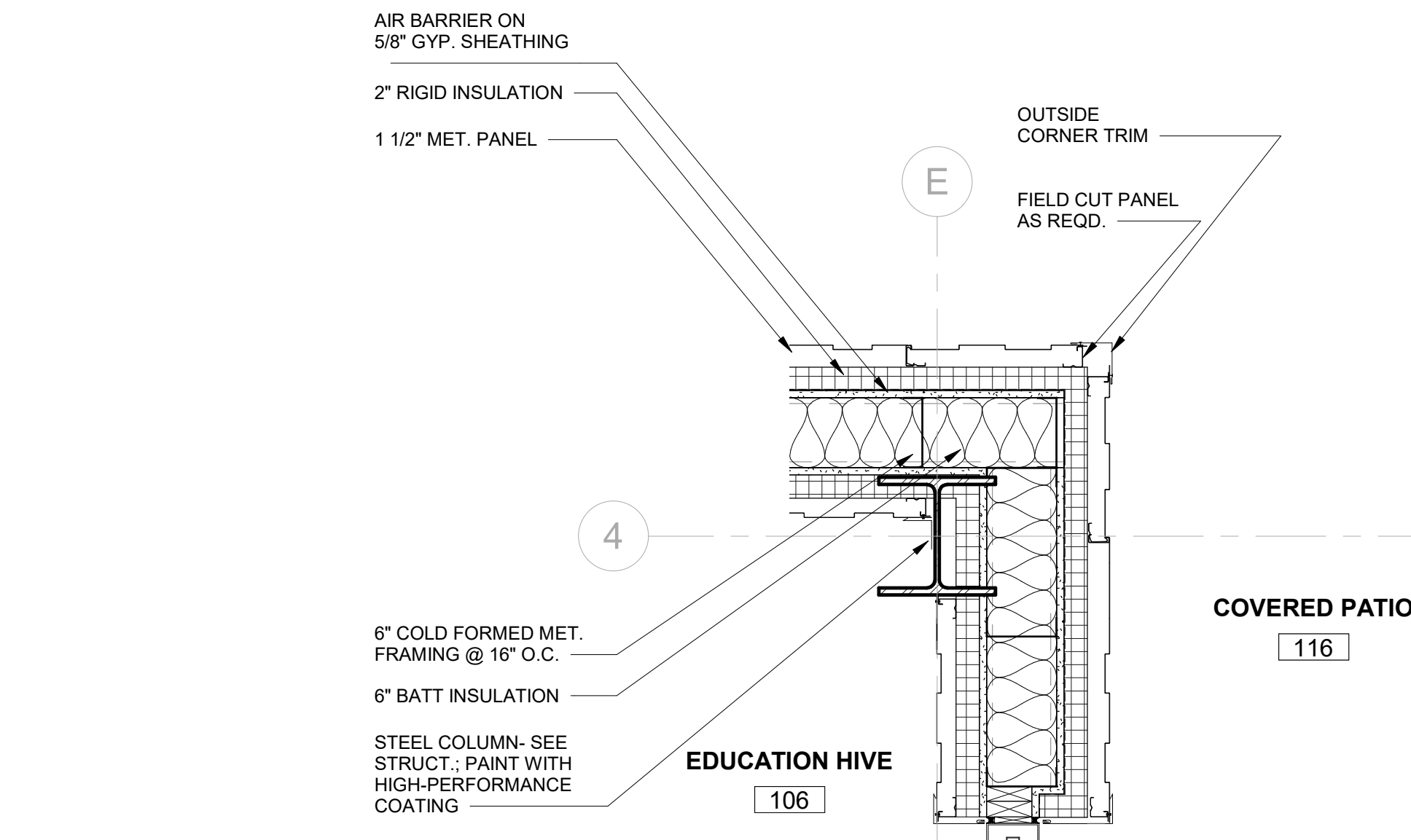
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A202 1" = 1'-0"



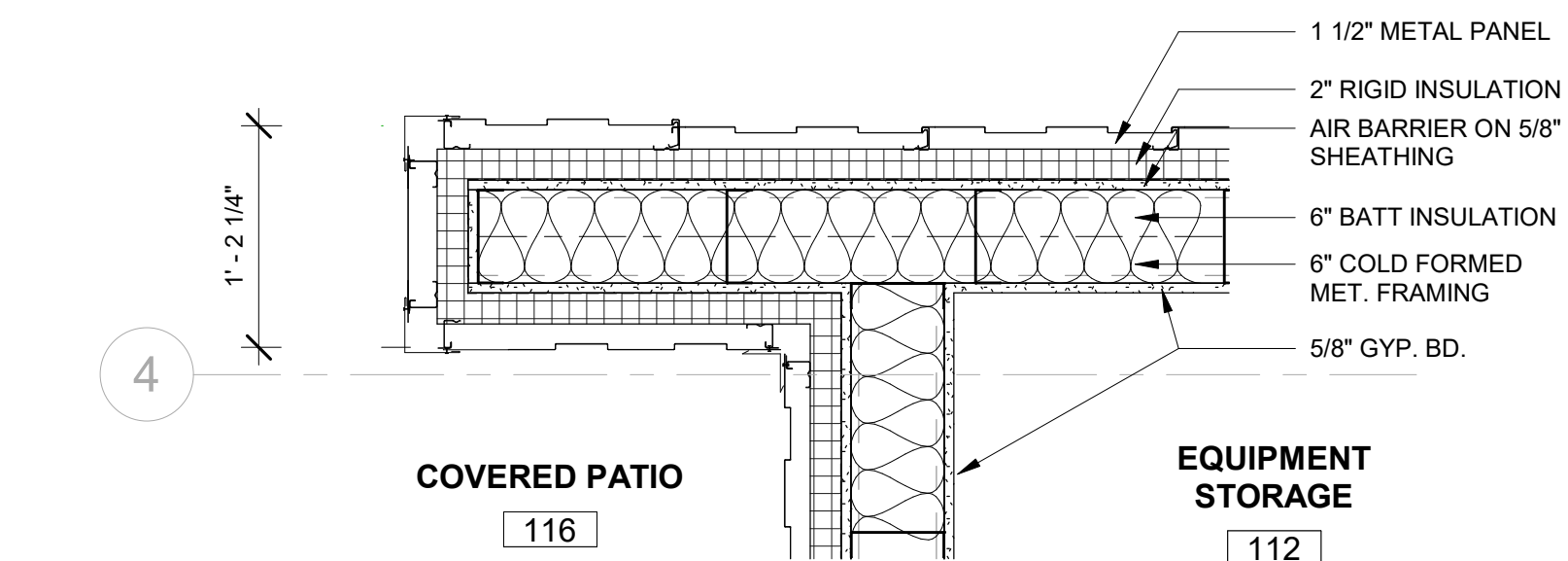
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A202 1" = 1'-0"



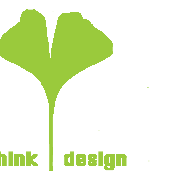
9 PLAN DETAIL  
A202 1" = 1'-0"



10 PLAN DETAIL  
A202 1" = 1'-0"



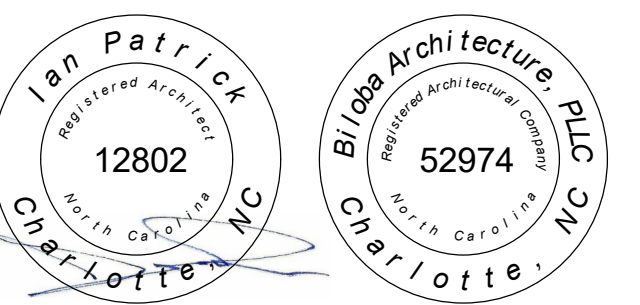
11 PLAN DETAIL  
A202 1" = 1'-0"



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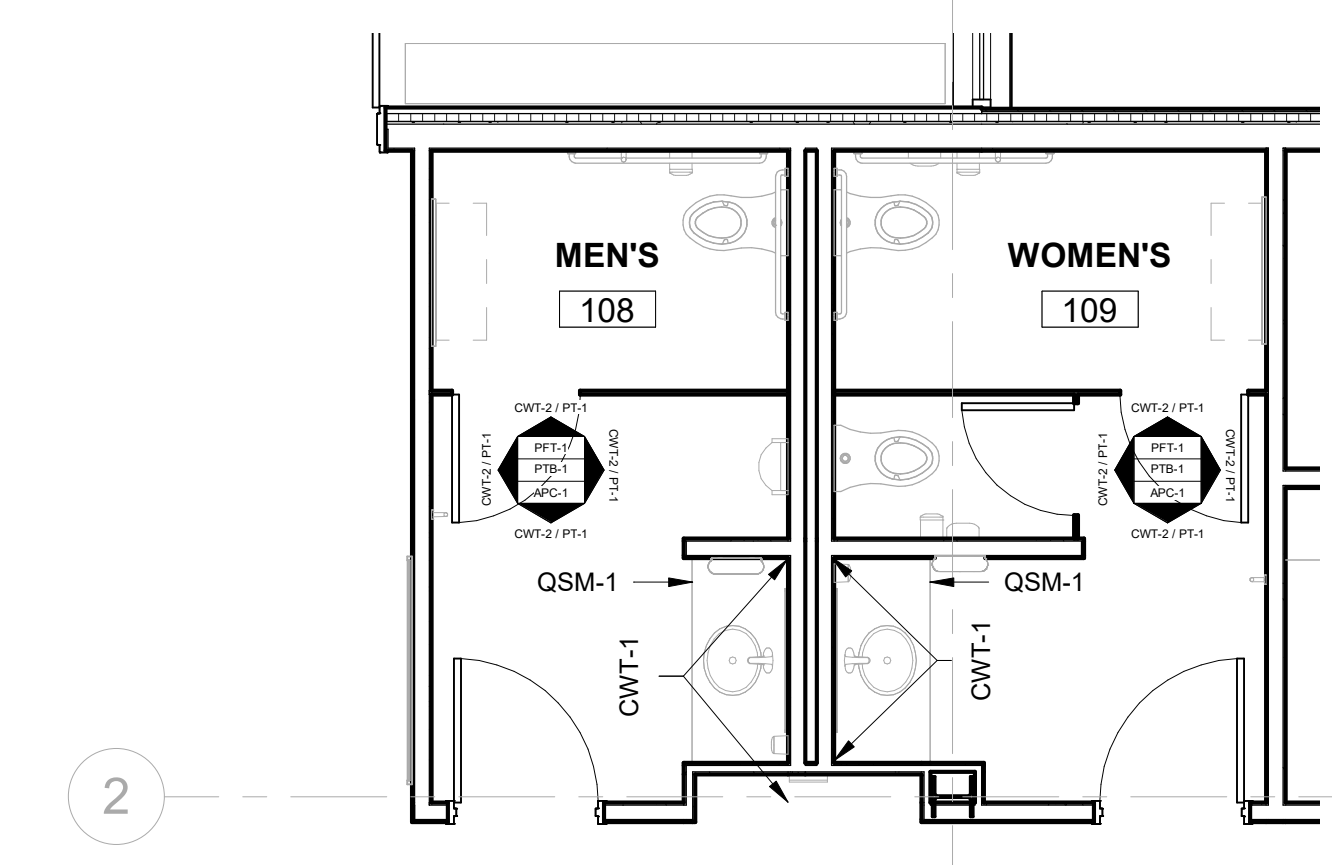
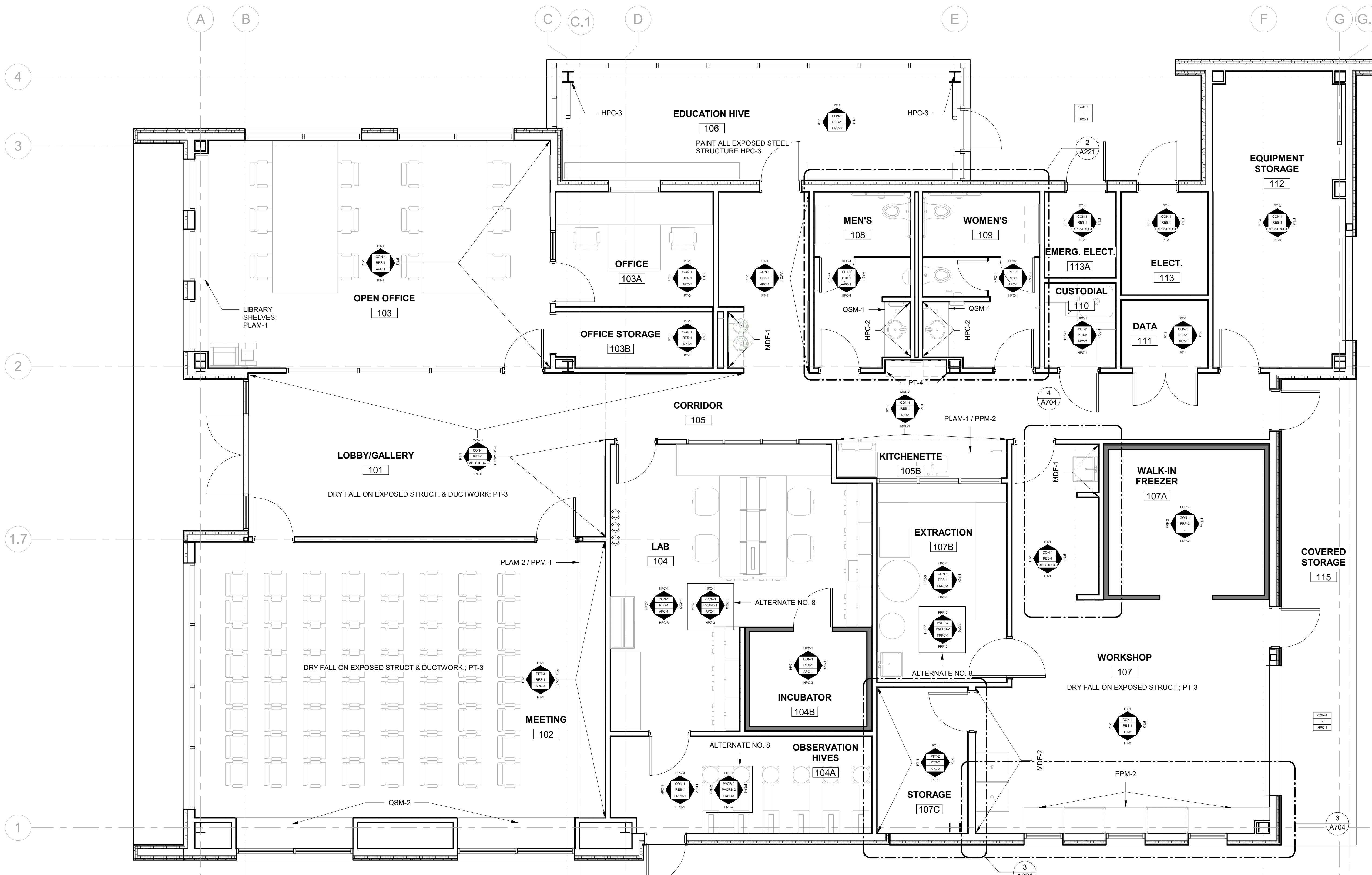
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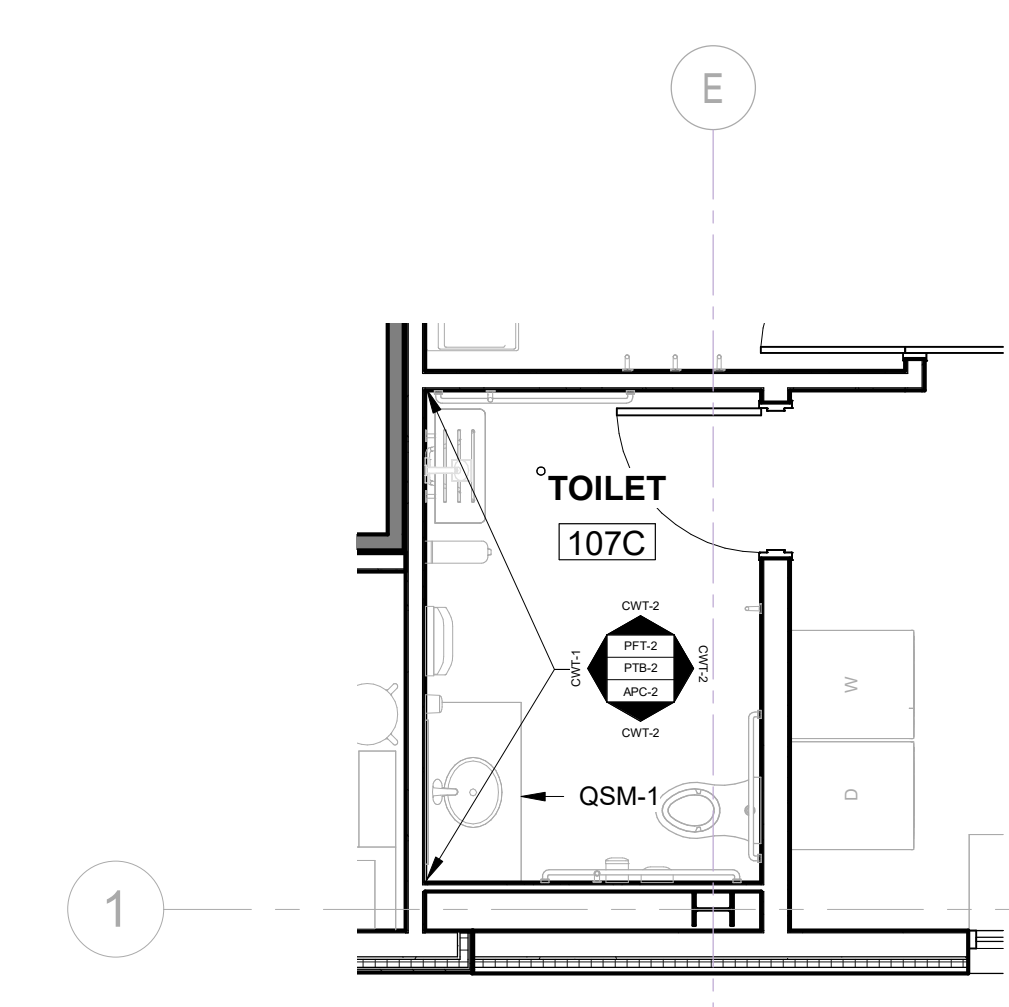


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2 FINISH PLAN - ALTERNATE NO. 4  
1/4" = 1'-0"



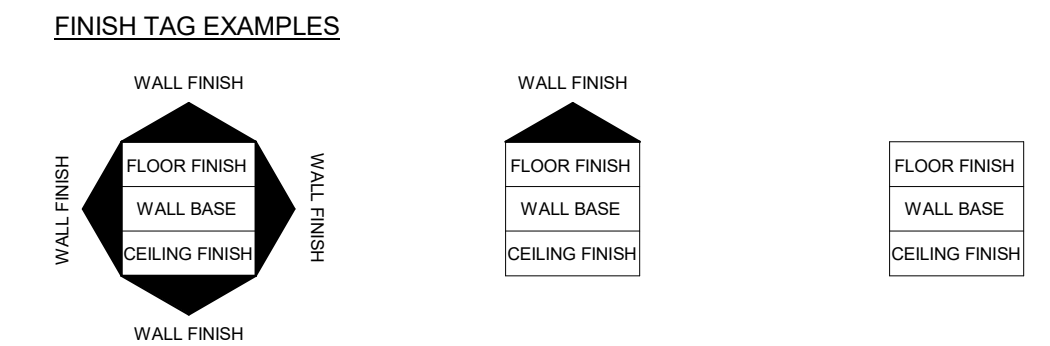
3 FINISH PLAN - ALTERNATE NO. 5  
1/4" = 1'-0"

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

**FINISH NOTES**

- ALL INTERIOR FINISHES SHALL COMPLY WITH NC STATE BUILDING CODE CHAPTER 8.
- MANUFACTURER'S NAME AND STOCK NUMBERS ARE PROVIDED TO IDENTIFY THE PATTERN, COLOR, AND TEXTURE DESIRED (BASIS OF DESIGN). OTHER MANUFACTURERS' PRODUCTS MEETING THE REQUIREMENTS SPECIFIED AND HAVING SIMILAR PATTERN, COLOR AND TEXTURE MAY BE ACCEPTABLE. SEE SPECS FOR LISTING OF ALTERNATE MANUFACTURERS.
- ALL WALLS TO BE PAINTED PT-1 U.N.O.
- ALL NEW GYP. BD. CEILINGS TO BE PAINTED PT-1 U.N.O.
- PROVIDE MANUAL ROLLER SHADES FOR ROOM 103-OPEN OFFICE EAST WINDOWS AND ROOM 102-MEETING WEST WINDOWS.
- ALL DOOR FRAMES TO BE PAINTED SAME AS ADJACENT WALL COLOR U.N.O.
- A METAL SCHLUTER STRIP (VMPRO-U IN BRUSHED CHROME, OR APPROVED EQUAL) SHALL BE PROVIDED AT LVT TO CONC FLOOR TRANSITIONS.
- EXPOSED STRUCTURE AND MECHANICAL TO BE PAINTED IN DRY FOG.

**FINISH SYMBOL LEGEND**



**FINISH LEGEND**

APC	ACOUSTICAL PANEL CEILING
AWP	ACOUSTICAL WALL PANEL
CON	CONCRETE FLOOR
CONP	CONCRETE FLOOR POLISHED
CWT	CERAMIC WALL TILE
FRP	FIBERGLASS REINFORCED PLASTIC
FRPC	FIBERGLASS REINFORCED PLASTIC CEILING
HPC	HIGH PERFORMANCE COATING
MDF	MEDIUM DENSITY FIBERBOARD WALL PANELS
PT	PAINT
PFT	PORCELAIN FLOOR TILE
PFTM	PAPER PHENOLIC MATERIAL
PTB	PORCELAIN TILE BASE
PLAM	PLASTIC LAMINATE
PVCR	POLYVINYL CHLORIDE ROLL
PVCRB	POLYVINYL CHLORIDE ROLL BASE (INTEGRAL)
QSM	QUARTZ SURFACE MATERIAL
RES	RESILIENT RUBBER BASE
SSM	SOLID SURFACE MATERIAL
VWC	VINYL WALL COVERING

**WALL FINISH:**

PT-1	MATERIAL: PAINT MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW7004 COLOR: SNOWBOUND GLOSS: EGGSHELL
PT-2	MATERIAL: PAINT MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW6682 COLOR: LUNE DRY GLOSS: EGGSHELL
PT-3	MATERIAL: PAINT MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW6684 COLOR: BEFORE THE STORM GLOSS: EGGSHELL
PT-4	MATERIAL: PAINT MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW9685 COLOR: AFTER THE STORM GLOSS: EGGSHELL
HPC-1	MATERIAL: HIGH PERFORMANCE COATING MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW7004 COLOR: SNOWBOUND
HPC-2	MATERIAL: HIGH PERFORMANCE COATING MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW6683 COLOR: BEE
HPC-3	MATERIAL: HIGH PERFORMANCE COATING MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: SW7069 COLOR: IRON ORE
FRP-1	MATERIAL: FIBERGLASS REINFORCED PLASTIC MANUFACTURER: CRANE COMPOSITES PRODUCT NO: GLASBOARD COLOR: BLACK FINISH: DIMPLED
FRP-2	MATERIAL: FIBERGLASS REINFORCED PLASTIC MANUFACTURER: CRANE COMPOSITES PRODUCT NO: GLASBOARD COLOR: WHITE FINISH: DIMPLED
CWT-1	MATERIAL: CERAMIC WALL TILE MANUFACTURER: UMORE PRODUCT NO: BOLOGNA COLOR: JUNIPER - MIXED FINISH SIZE: HEXAGON MOSAIC
CWT-2	MATERIAL: CERAMIC WALL TILE MANUFACTURER: UMORE PRODUCT NO: SOLENO COLOR: LACE MATTE SIZE: 2.5" X 16"
MDF-1	MATERIAL: MEDIUM DENSITY FIBERBOARD WALL PANELS MANUFACTURER: ARCHITECTURAL SYSTEMS, INC. PRODUCT NO: CHIZEL BLACK MDF PANELS COLOR: BLACK - WPFNS06 THICKNESS: 12.5MM

**WALL FINISH (CONTINUED):**

MDF-2	MATERIAL: MEDIUM DENSITY FIBERBOARD WALL PANELS MANUFACTURER: ARCHITECTURAL SYSTEMS, INC. PRODUCT NO: CHIZEL WOOD PANELS COLOR: WOOD - WPFNS195 THICKNESS: 12.5MM
AWP-1	MATERIAL: ACOUSTICAL WALL PANEL MANUFACTURER: ARCHITECTURAL SYSTEMS, INC. PRODUCT NO: WOOD SLAT WALL - ACOUSTICAL COLOR: WALNUT NATURAL WPFV495 THICKNESS: 12.5MM
VWC-1	MATERIAL: VINYL WALL COVERING MANUFACTURER: DREAMSCAPE WALLS PRODUCT NO: TYPE 1 COMMERCIAL WALLCOVERINGS COLOR: GRAPHIC TBD BY OWNER
PFT-1	MATERIAL: PORCELAIN FLOOR TILE MANUFACTURER: DALTE PRODUCT NO: BEE HIVE MEDLEY COLOR: CUBE POSITIVE P047 SIZE: 8 1/2" X 10" HEXAGON
PFT-2	MATERIAL: PORCELAIN FLOOR TILE MANUFACTURER: SHERWIN-WILLIAMS PRODUCT NO: TIVOLI COLOR: MIDNIGHT SIZE: 10" X 11" HEX MOSAIC
PFT-3	MATERIAL: PORCELAIN FLOOR TILE MANUFACTURER: DALTE PRODUCT NO: ACREAGE COLOR: PALAMINO AC11 SIZE: 9" X 45" MATTE
PVCR-1	MATERIAL: POLYVINYL CHLORIDE ROLL MANUFACTURER: ALTRO PRODUCT NO: SYMPHONIA COLOR: AYANA SY20034
PVCR-2	MATERIAL: POLYVINYL CHLORIDE ROLL MANUFACTURER: ALTRO PRODUCT NO: SYMPHONIA COLOR: FESTUCA SY20010
CON-1	MATERIAL: CONCRETE FLOOR FINISH: SEALED
PCON-1	MATERIAL: CONCRETE FLOOR FINISH: POLISHED
RES-1	MATERIAL: RESILIENT RUBBER BASE MANUFACTURER: JOHNSONITE PRODUCT NO: BASEWORKS THERMOSET RUBBER (TYPE TS) COLOR: 48 GREY SIZE: 6"
PTB-1	MATERIAL: PORCELAIN TILE BASE MANUFACTURER: DALTE PRODUCT NO: COLOR WHEEL LINEAR COLOR: MATTE ARCTIC WHITE SIZE: 4" X 12" FLAT TOP COVE BASE

**WALL BASE (CONTINUED):**

PTB-2	MATERIAL: PORCELAIN TILE BASE MANUFACTURER: UMORE PRODUCT NO: TIVOLI COLOR: MIDNIGHT SIZE: 4" CUT TILE BASE (USE SCHLUTER DILEX-AHK IN SATIN NICKEL AT)
PVCRB-1	MATERIAL: POLYVINYL CHLORIDE ROLL BASE MANUFACTURER: ALTRO PRODUCT NO: SYMPHONIA COLOR: AYANA SY20034 SIZE: 6" (INTEGRAL COVE BASE)
PVCRB-2	MATERIAL: POLYVINYL CHLORIDE ROLL BASE MANUFACTURER: ALTRO PRODUCT NO: SYMPHONIA COLOR: FESTUCA SY20010 SIZE: 6" (INTEGRAL COVE BASE)
APC-1	MATERIAL: ACOUSTICAL PANEL CEILING MANUFACTURER: ARMSTRONG PRODUCT NO: CALLA 680 COLOR: WHITE SIZE: 2' X 2' X 1"
APC-2	MATERIAL: ACOUSTICAL PANEL CEILING MANUFACTURER: ARMSTRONG PRODUCT NO: CERAMAGUARD 605 COLOR: WHITE SIZE: 2' X 4' X 5/8"
APC-3	MATERIAL: ACOUSTIC PET MATERIAL CEILING MANUFACTURER: ALTRISPACE PRODUCT NO: ACOUSTIC SHAPES, HEXAGON COLOR: WHITE SIZE: 30" X 30" X 2"
FRPC-1	MATERIAL: FIBERGLASS REINFORCED PLASTIC CEILING MANUFACTURER: NIUDO PRODUCT NO: FIBERLITE FRP COLOR: WHITE 151 SIZE: 24" X 24" FINISH: SMOOTH
PLAM-1	MATERIAL: PLASTIC LAMINATE MANUFACTURER: FENIX PRODUCT NO: FENIX NTM COLOR: NERO INGO J0720 FINISH: MATTE - THROUGH COLOR
PLAM-2	MATERIAL: PLASTIC LAMINATE MANUFACTURER: FENIX PRODUCT NO: FENIX NTM COLOR: BLU FES J0754 FINISH: MATTE - THROUGH COLOR
PPM-1	MATERIAL: PAPER PHENOLIC MATERIAL MANUFACTURER: RICHIE PRODUCT NO: CASCADE COLOR: HOOD (HONED FINISH)

**MILLWORK / COUNTERTOPS (CONTINUED):**

PPM-2	MATERIAL: PAPER PHENOLIC MATERIAL MANUFACTURER: RICHIE PRODUCT NO: STRATUM COLOR: BAMBOO BLACK DIAMOND (HONED FINISH)
QSM-1	MATERIAL: QUARTZ SURFACE MATERIAL MANUFACTURER: CORIAN PRODUCT NO: QUARTZ SURFACE COLOR: PORTORO
QSM-2	MATERIAL: QUARTZ SURFACE MATERIAL MANUFACTURER: CORIAN PRODUCT NO: QUARTZ SURFACE COLOR: SNOW WHITE

**EXTERIOR FINISH NOTES**

- SEE EXTERIOR ELEVATIONS FOR METAL PANEL COLOR LOCATIONS.
- RED STANDING SEAM METAL ROOF: METAL ROOFING SYSTEMS, INC. - REGAL RED
- RED METAL FASCIA: MBCI - SIGNATURE 300 BRITE RED
- RED METAL PANEL: MBCI DESIGNER SERIES FLUTED - SIGNATURE 300 BRITE RED
- BROWN METAL TRIM: MBCI - SIGNATURE 200 KOKO BROWN
- WHITE METAL PANEL: MBCI DESIGNER SERIES FLUTED - SIGNATURE 300 BONE WHITE
- RED METAL GUTTER WITH RAINCHAINS: MBCI - SIGNATURE 300 BRITE RED
- TIMBER CLADDING: RESAWN TIMBER CO. - ACCOYA WATSON 1C
- AHU ENCLOSURE: MBCI - SIGNATURE 200 KOKO BROWN

**ALTERNATES LEGEND**

ALTERNATE NO. 1A	OWNER PREFERRED DOOR HARDWARE
ALTERNATE NO. 1B	OWNER PREFERRED BRAND CONTROLLER
ALTERNATE NO. 1C	OWNER PREFERRED CONTROLS
ALTERNATE NO. 1D	OWNER PREFERRED CONTROLS
ALTERNATE NO. 2	BARN QUILT CUSTOM PANELS
ALTERNATE NO. 3	MOVEABLE GLASS WALL
ALTERNATE NO. 4	CERAMIC WALL TILE (BASE BID - HIGH PERFORMANCE COATING HPC-1)
ALTERNATE NO. 5	TOILET ROOM 107C (BASE BID - STORAGE ROOM 107C)
ALTERNATE NO. 6	EMERGENCY GENERATOR
ALTERNATE NO. 7	POLISHED CONCRETE (BASE BID - UNPOLISHED CONCRETE)
ALTERNATE NO. 8	FRP AND PVC ROLL PRODUCT FLOORING (BASE BID - HIGH PERFORMANCE COATING HPC-1 AND UNPOLISHED CONCRETE FLOOR CON-1)
ALTERNATE NO. 9	AHU SCREENING (BASE BID - OMIT SCREENING)
ALTERNATE NO. 10	EXISTING HOUSE & SEPTIC DEMOLITION
ALTERNATE NO. 11	LAB CASEWORK (BASE BID - OMIT LAB CASEWORK)

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**NCSU Apiculture Facility**

Raleigh, NC  
SCO ID No.: 22-24494-01A  
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Project Number 132

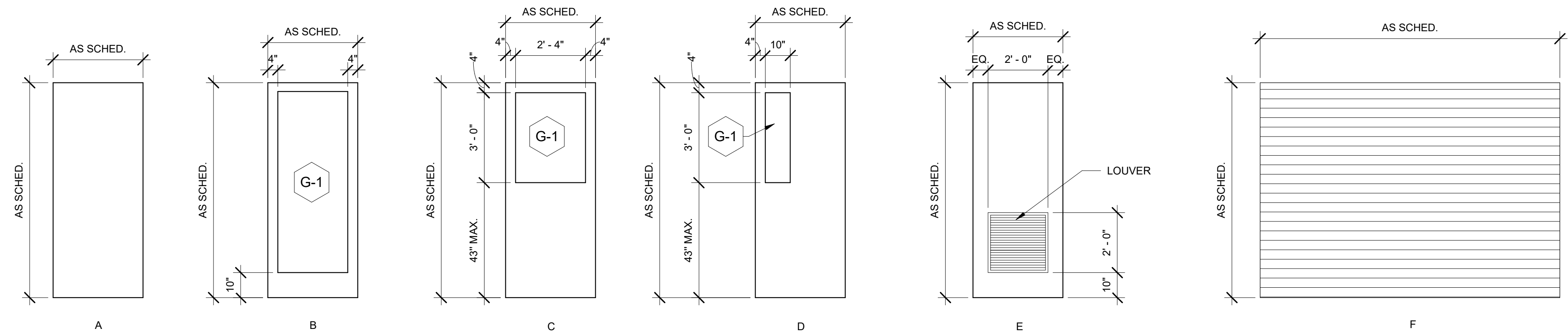
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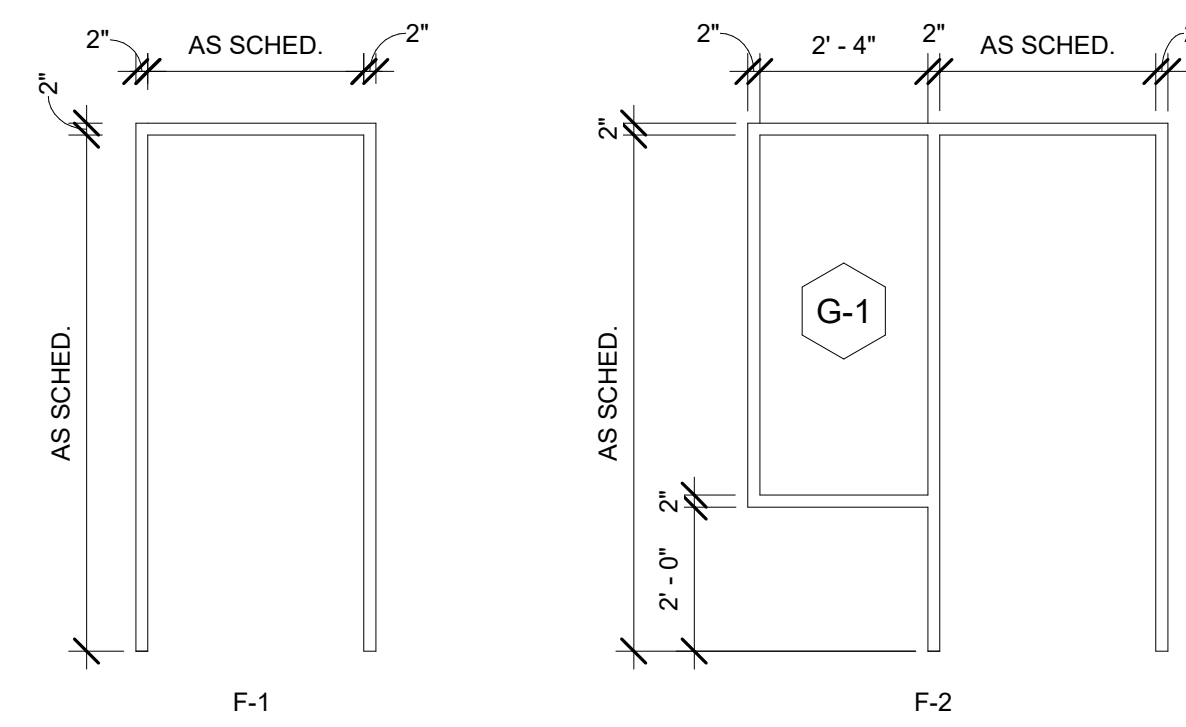
**A221**

Plate

DOOR SCHEDULE - BASE BID													
DOOR NO.	DOOR TYPE	DOOR MATERIAL	FIRE RATING	HARDWARE SET	DOOR WIDTH	DOOR HEIGHT	DOOR THICK	FRAME TYPE	FRAME MATERIAL	HEAD	JAMB	THOLD	COMMENTS
101.1	B	ALUM.	-	1	6'-0"	8'-0"	0'-1 3/4"	SF-6	ALUM.			10/A251	
102.1	B	WD.	-	3	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
102.1A/B	B	ALUM.	-	3	24'-4"	7'-0"	0'-1 25/32"	-	ALUM.	3/A254			MEETING ROOM- STACKING DOOR ALTERNATE NO. 3
102.2	B	WD.	-	3	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
103.1	B	WD.	-	5	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
103A.1	C	WD.	-	6	3'-0"	7'-0"	0'-1 3/4"	F-2	H.M.	3/A251	8/A251		
103B.1	-	-	-	-	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		CASED OPENING
104.1	B	WD.	-	5	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
104.1	D	WD.	-	7	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
104A.2	D	H.M.	-	4	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	6/A251	14/A251		
106.1	D	H.M.	-	4	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	4/A251	15/A251		
106.2	B	H.M.	-	4	3'-0"	7'-0"	0'-1 3/4"	-	ALUM.				
107.1	C	H.M.	-	5	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
107.2	F	STEEL	-	-	10'-0"	8'-0"	0'-3"	-	-	7/A251			OVERHEAD COILING DOOR
107.3	A	H.M.	-	4	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	4/A251	15/A251		
107B.1	D	STEEL	-	BY MANUF.	3'-0"	7'-0"	0'-1 3/4"	F-1	STEEL	3/A251	8/A251		TRAFFIC DOOR
107C.1	A	H.M.	-	11	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
108.1	A	WD.	-	8	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	11/A251	12/A251		
109.1	A	WD.	-	8	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	11/A251	12/A251		
110.1	A	WD.	-	9	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
111.1	A	WD.	-	10	5'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
112.1	A	WD.	-	5	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	3/A251	8/A251		
112.2	F	STEEL	-	-	8'-0"	8'-0"	0'-3"	-	-	7/A251			OVERHEAD COILING DOOR
113.1	E	H.M.	-	4	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	6/A251	14/A251		
113A.1	E	H.M.	-	2B	3'-0"	7'-0"	0'-1 3/4"	F-1	H.M.	6/A251	14/A251		
115.1	B	ALUM.	-	2A	3'-0"	7'-0"	0'-1 3/4"	F-1	ALUM.	4/A251	15/A251	10/A251	



1 DOOR ELEVATIONS  
A251 3/8" = 1'-0"

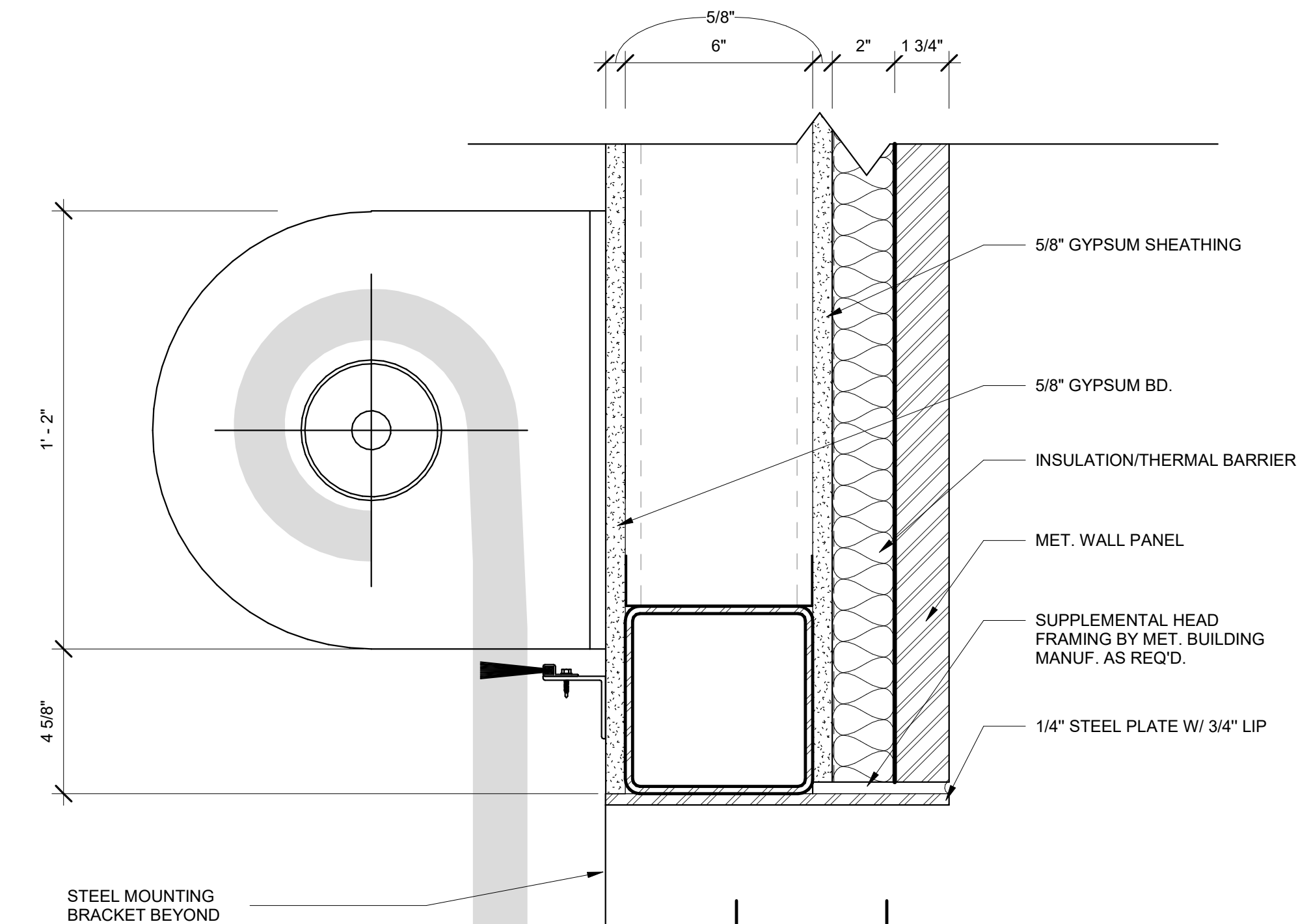


2 DOOR FRAME ELEVATIONS  
A251 3/8" = 1'-0"

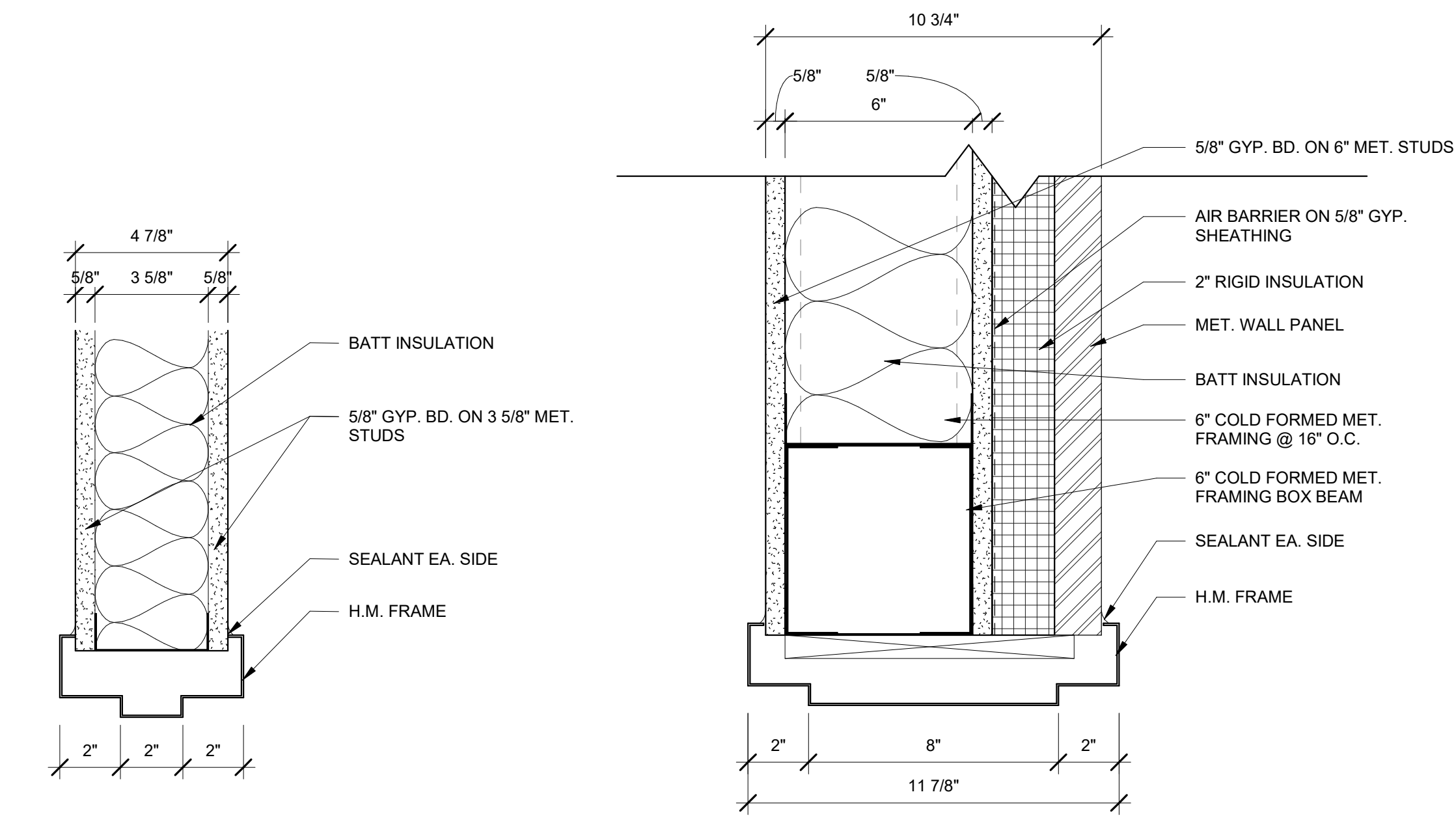
GLAZING SCHEDULE

G-1	1/4" CLEAR ANNEALED TEMPERED FLOAT GLASS
G-2	1" INSULATING GLAZING UNIT

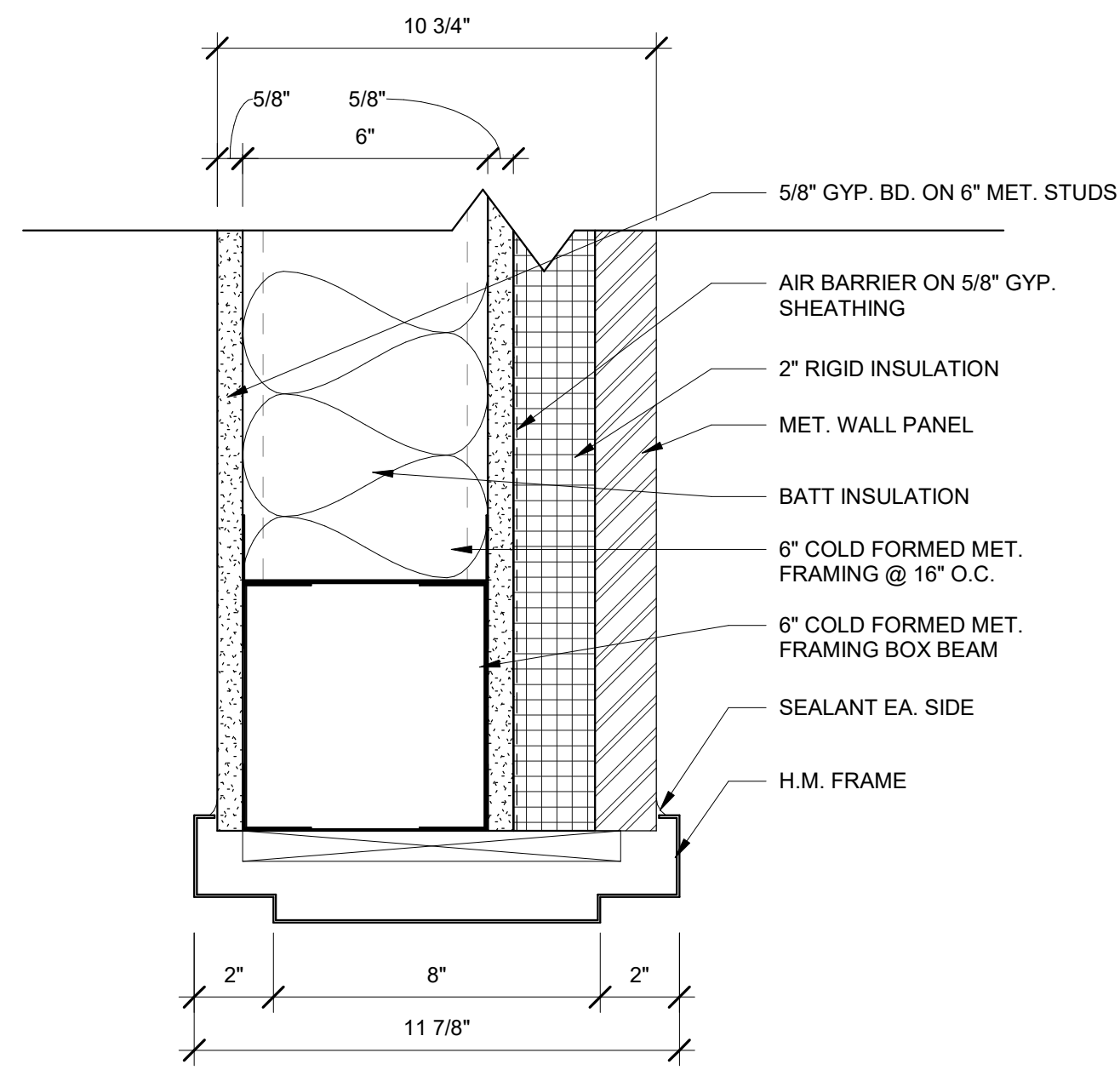
SEE SPECIFICATIONS FOR MORE INFORMATION ON GLAZING TYPES



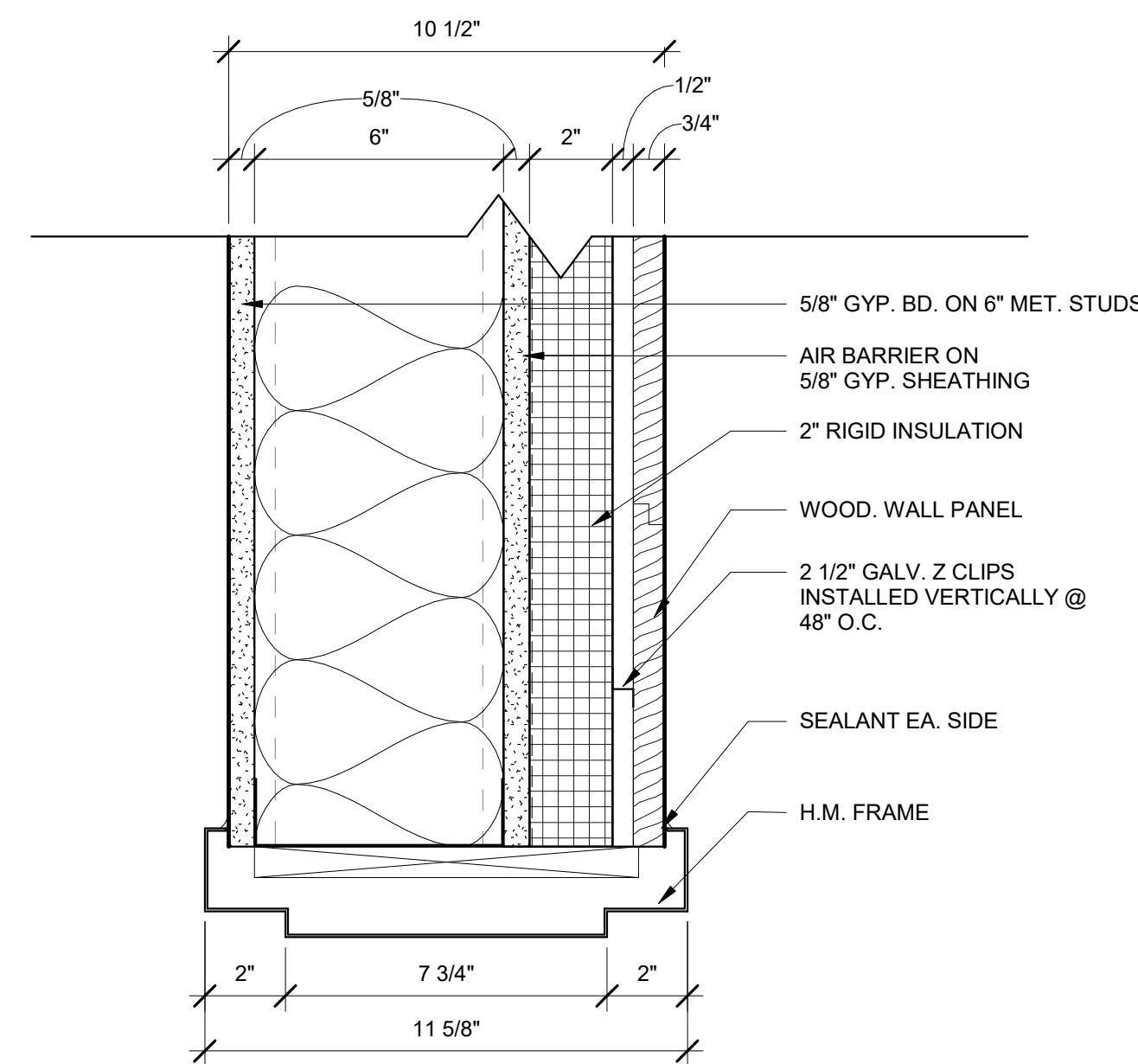
7 HEAD  
A251 3" = 1'-0"



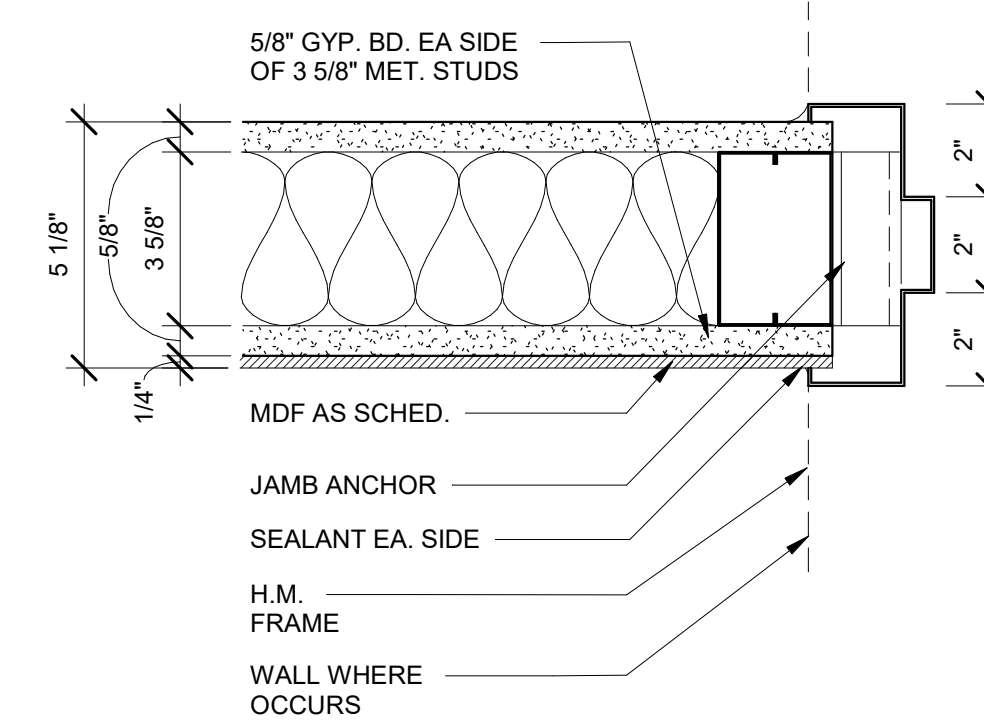
3 HEAD  
A251 3" = 1'-0"



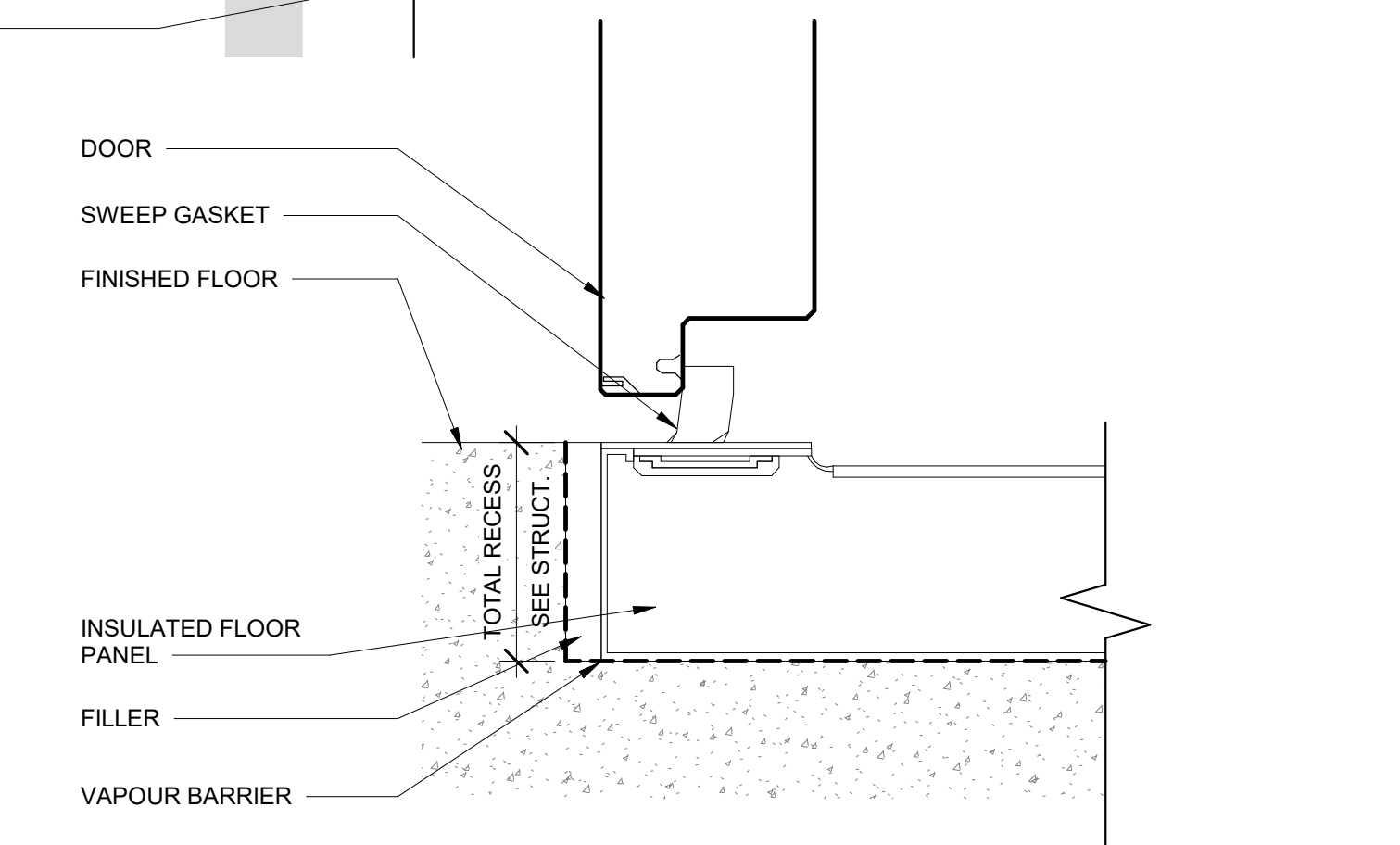
4 HEAD  
A251 3" = 1'-0"



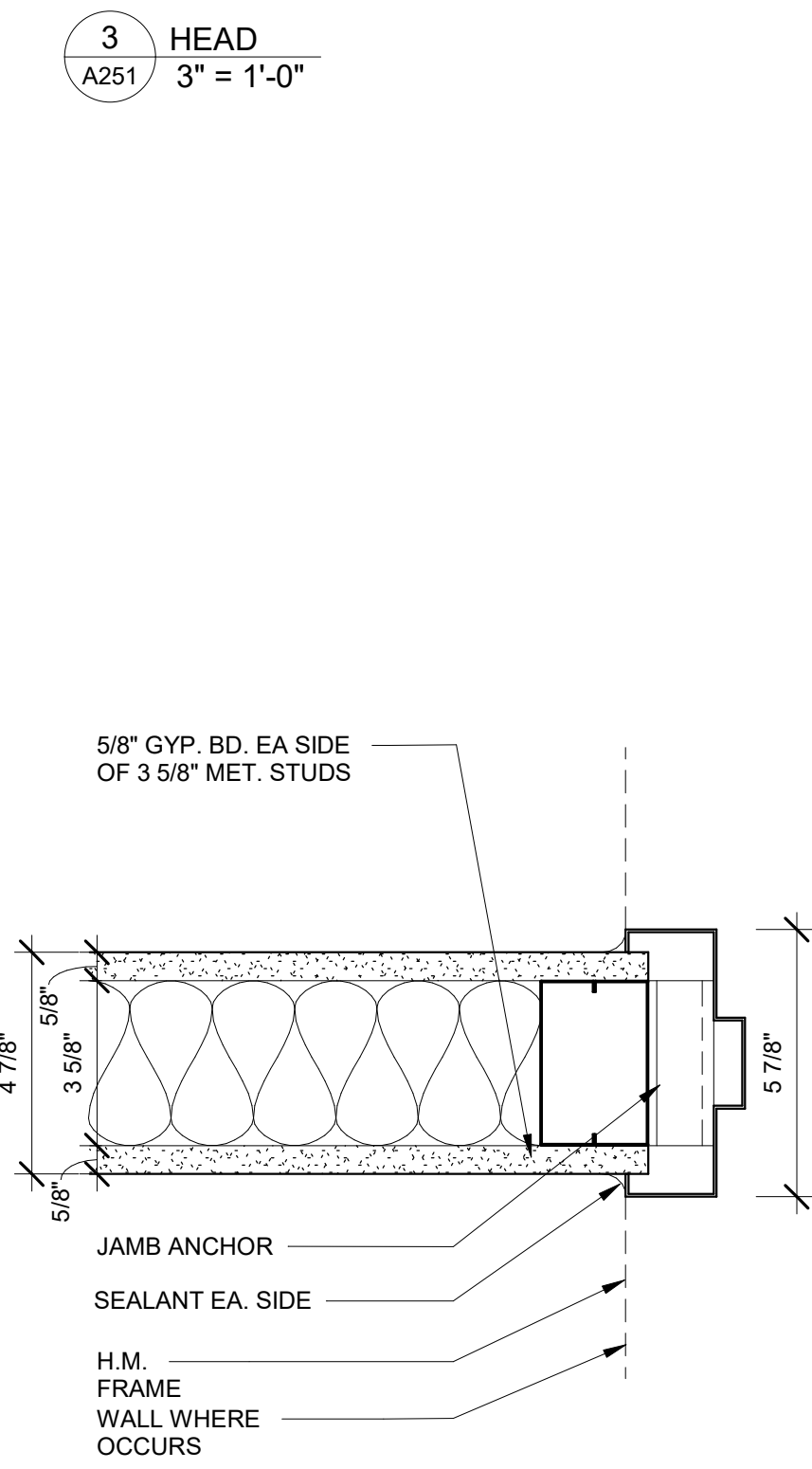
6 HEAD  
A251 3" = 1'-0"



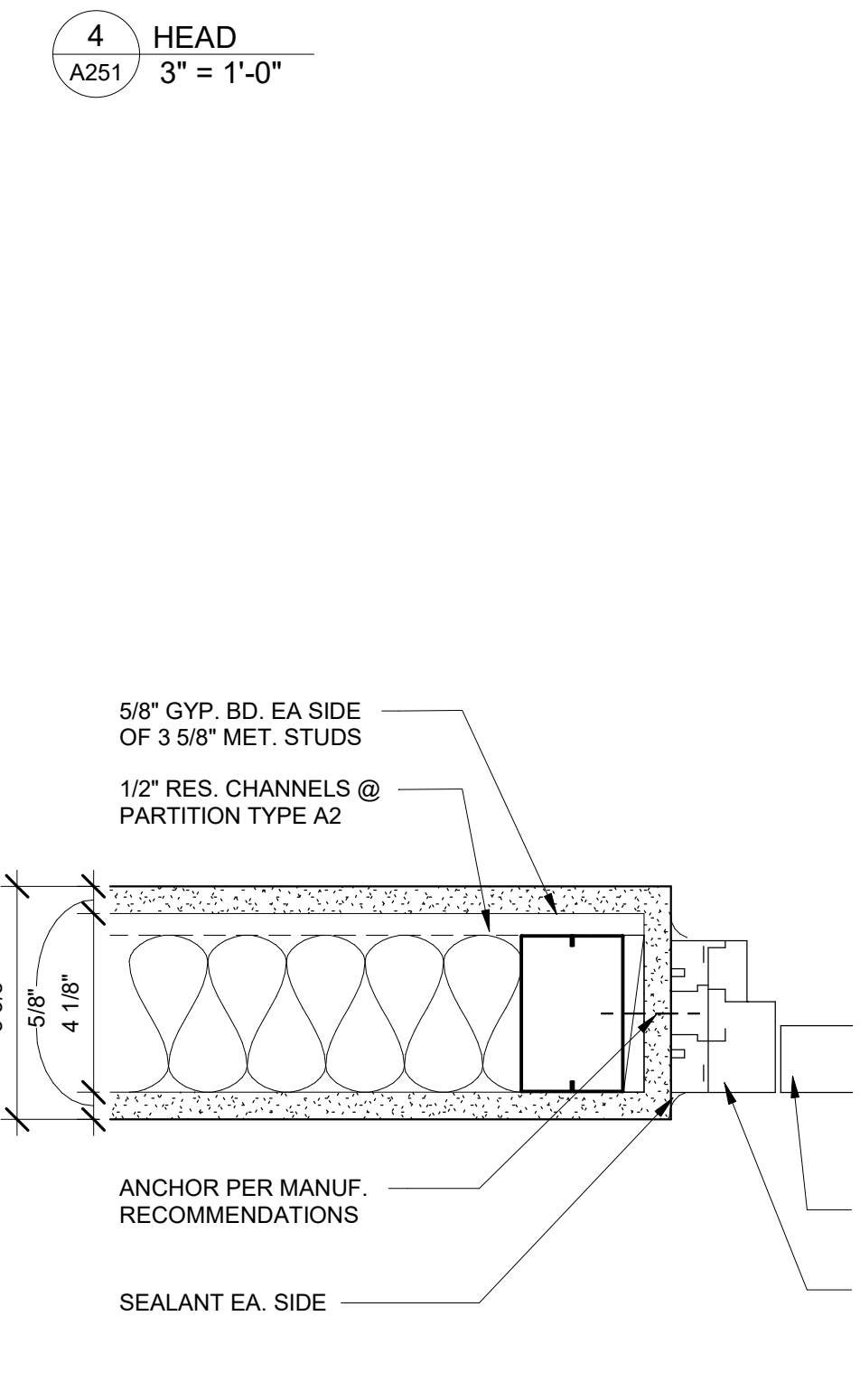
12 JAMB  
A251 3" = 1'-0"



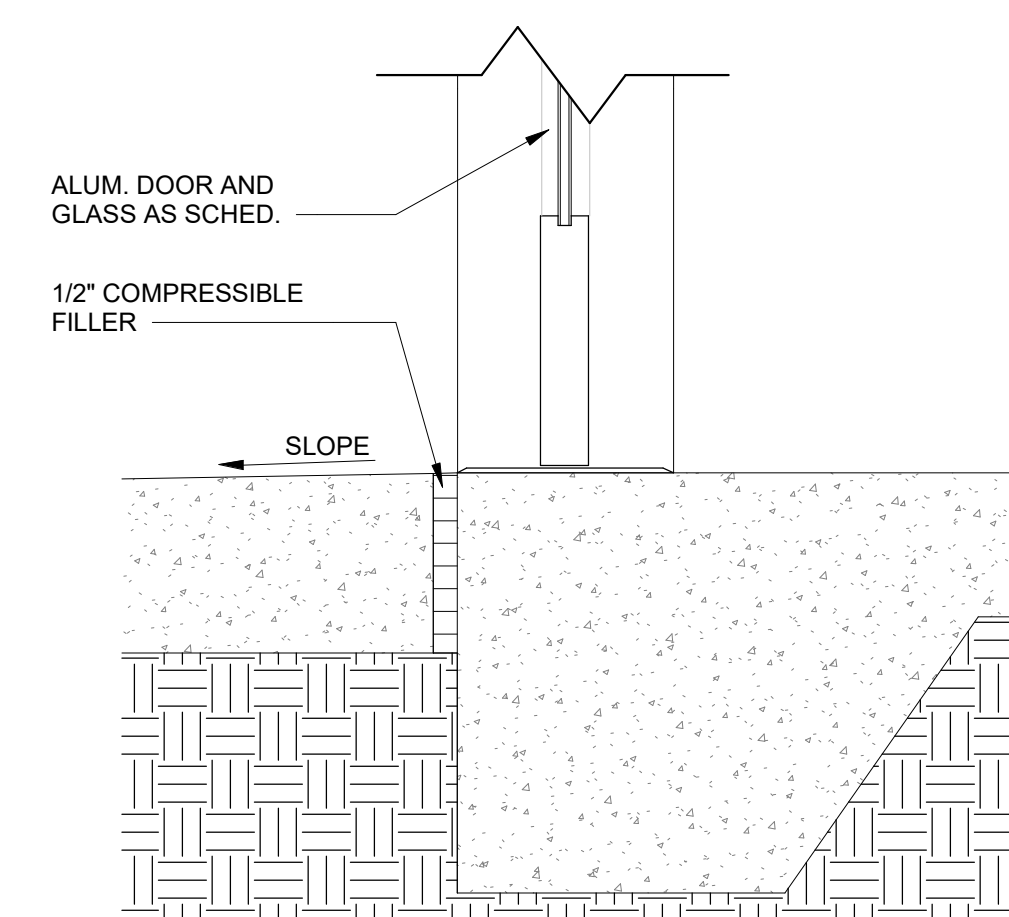
13 DETAIL- WALK IN FREEZER  
A251 3" = 1'-0"



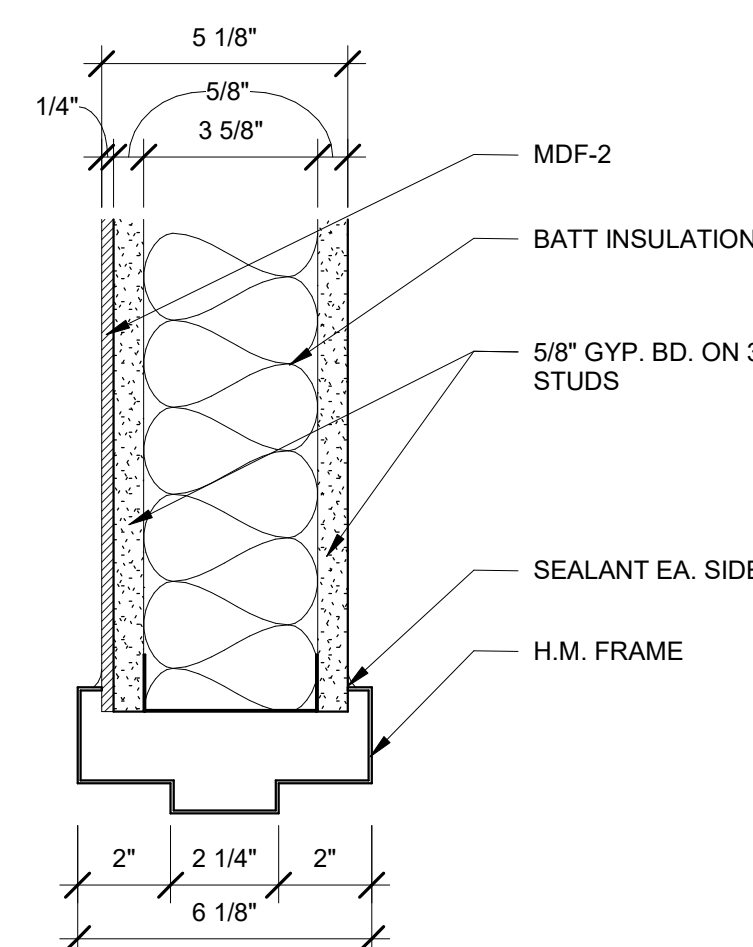
8 JAMB  
A251 3" = 1'-0"



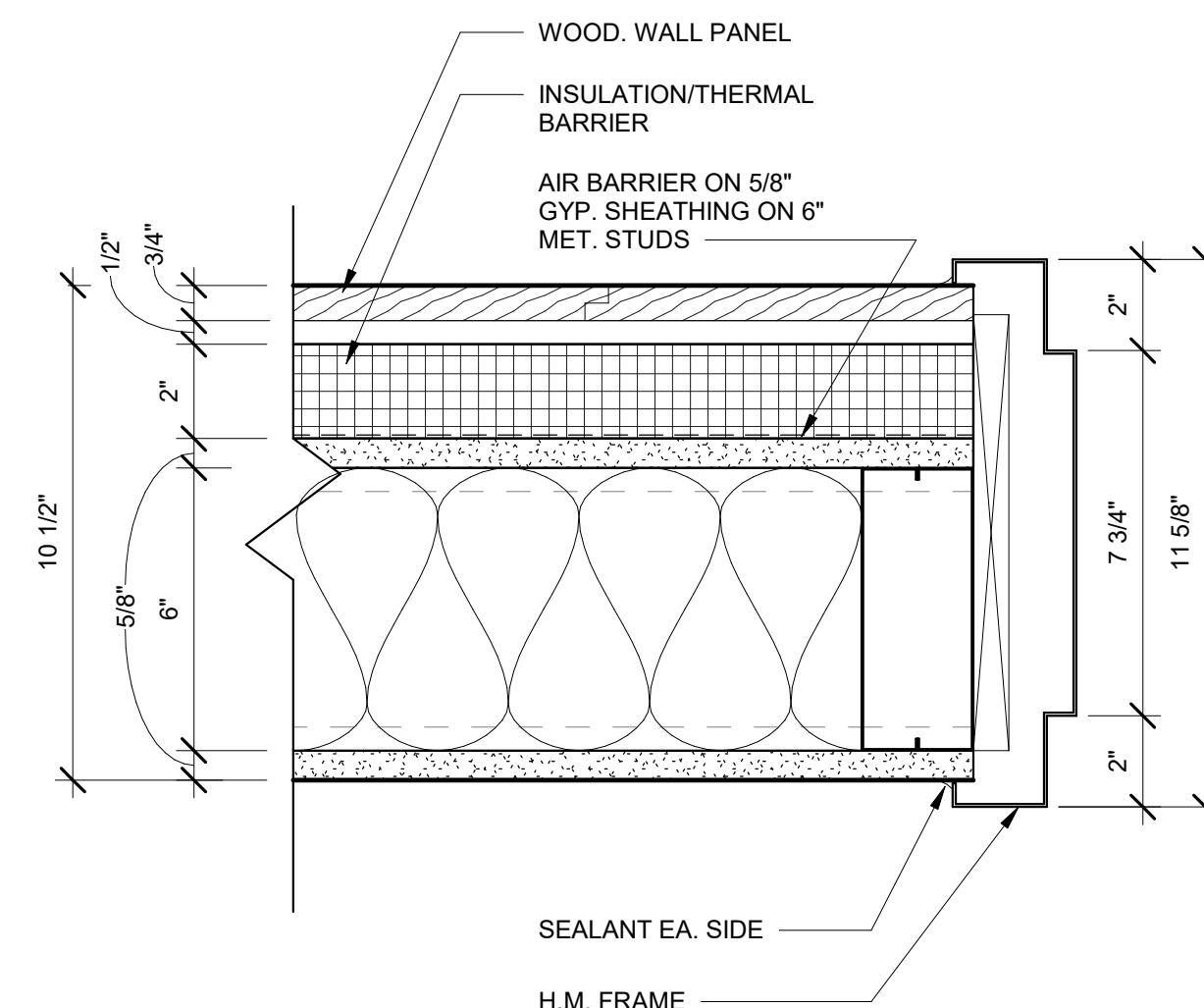
9 JAMB  
A251 3" = 1'-0"



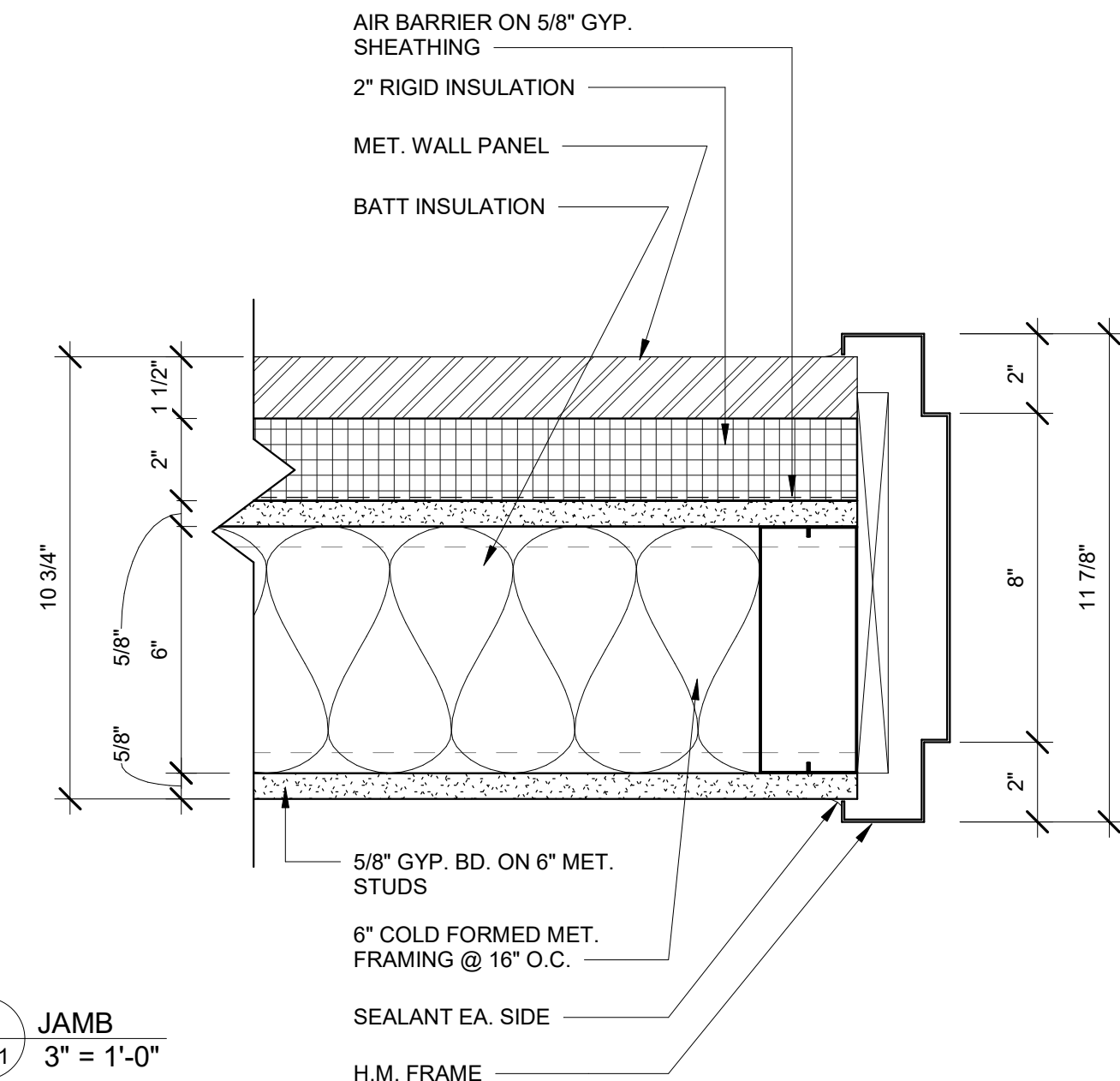
10 THRESHOLD DETAIL  
A251 3" = 1'-0"



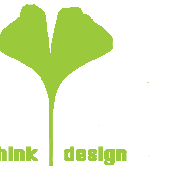
11 HEAD  
A251 3" = 1'-0"



14 JAMB  
A251 3" = 1'-0"



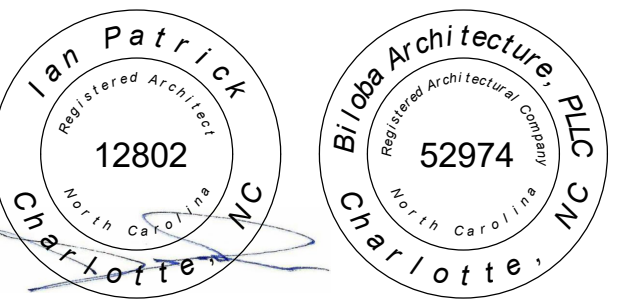
15 JAMB  
A251 3" = 1'-0"



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Date 01/10/2025

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Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

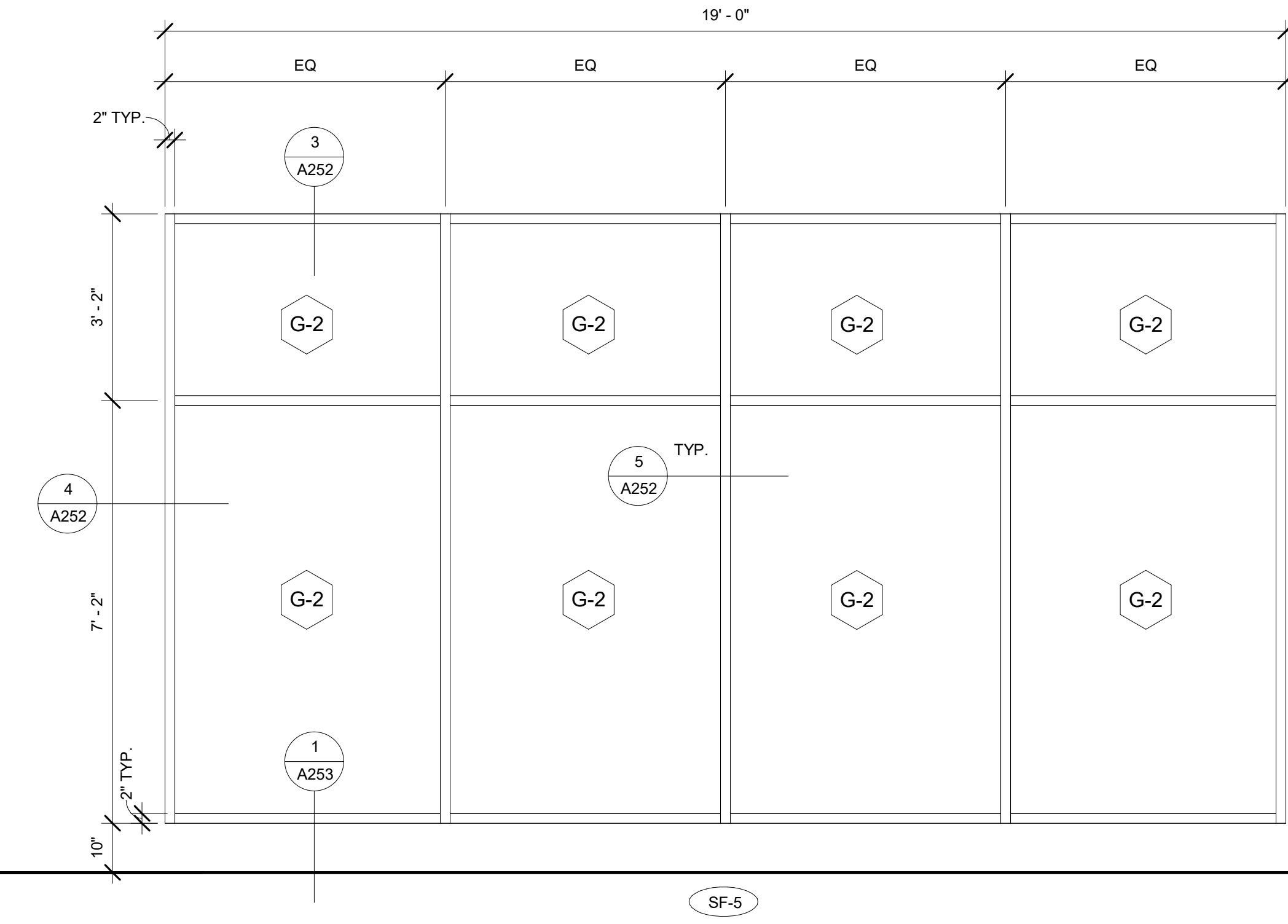
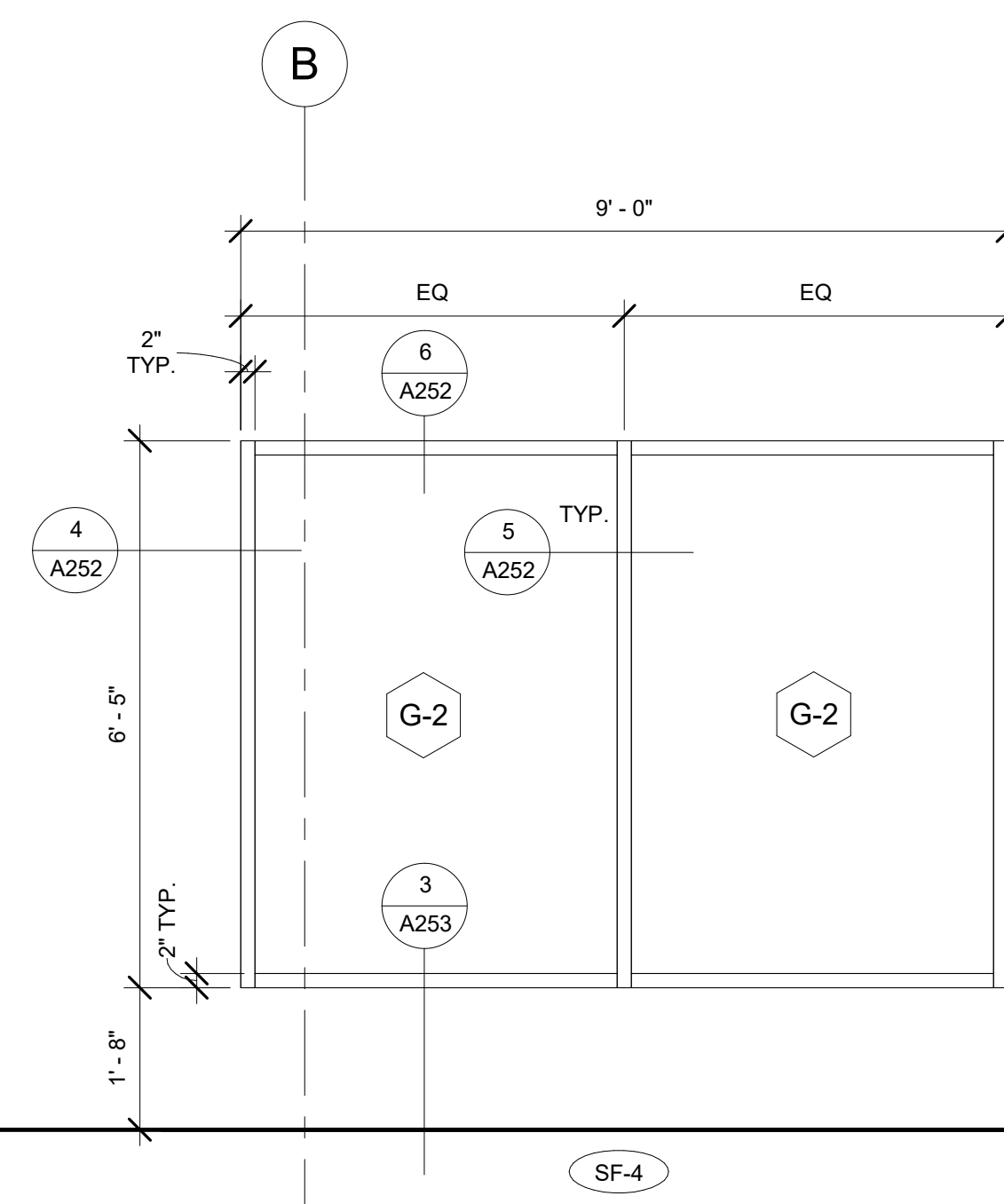
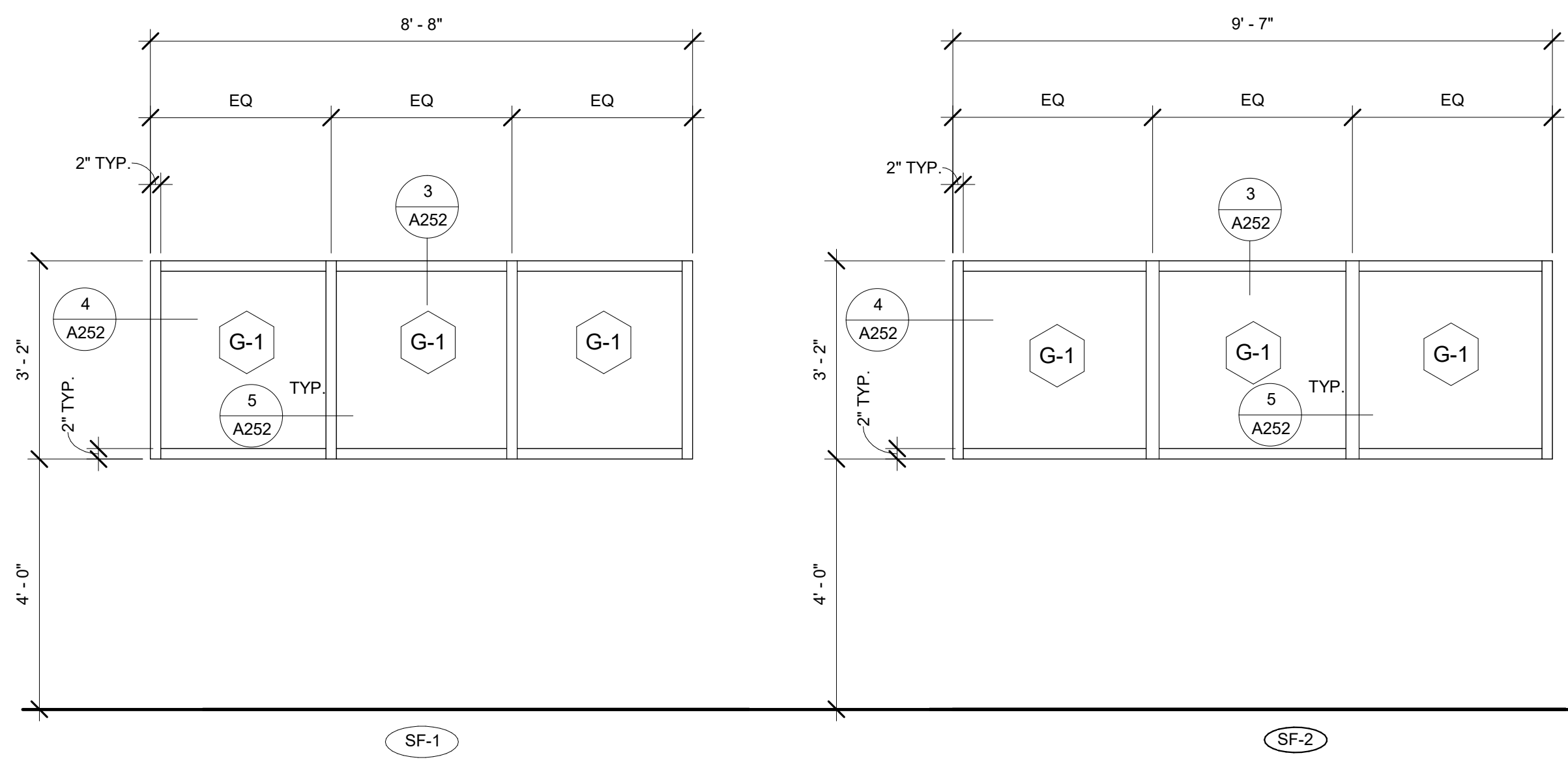
Project Number 132

Door Schedule, Frame Elevations, and Details

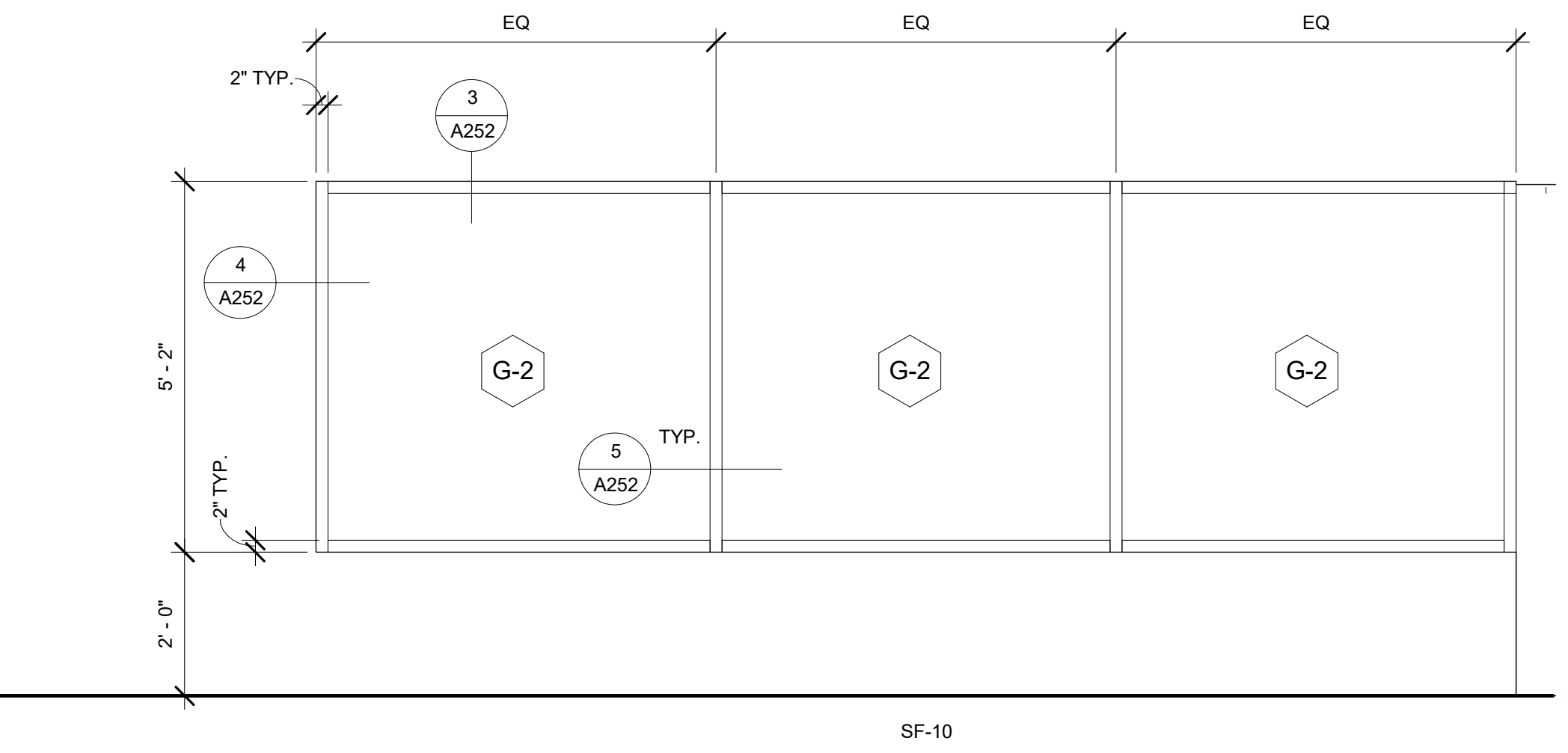
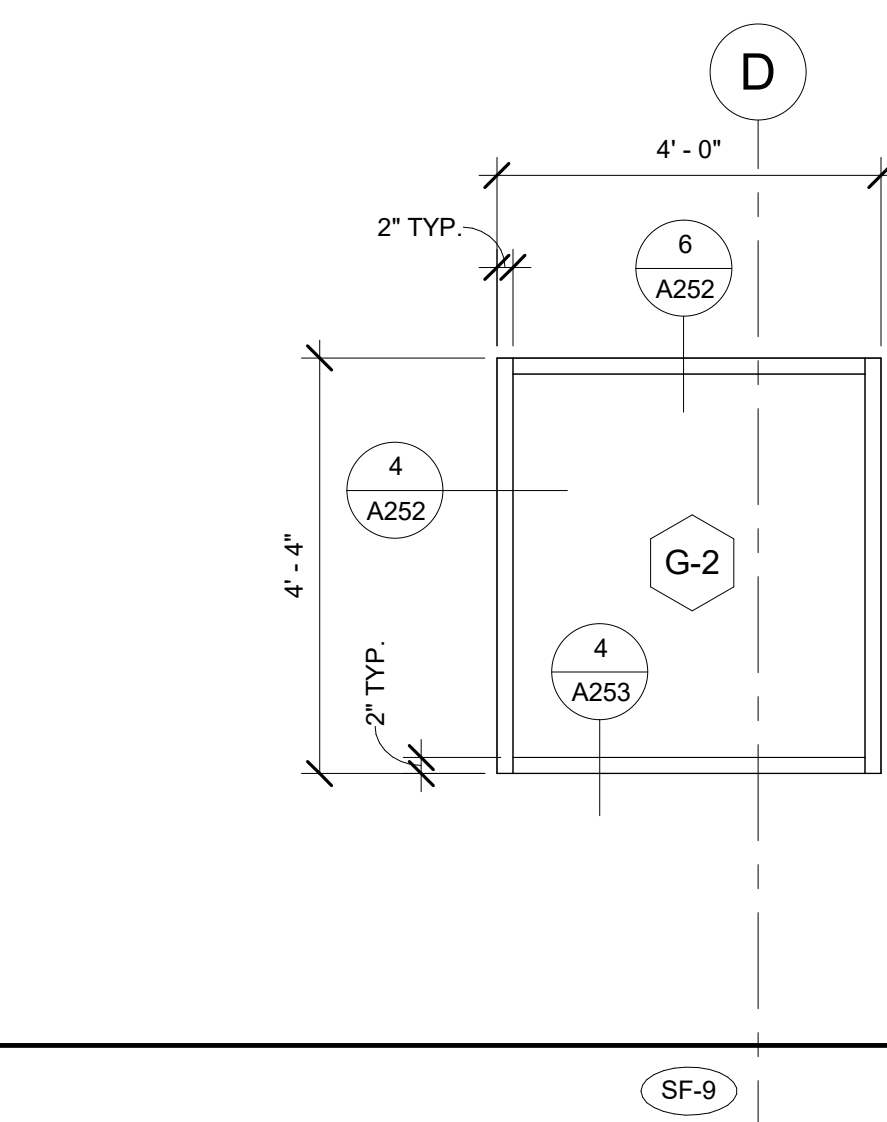
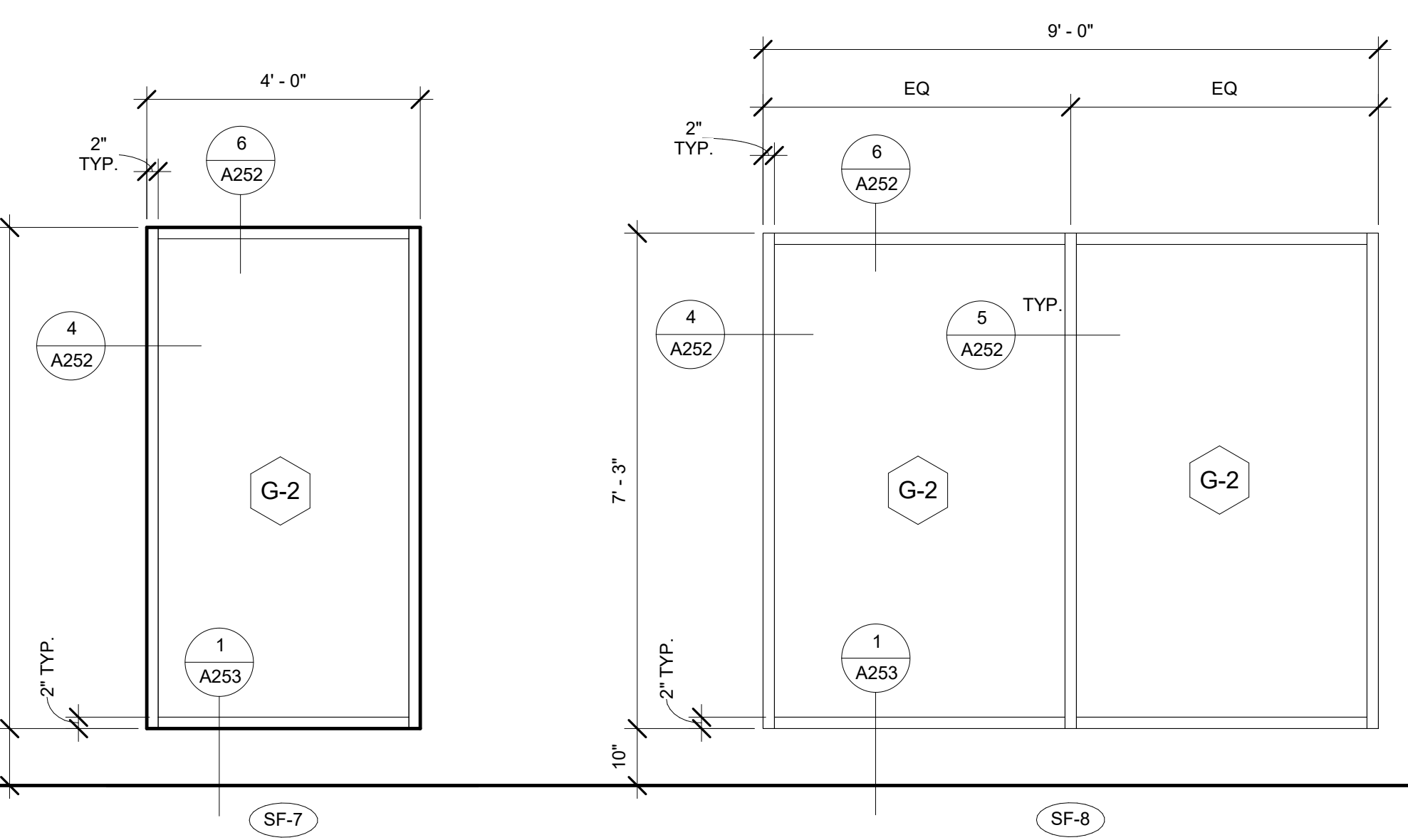
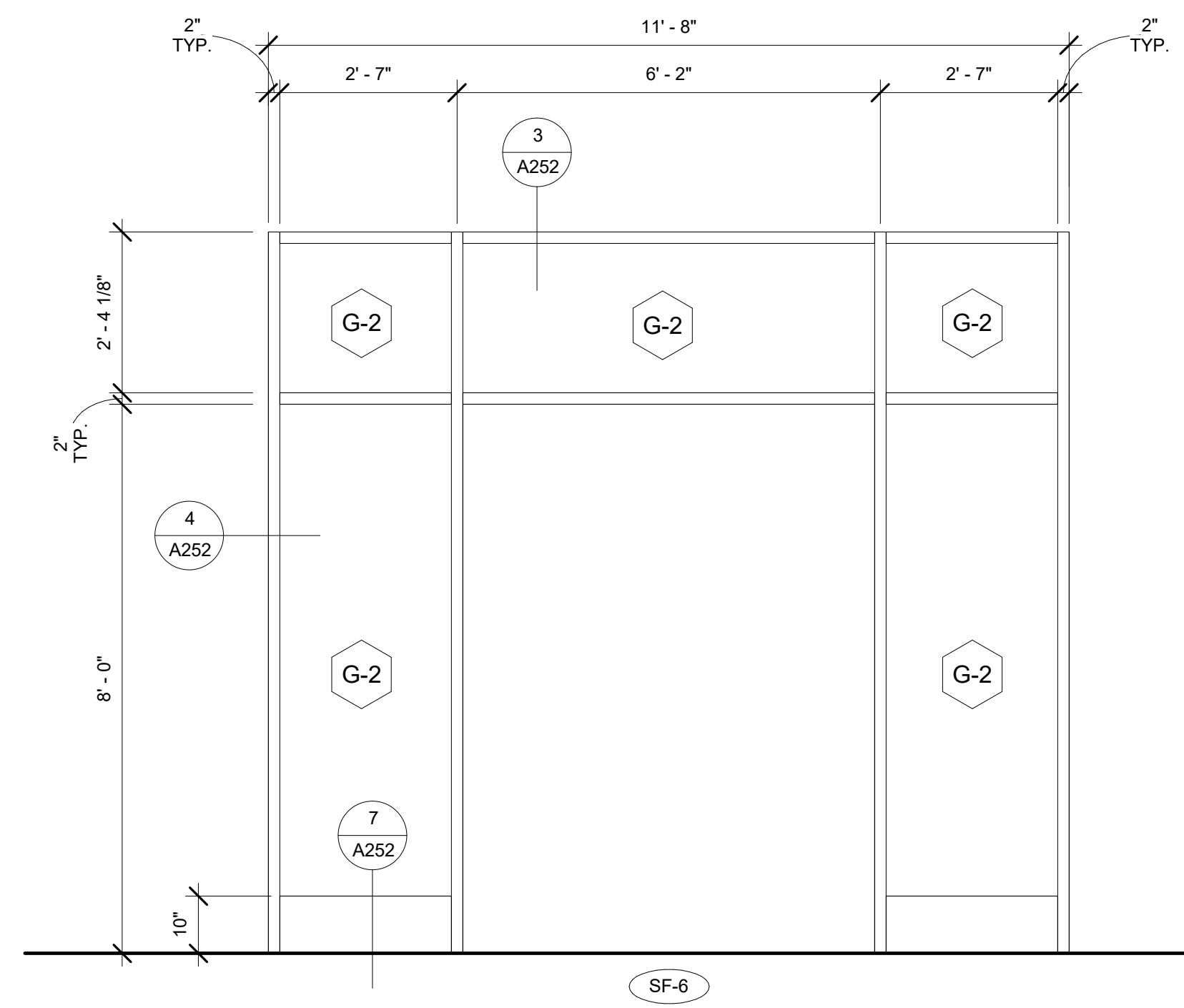
Sheet

A251

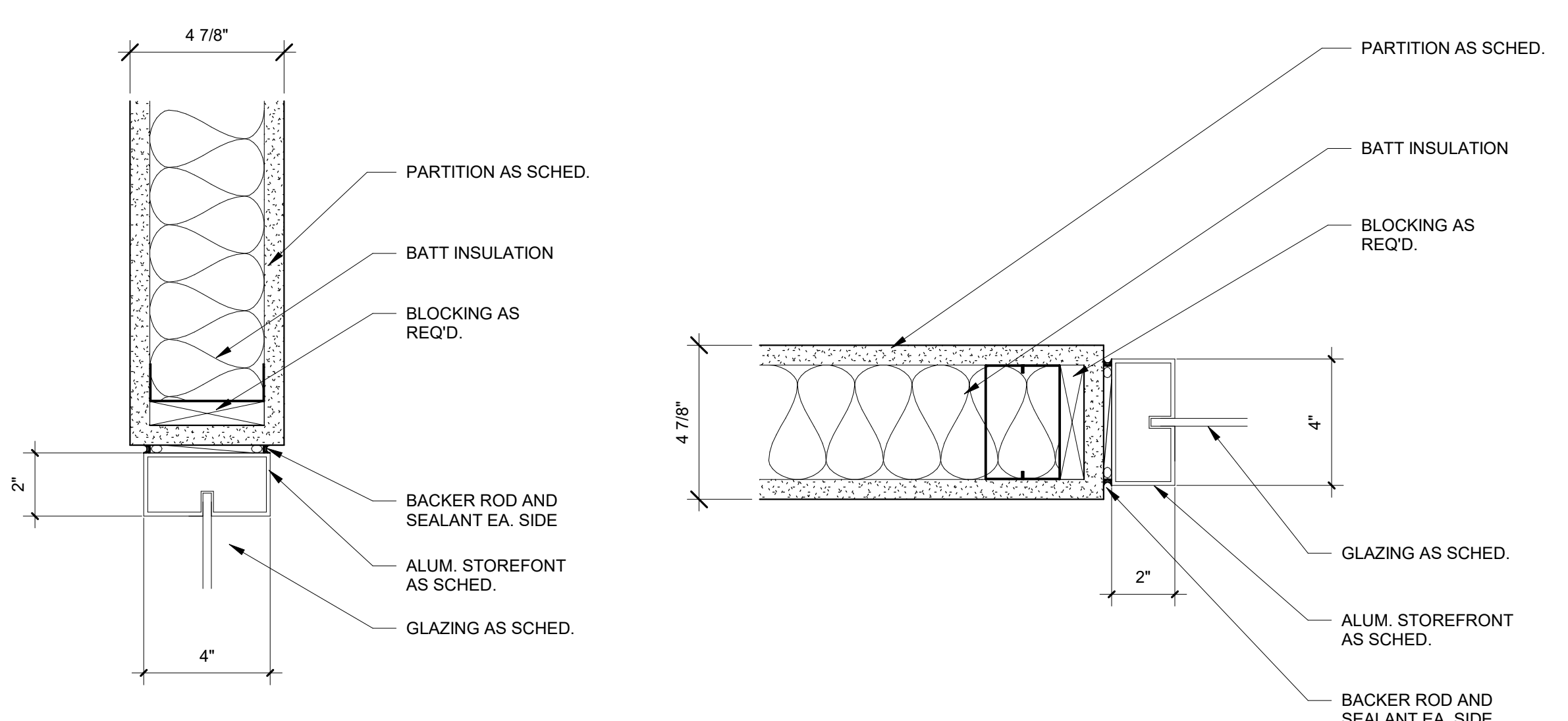
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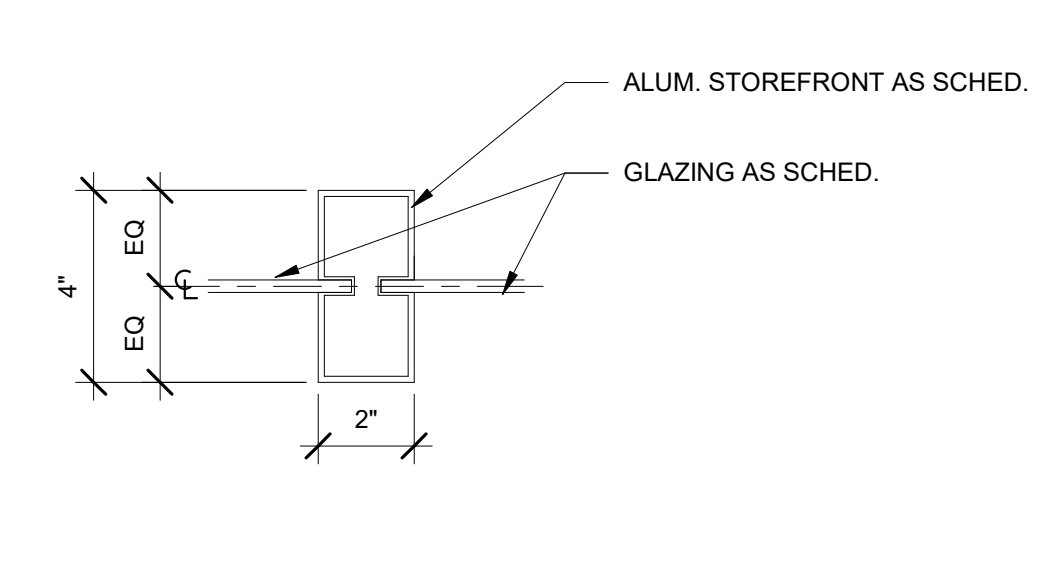
1 STOREFRONT ELEVATIONS  
A252 1/2" = 1'-0"



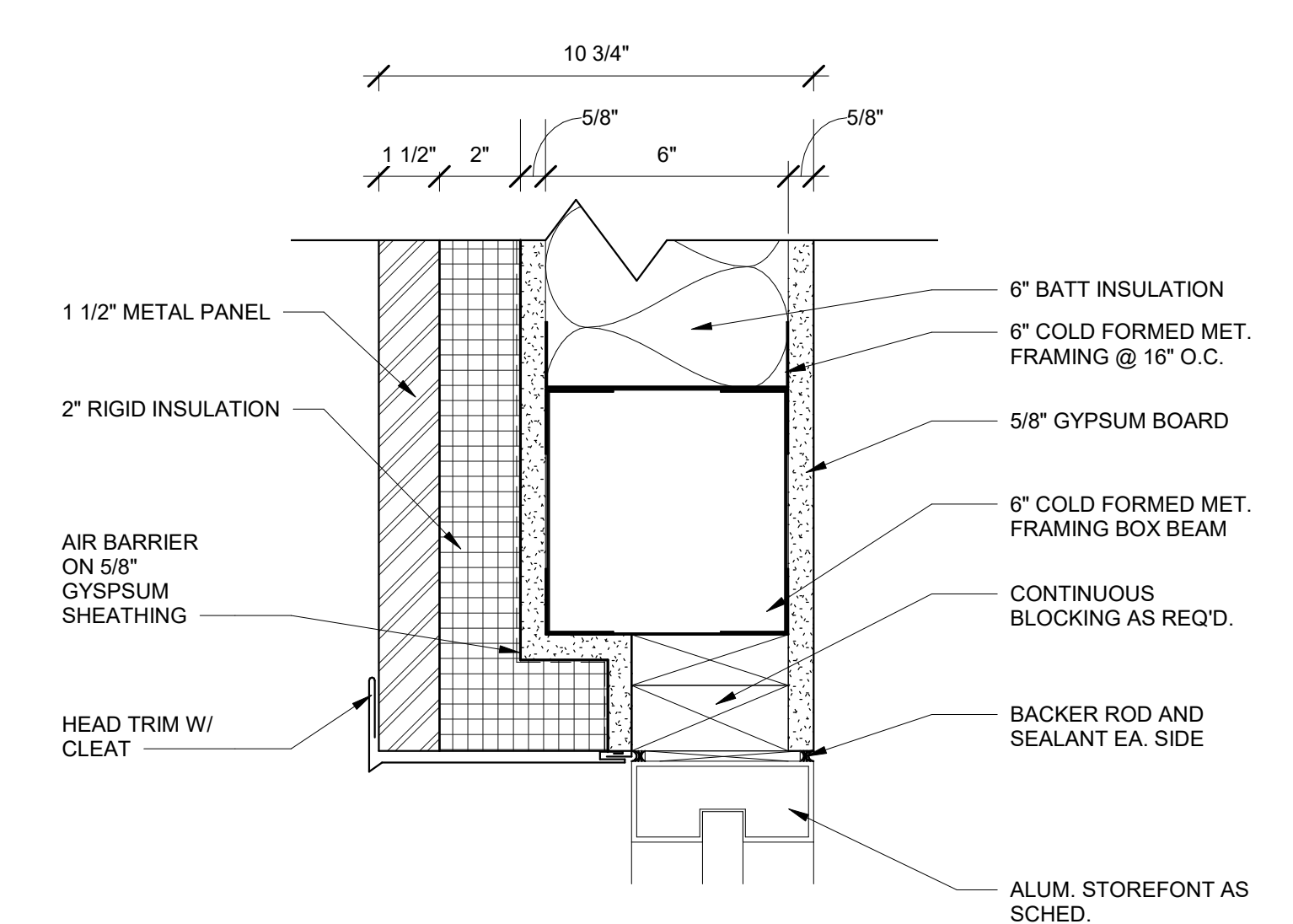
2 STOREFRONT ELEVATIONS  
A252 1/2" = 1'-0"



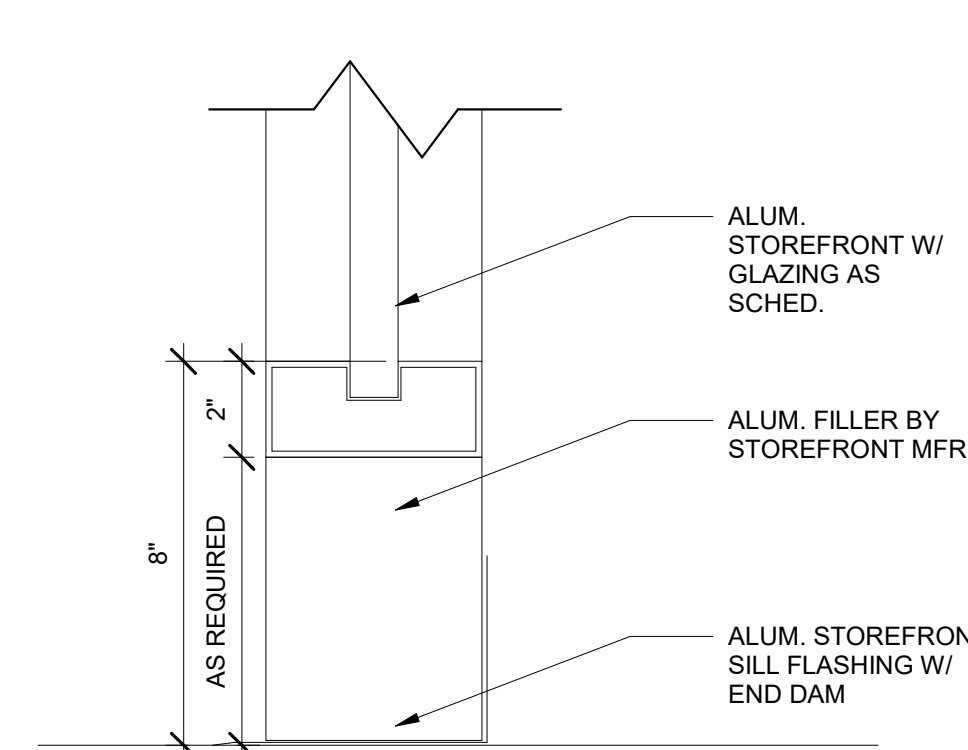
4 JAMB  
A252 3" = 1'-0"



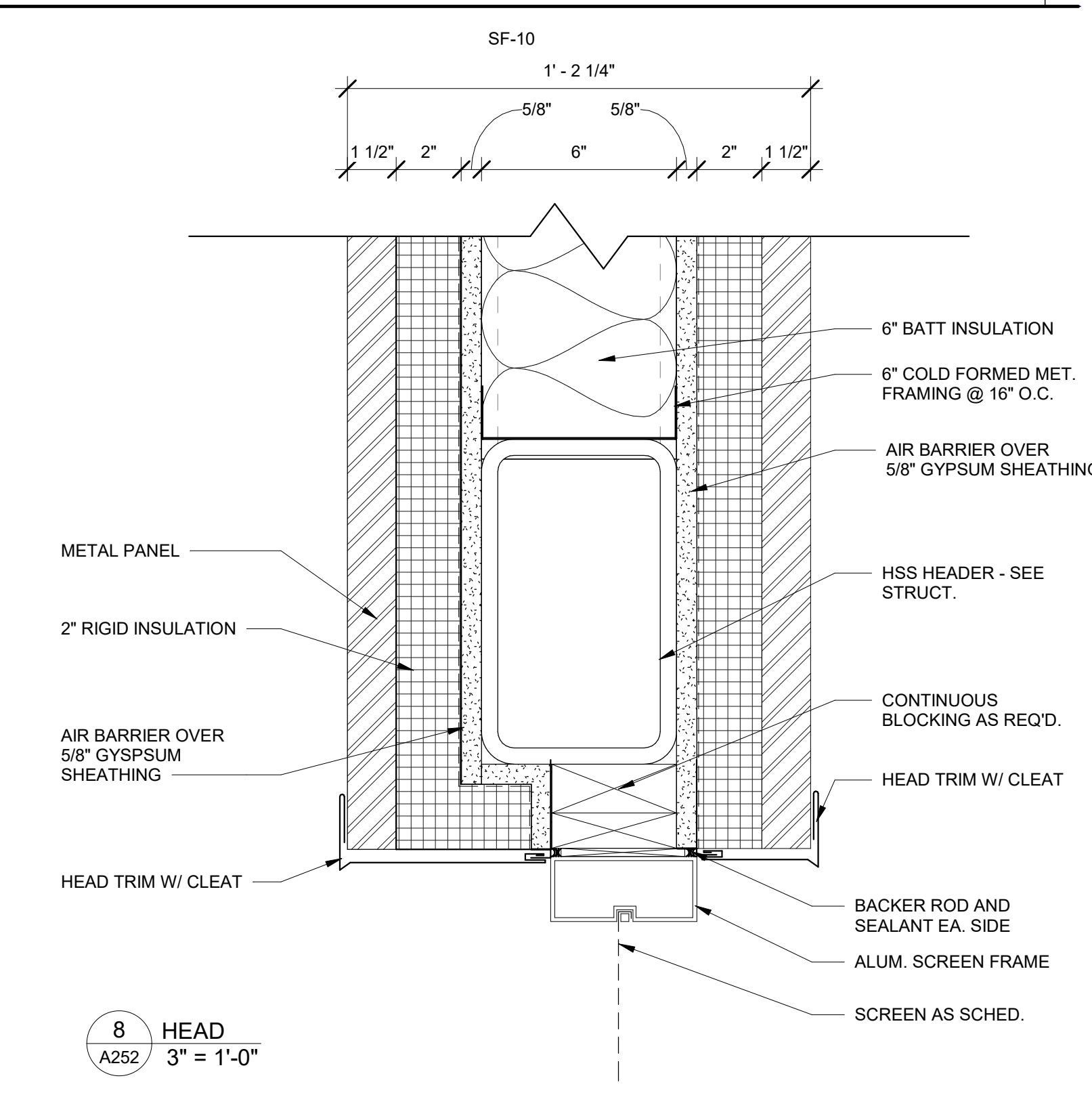
5 JAMB  
A252 3" = 1'-0"



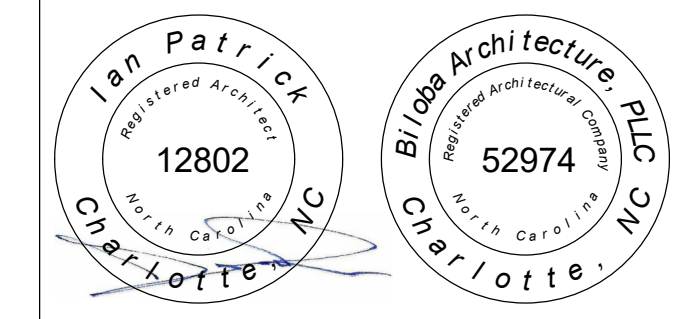
6 HEAD  
A252 3" = 1'-0"



7 SILL  
A252 3" = 1'-0"

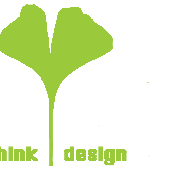


8 HEAD  
A252 3" = 1'-0"



01.10.2025

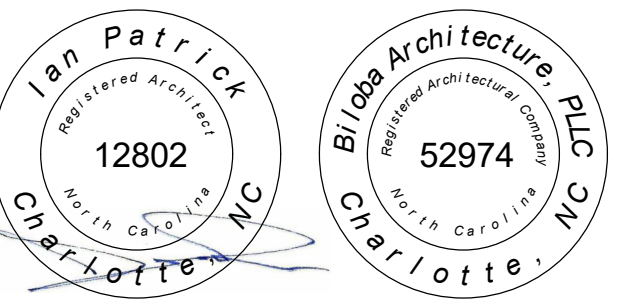
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Date	01/10/2025
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NCSU Apiculture Facility

Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 20222007

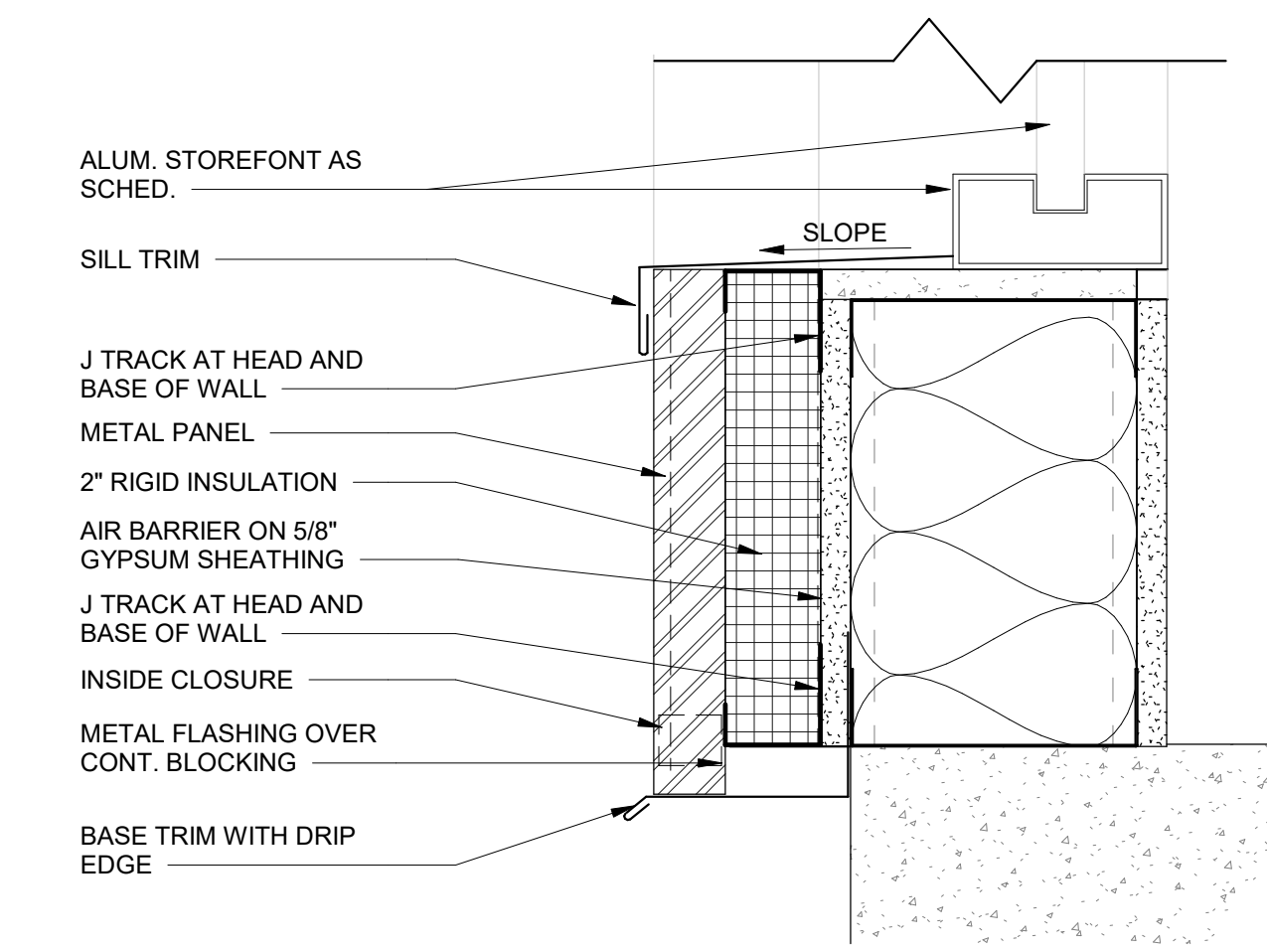
Project Number 132

Title  
**Storefront and Window  
Sectional Details**

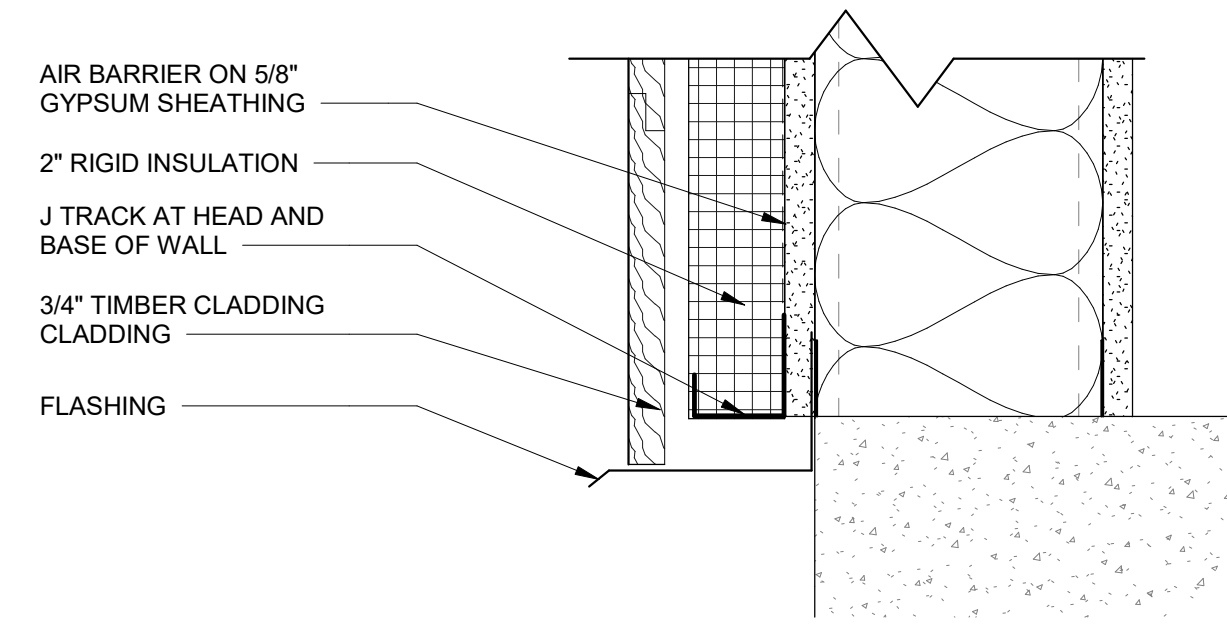
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**A253**

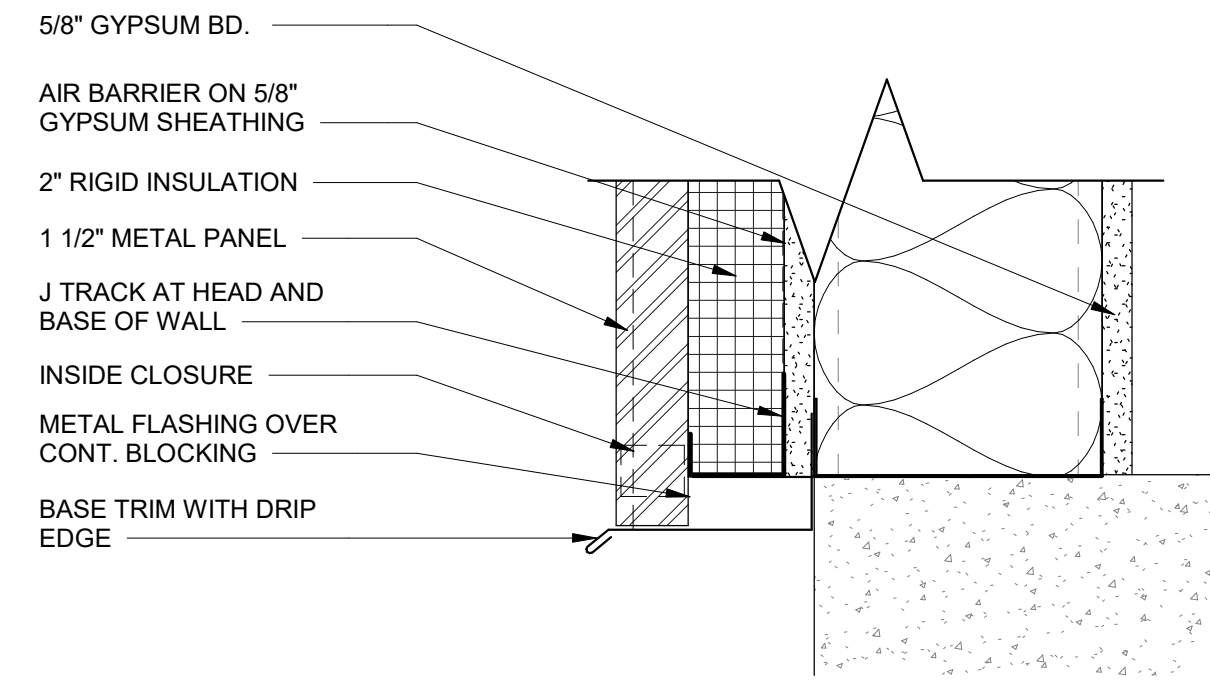
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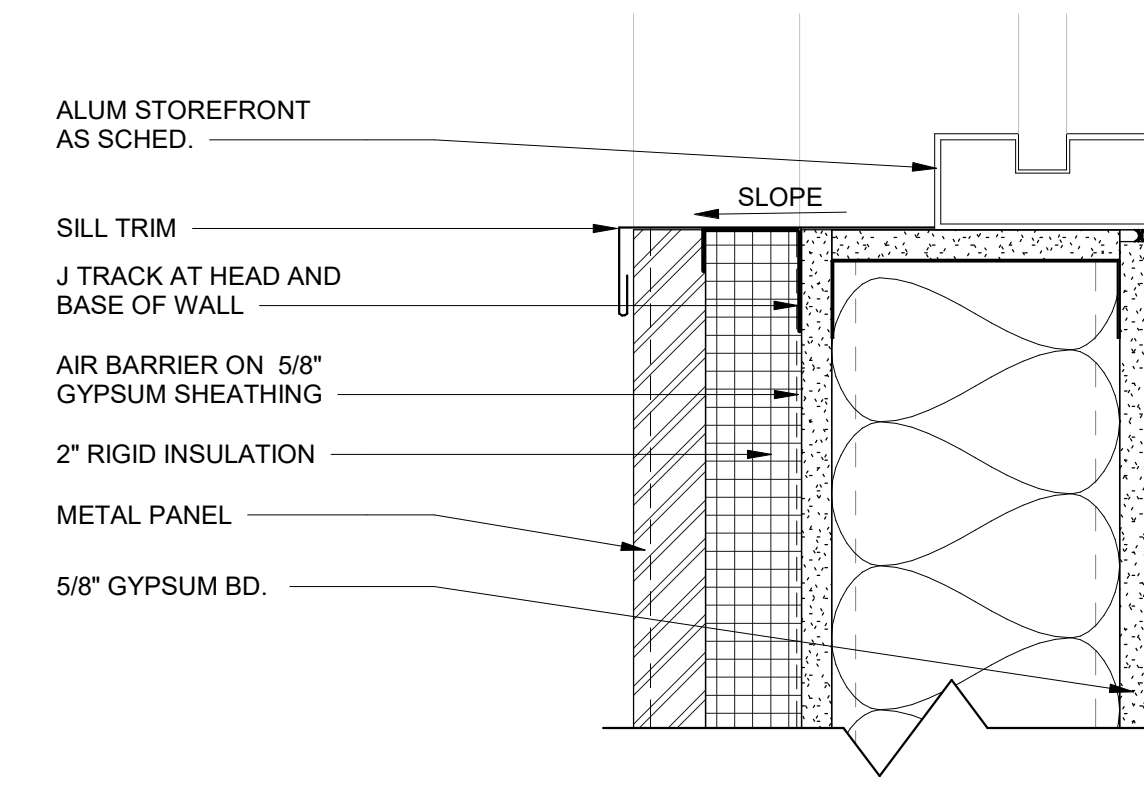
1 SILL AND WALL BASE  
A253 3" = 1'-0"



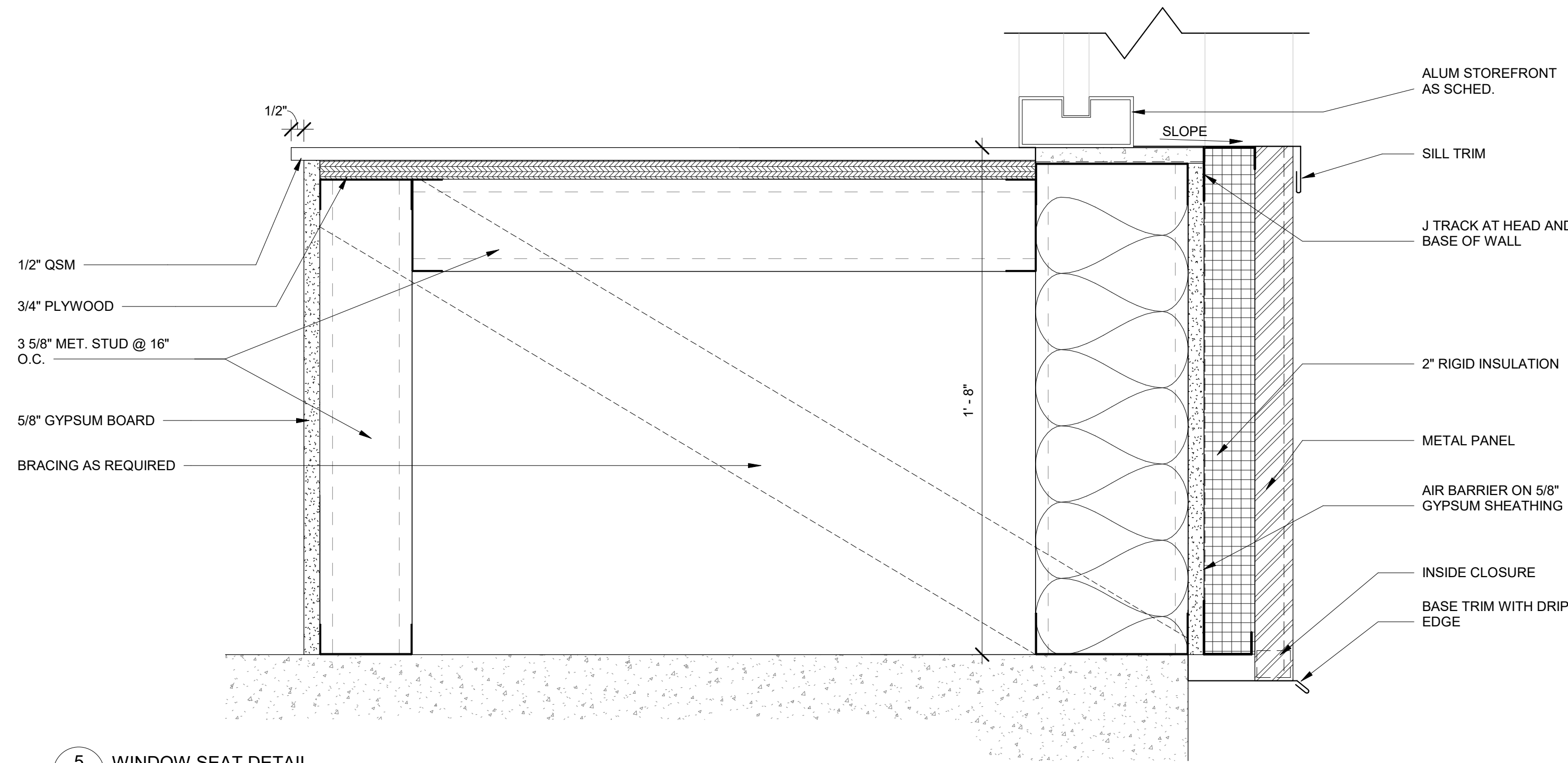
2 WALL BASE  
A253 3" = 1'-0"



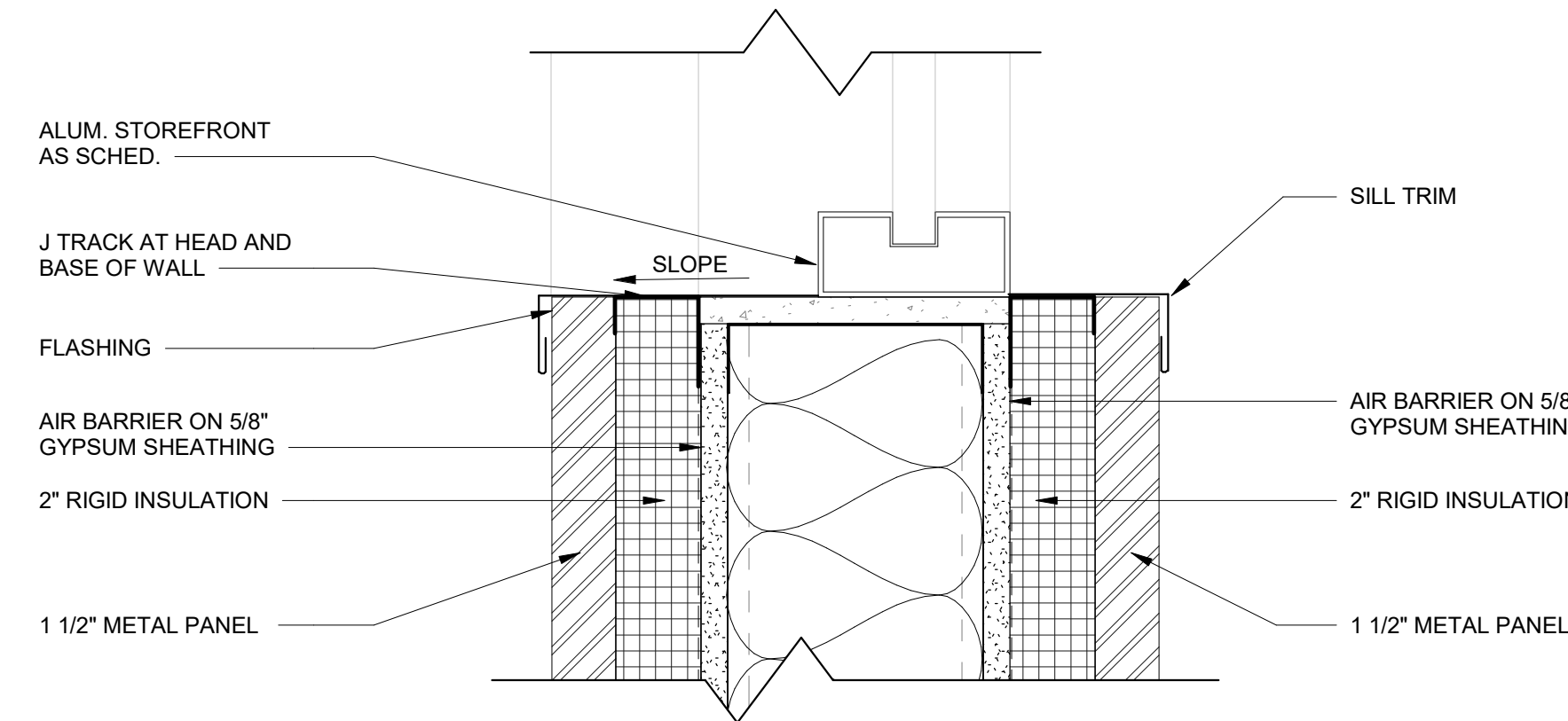
3 WALL BASE  
A253 3" = 1'-0"



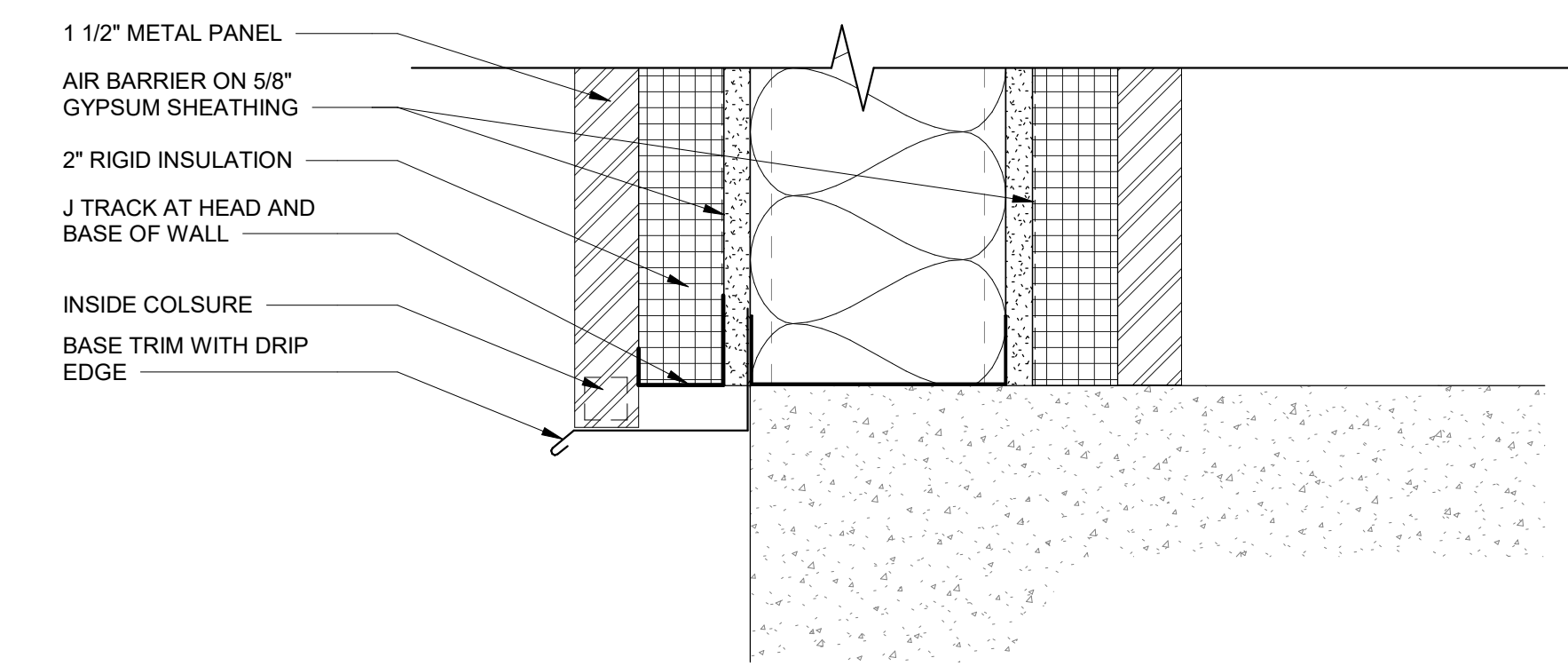
4 SILL  
A253 3" = 1'-0"



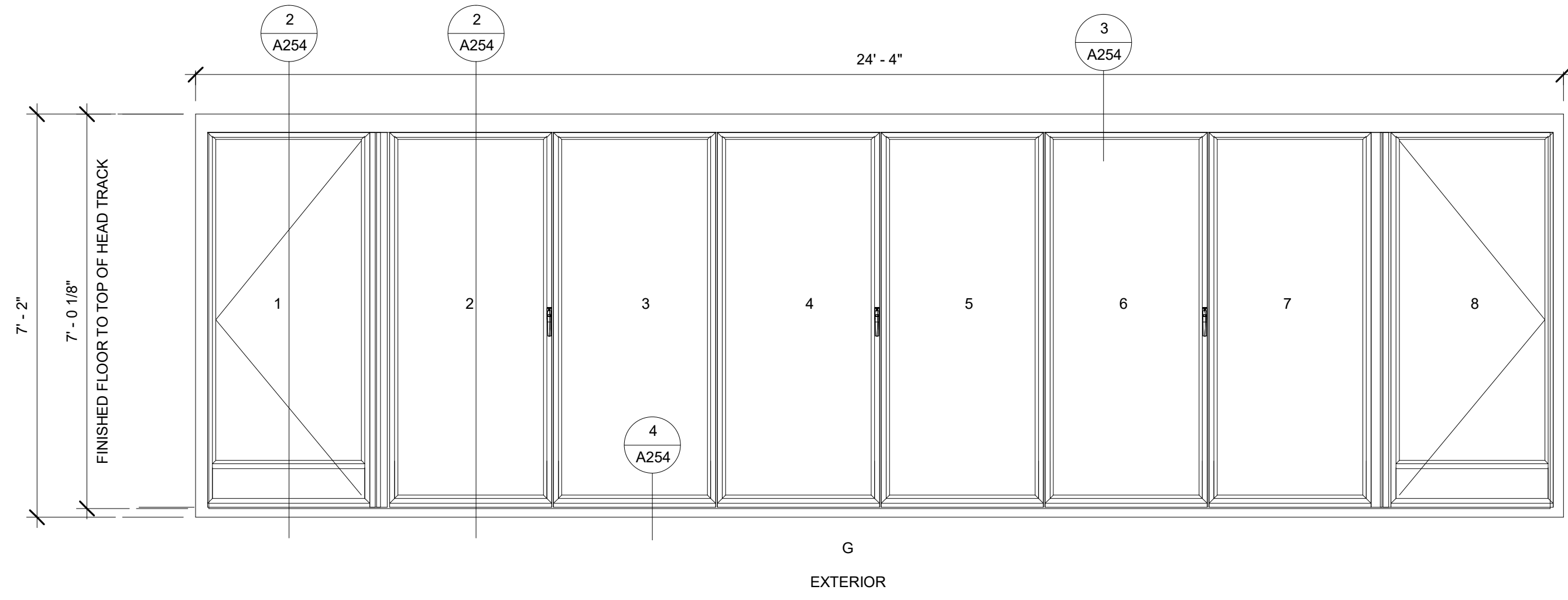
5 WINDOW SEAT DETAIL  
A253 3" = 1'-0"



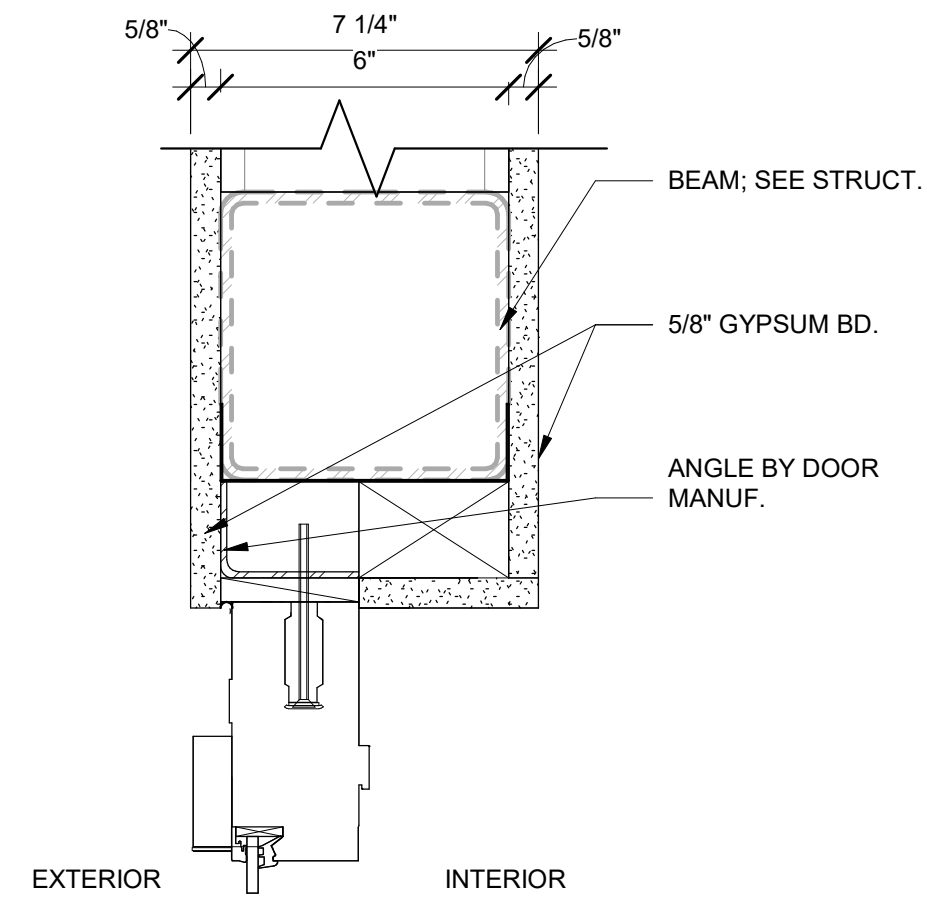
6 SILL DETAIL  
A253 3" = 1'-0"



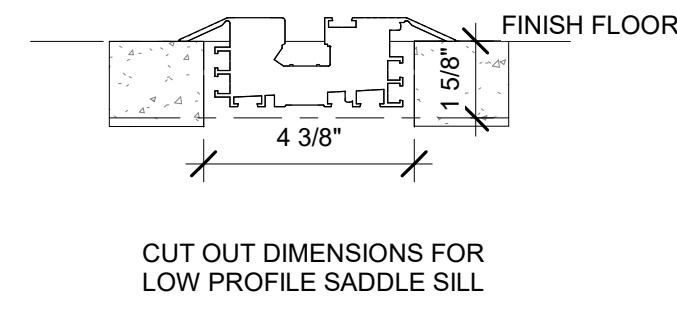
7 WALL BASE  
A253 3" = 1'-0"



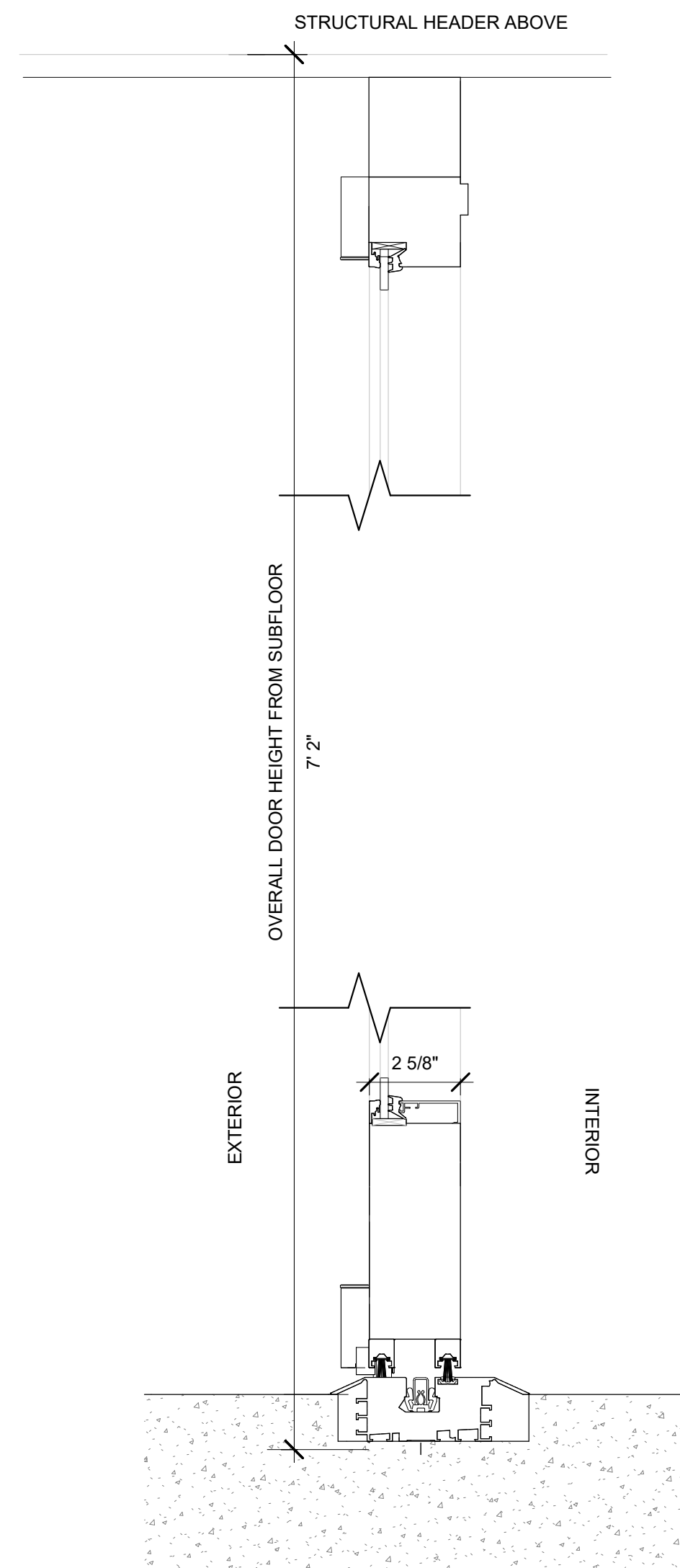
1 ELEVATION- MEETING ROOM  
1/2" = 1'-0"



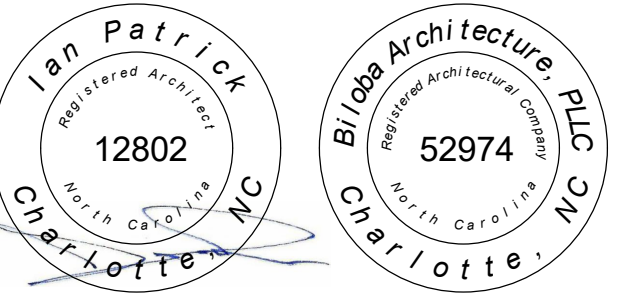
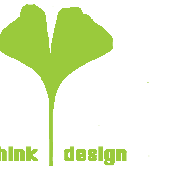
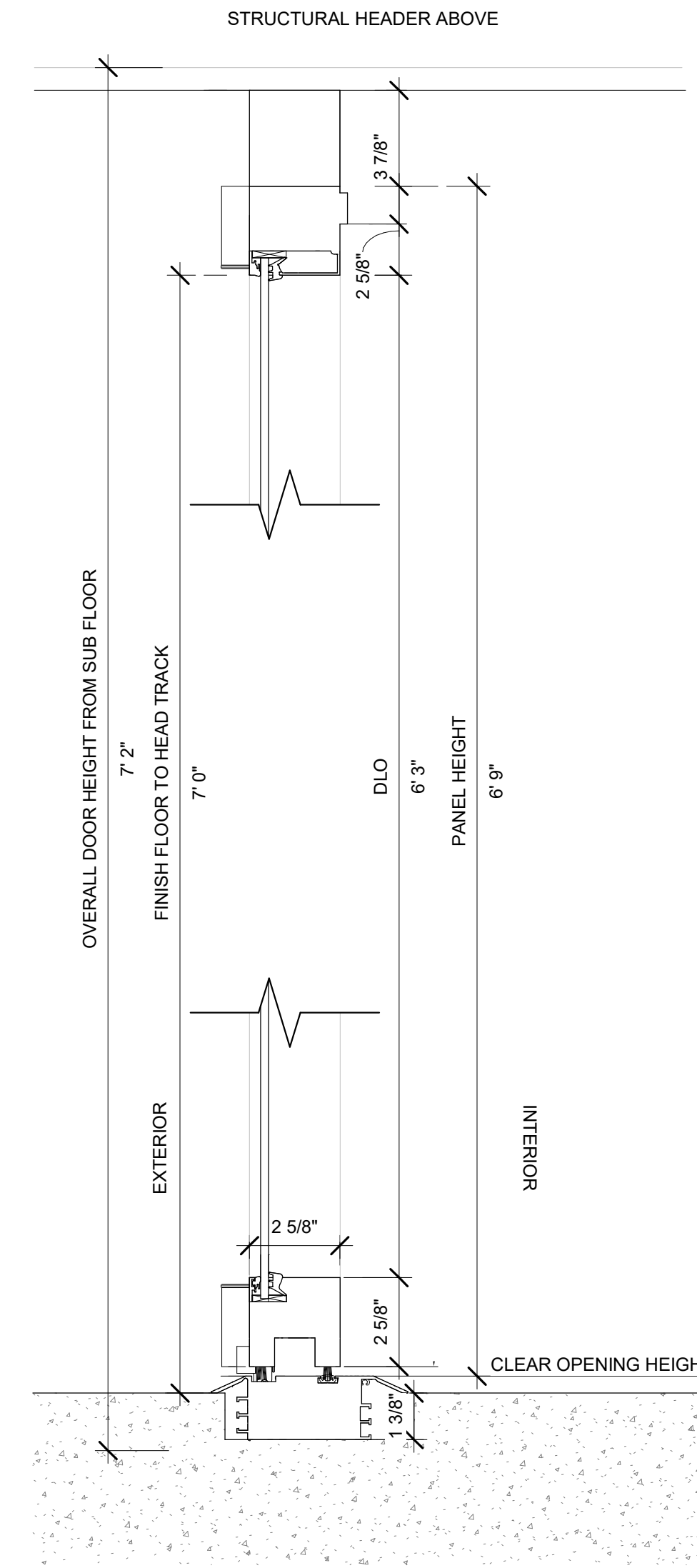
3 HEAD TRACK  
3" = 1'-0"



4 SILL TRACK  
3" = 1'-0"



2 DOOR SECTION- STACKING  
3" = 1'-0"



01.10.2025

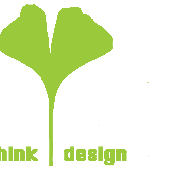
Drawn ADO

Checked IWP

Date 01/ 10/ 2025

Revisions

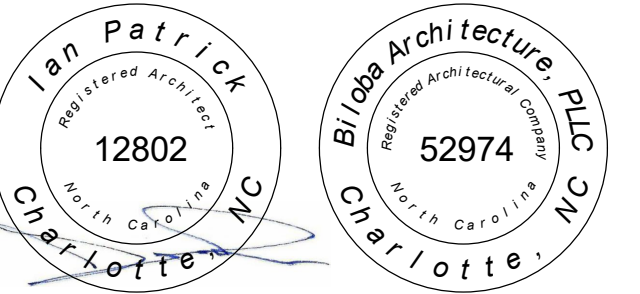




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01.10.2025

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Date 01/10/2025

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NCSU Apiculture Facility

Raleigh, NC

SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 20222007

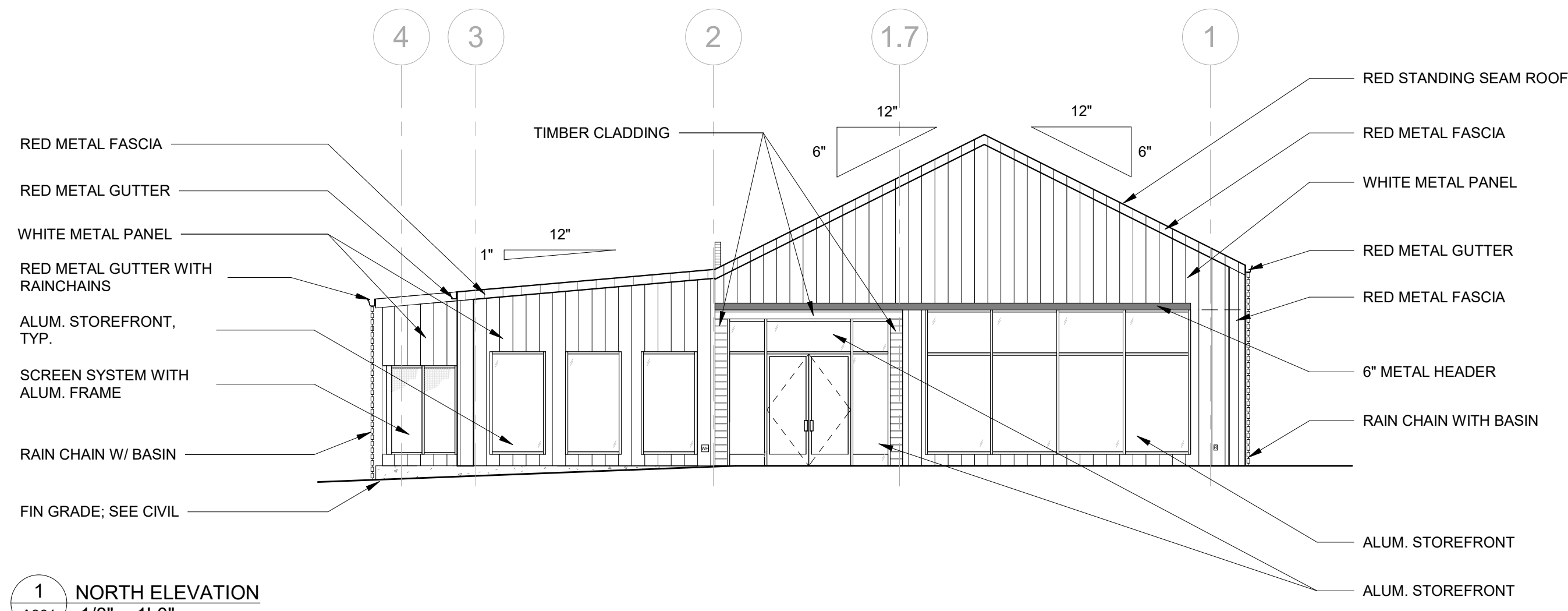
Project Number 132

Title Elevations

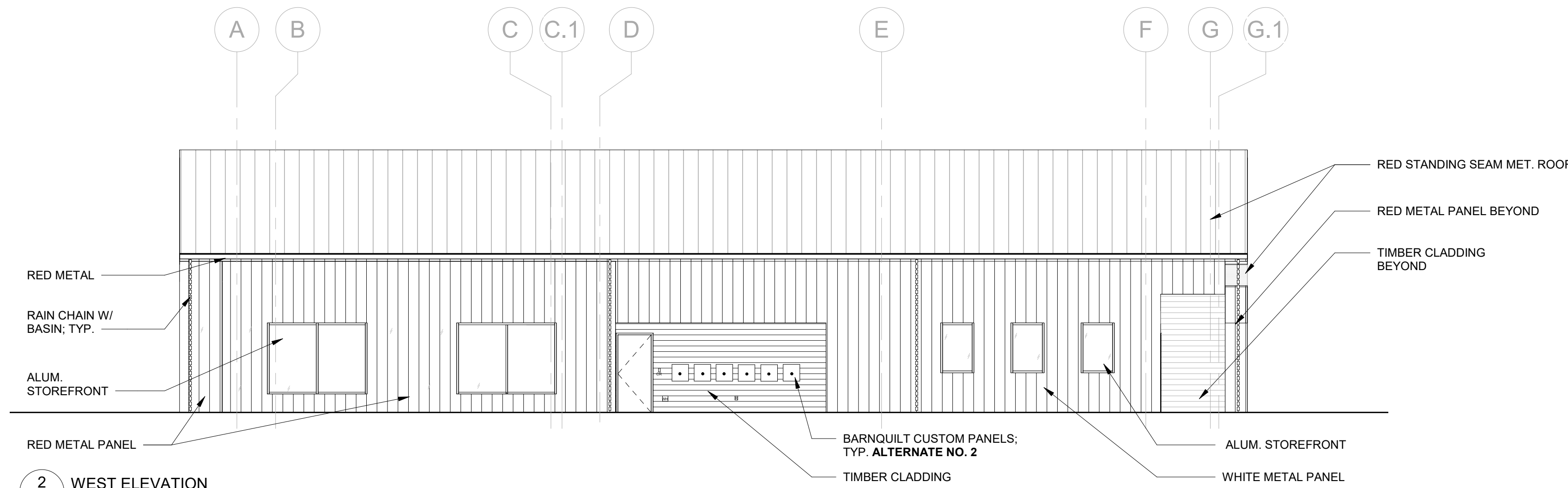
Sheet

A301

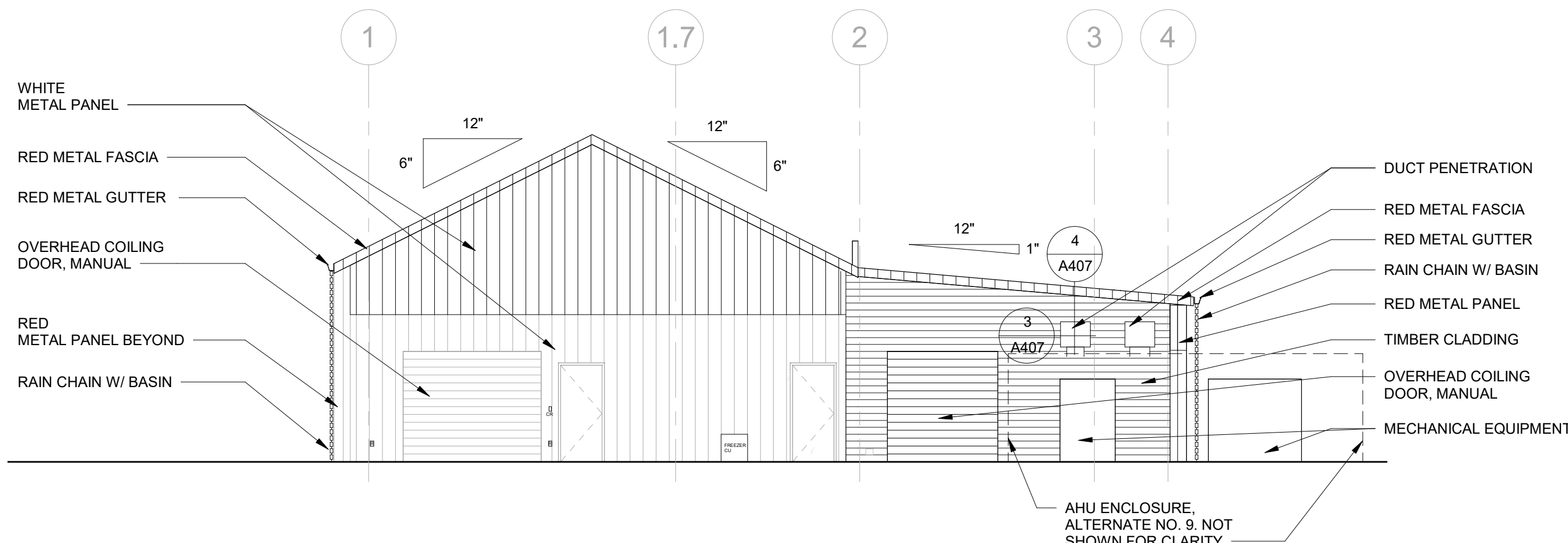
Plate



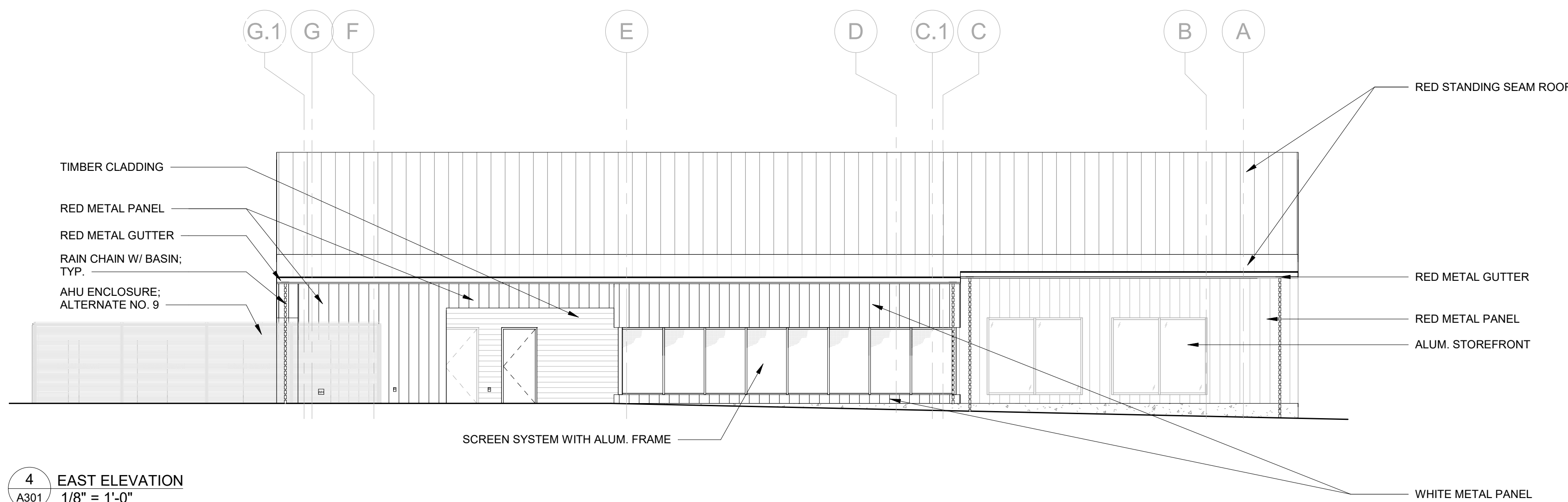
1 NORTH ELEVATION  
A301 1/8" = 1'-0"



2 WEST ELEVATION  
A301 1/8" = 1'-0"



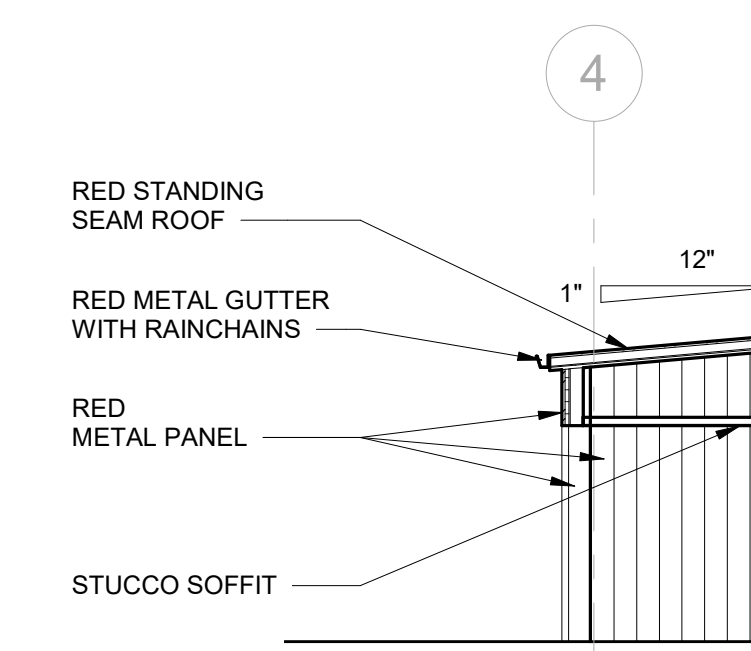
3 SOUTH ELEVATION  
A301 1/8" = 1'-0"



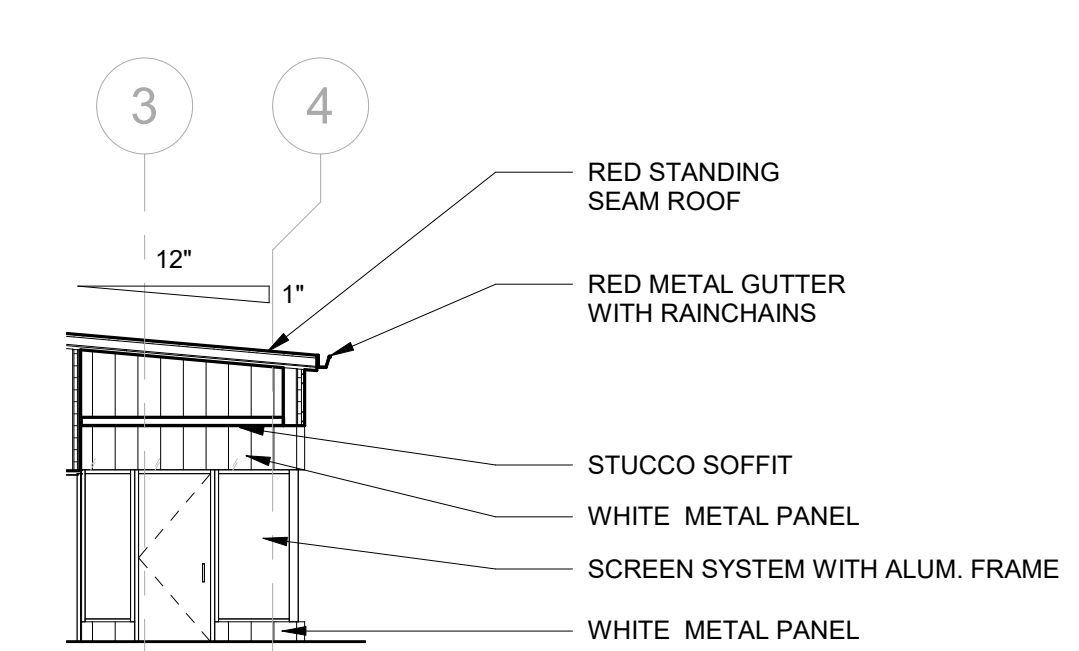
4 EAST ELEVATION  
A301 1/8" = 1'-0"

FIXTURE LEGEND

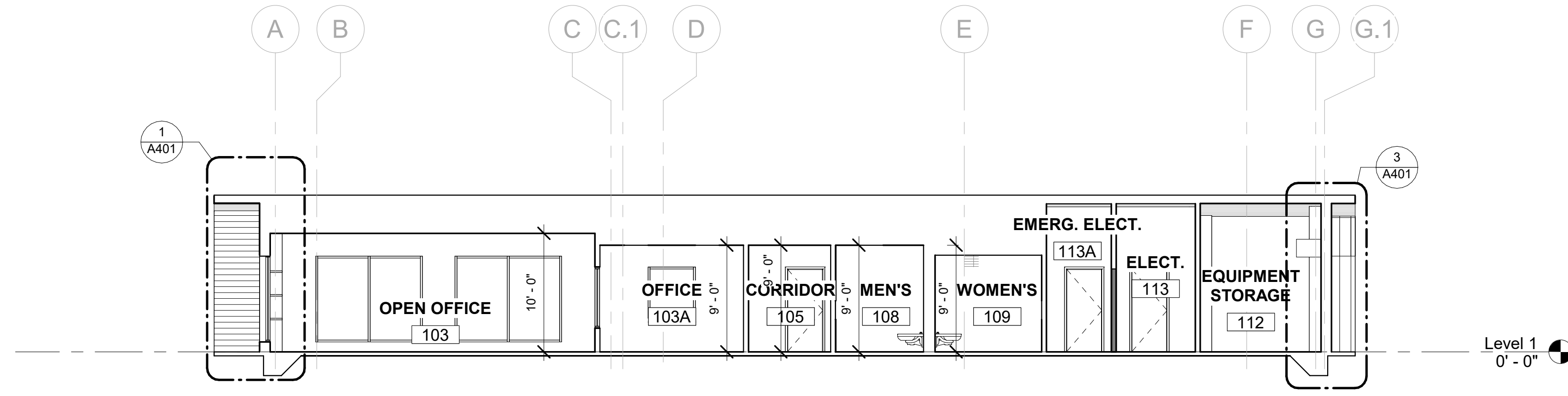
- WH EXTERIOR WALL HYDRANT
- R RECEPTACLE
- CR CARD READER



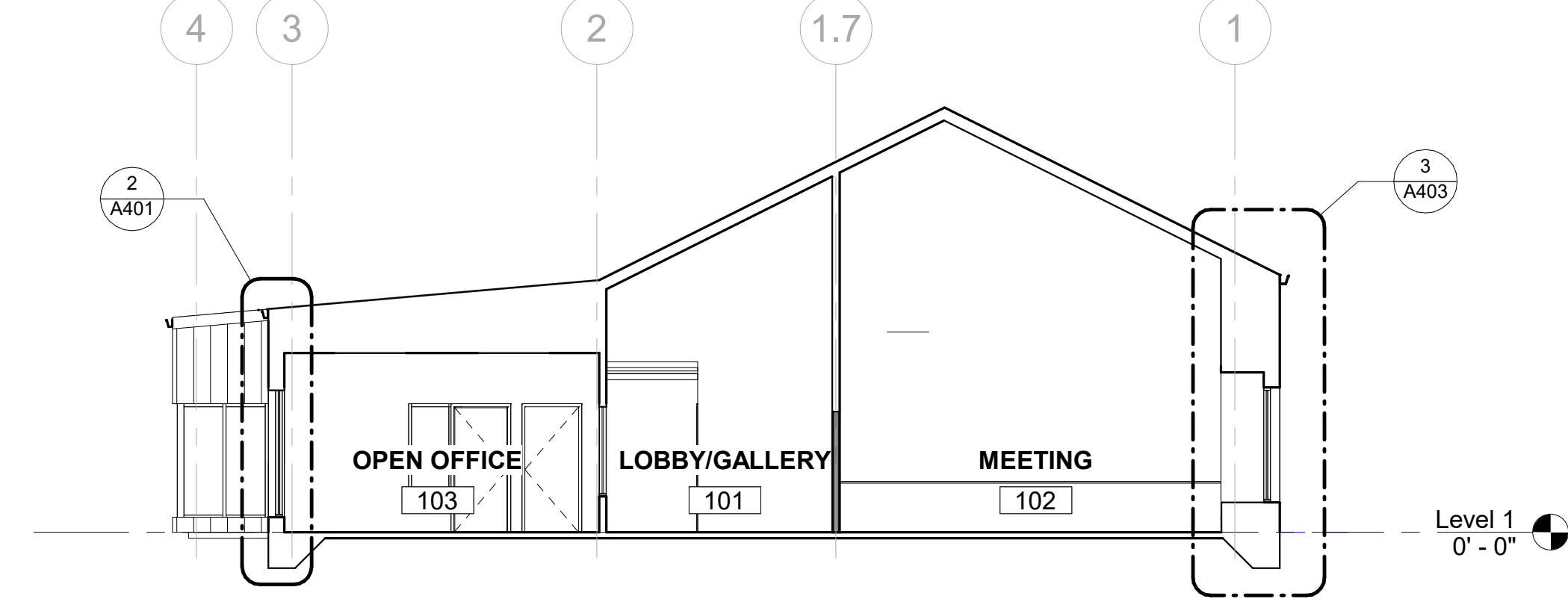
5 ELEVATION  
A301 1/8" = 1'-0"



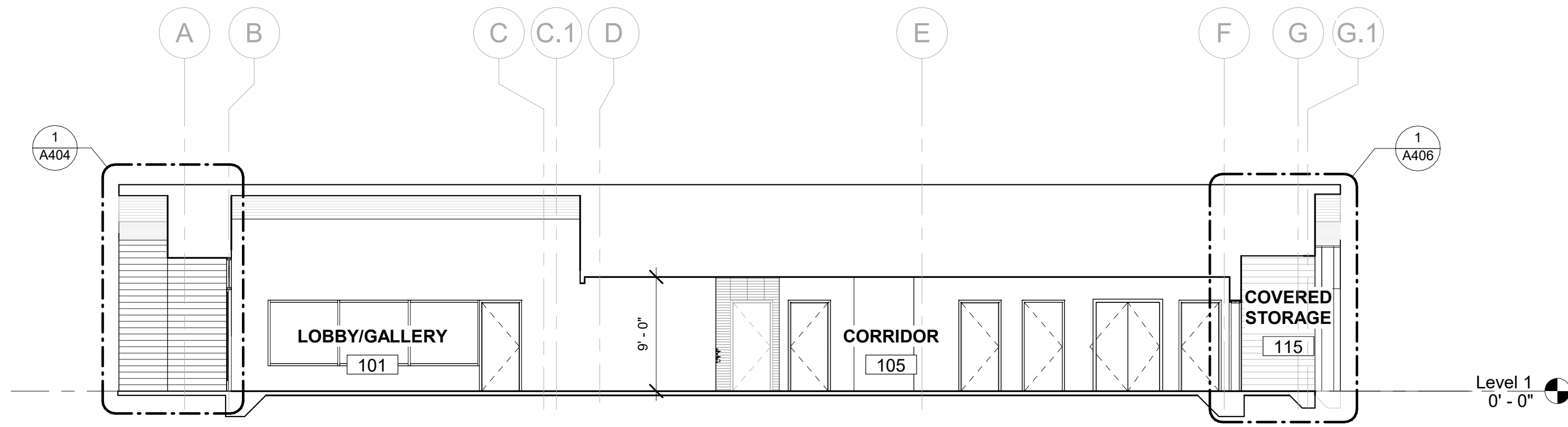
6 ELEVATION  
A301 1/8" = 1'-0"



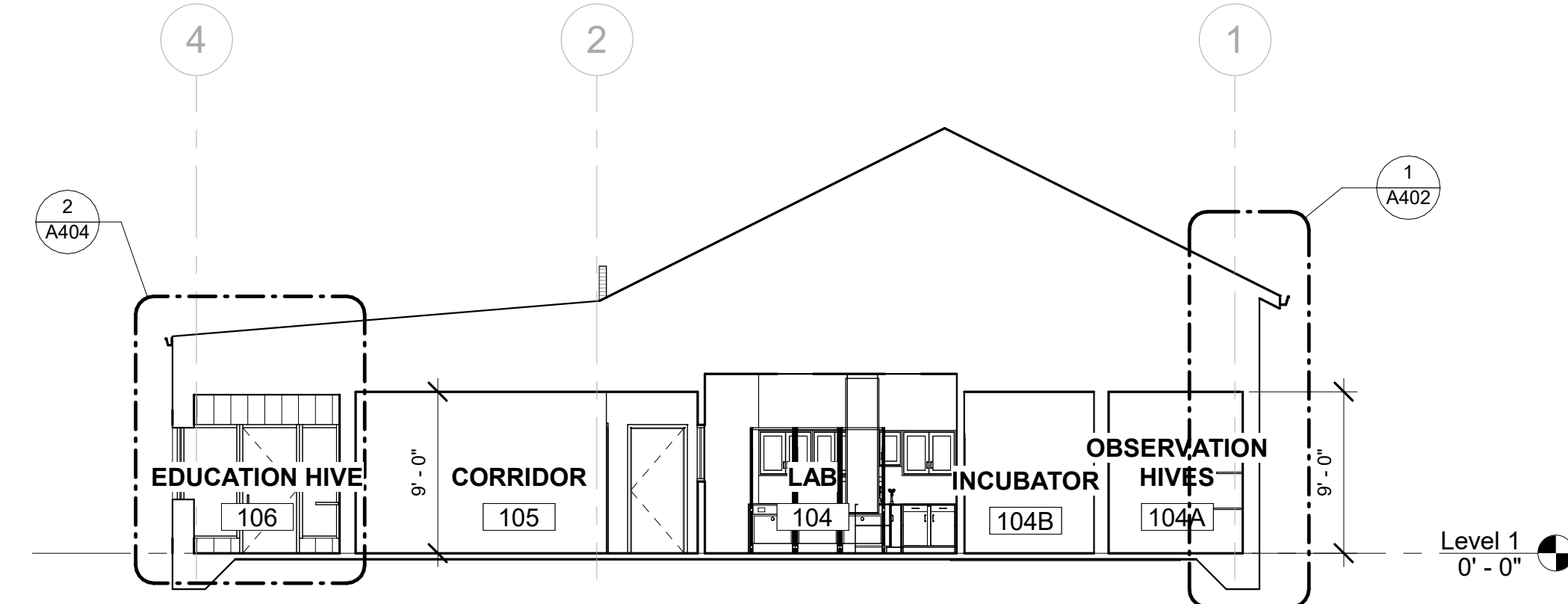
1 LONGITUDINAL BUILDING SECTION  
A351 1/8" = 1'-0"



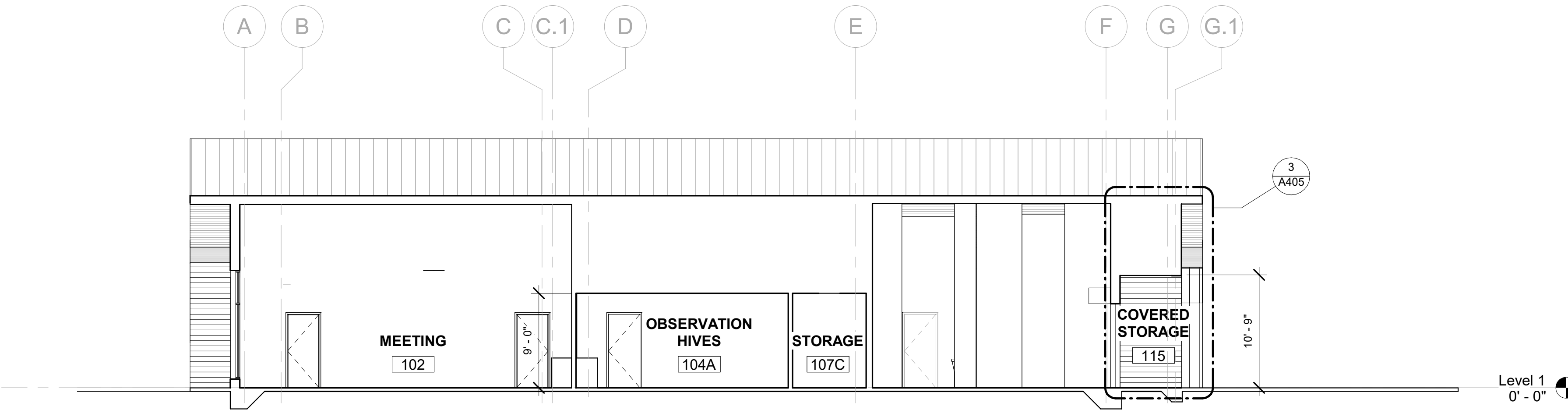
4 TRANSVERSE BUILDING SECTION  
A351 1/8" = 1'-0"



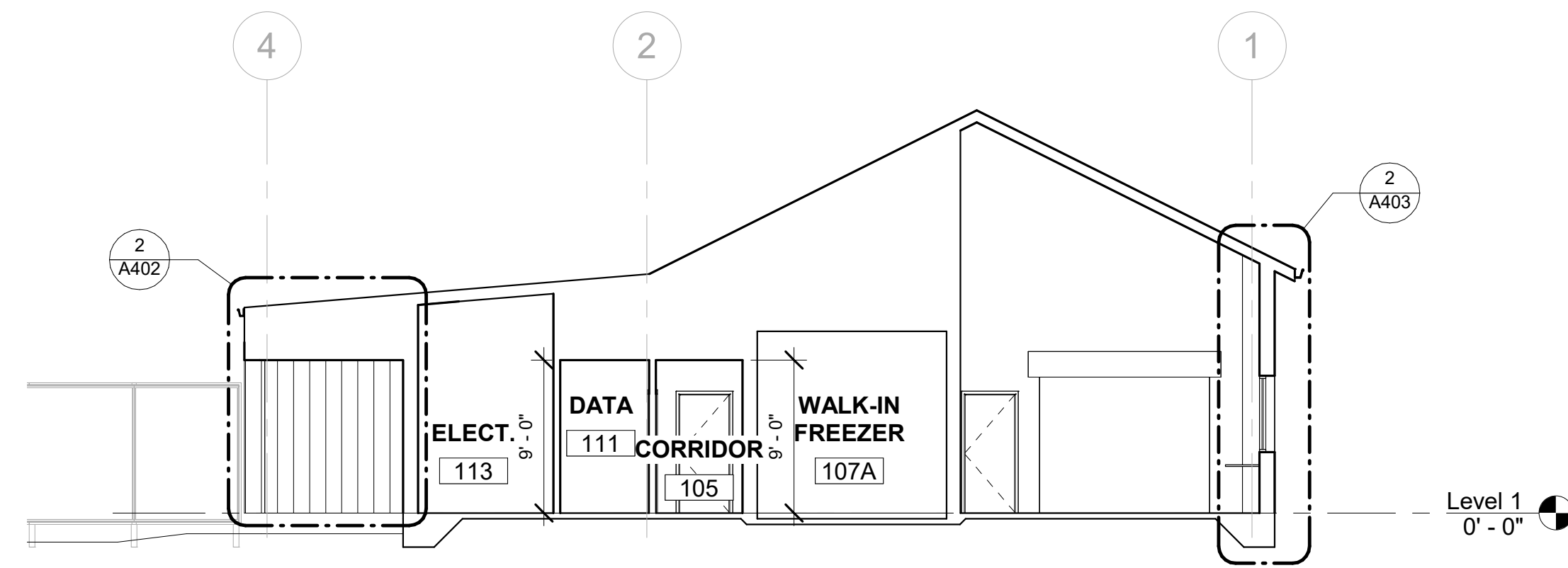
2 LONGITUDINAL BUILDING SECTION  
A351 1/8" = 1'-0"



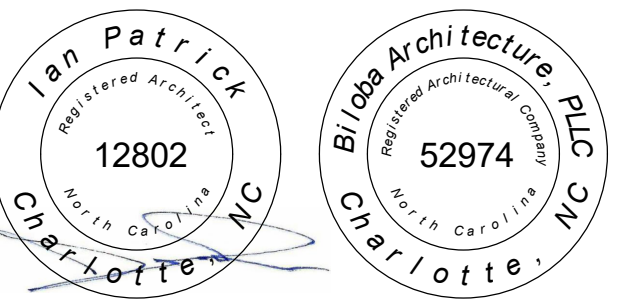
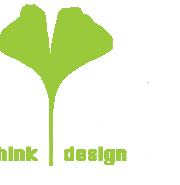
5 TRANSVERSE BUILDING SECTION  
A351 1/8" = 1'-0"



3 LONGITUDINAL BUILDING SECTION  
A351 1/8" = 1'-0"



6 TRANSVERSE BUILDING SECTION  
A351 1/8" = 1'-0"



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Code: 42124 Item: 315  
NCSU: 202220007

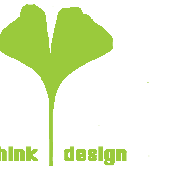
Project Number 132

Title  
**Building Sections**

Sheet

**A351**

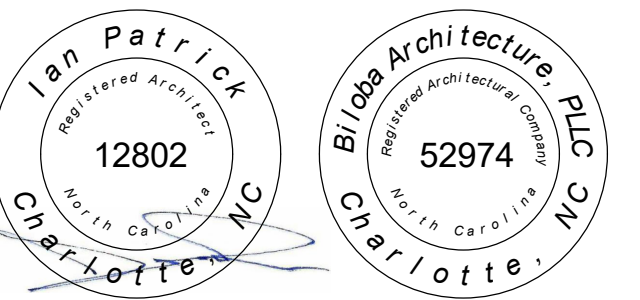
Plate



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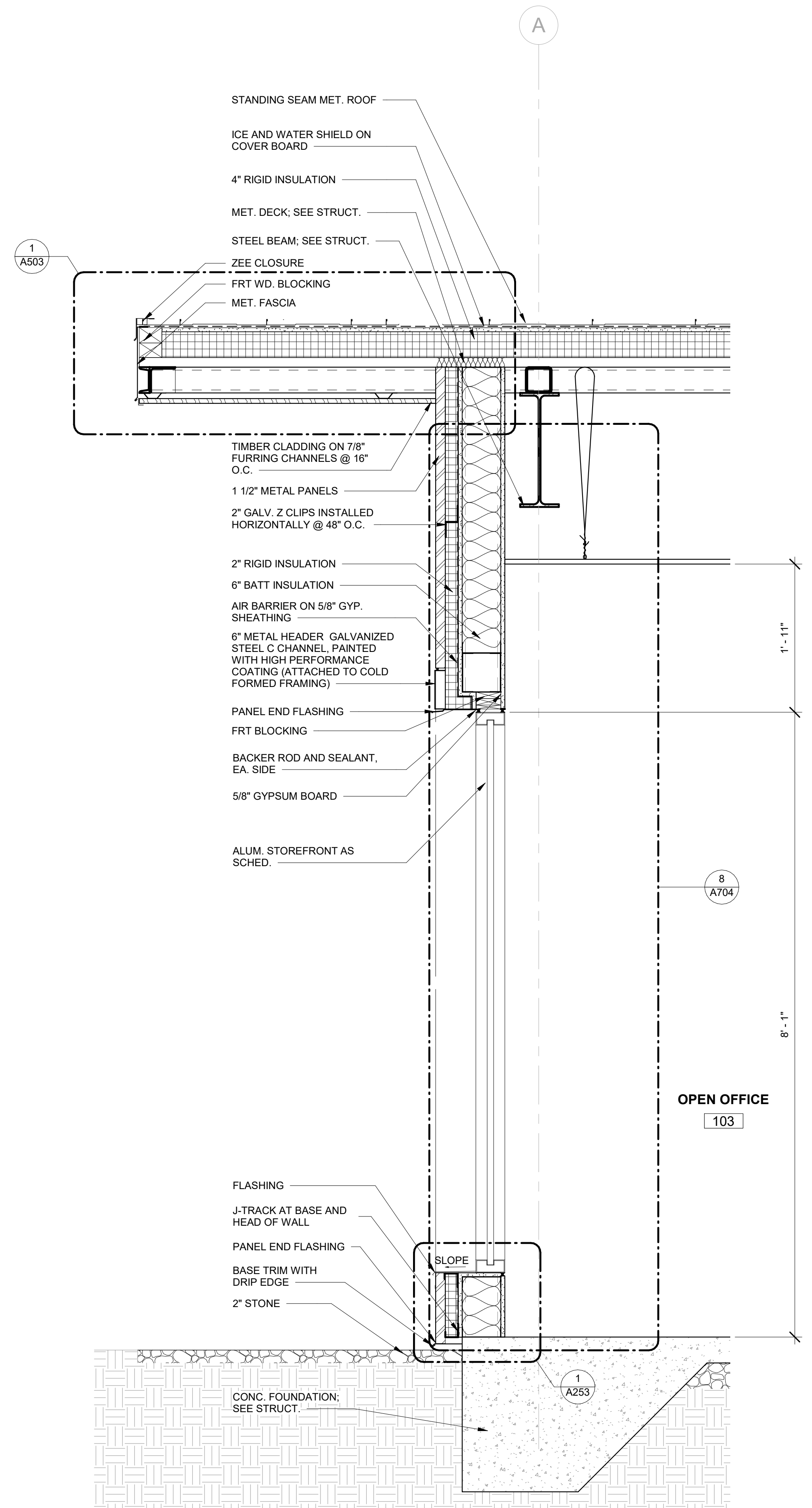
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Raleigh, NC 27603  
NC Certificate of Licensure: C-1051

Plumbing, Mechanical, and Electrical Engineer:  
RMP Engineering  
5520 Research Park Drive, Ste 300  
Baltimore, MD 21228  
NC Certificate of Licensure: C-1125

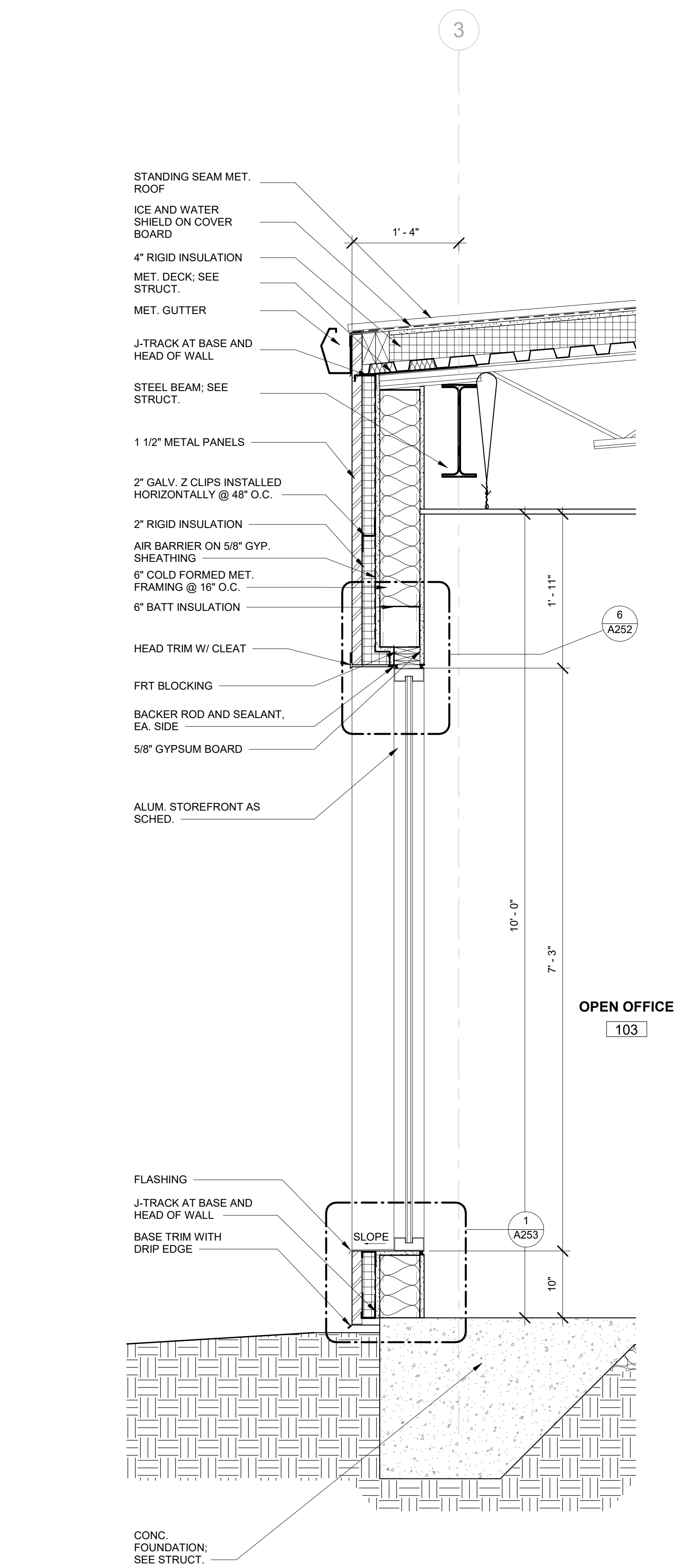


01.10.2025

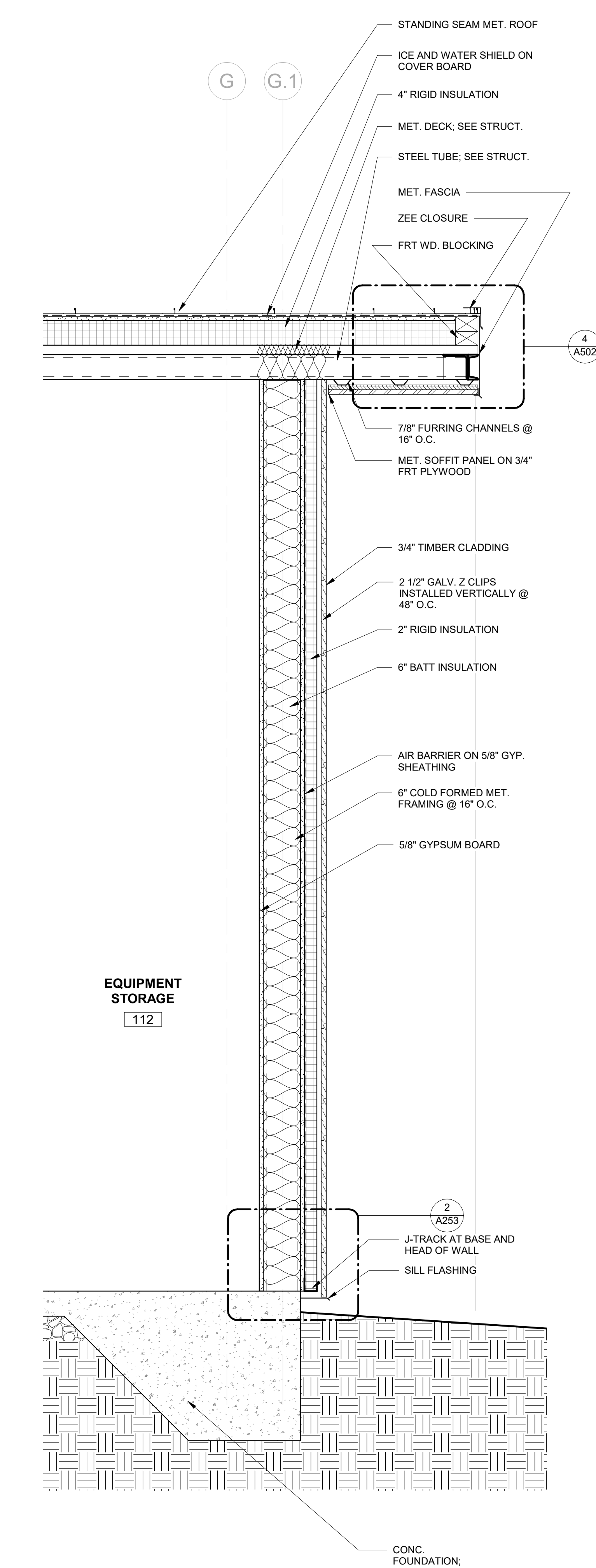
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1 WALL SECTION  
A401 1" = 1'-0"



2 WALL SECTION  
A401 1" = 1'-0"



3 WALL SECTION  
A401 1" = 1'-0"

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Code: 42124 Item: 315  
NCSU: 202220007

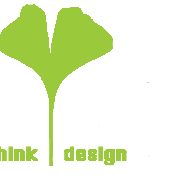
Project Number 132

Title  
**Wall Sections**

Sheet

**A401**

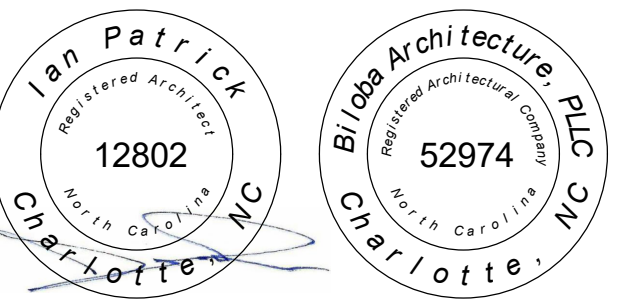
Plate



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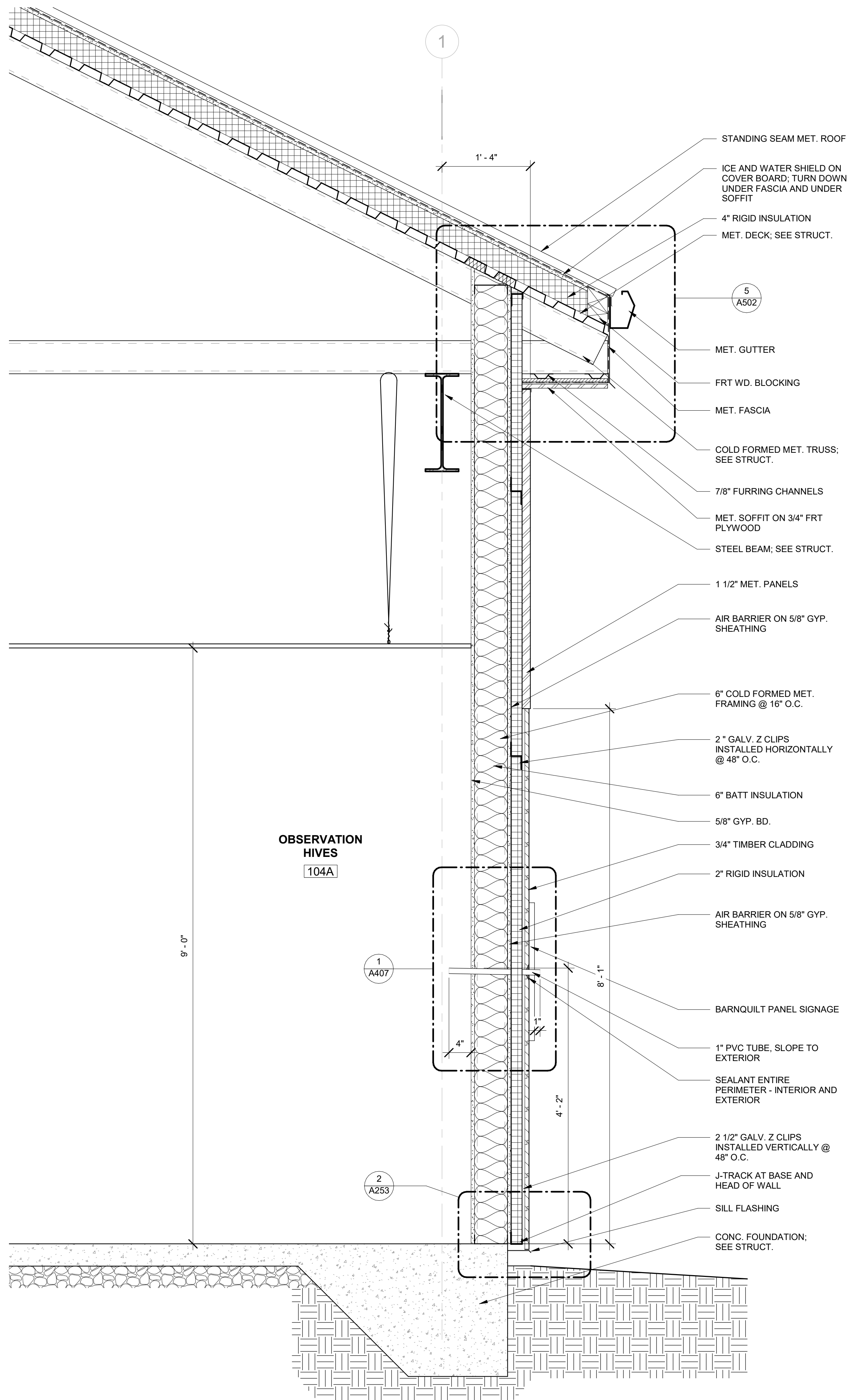
Project Number 132

Title  
**Wall Sections**

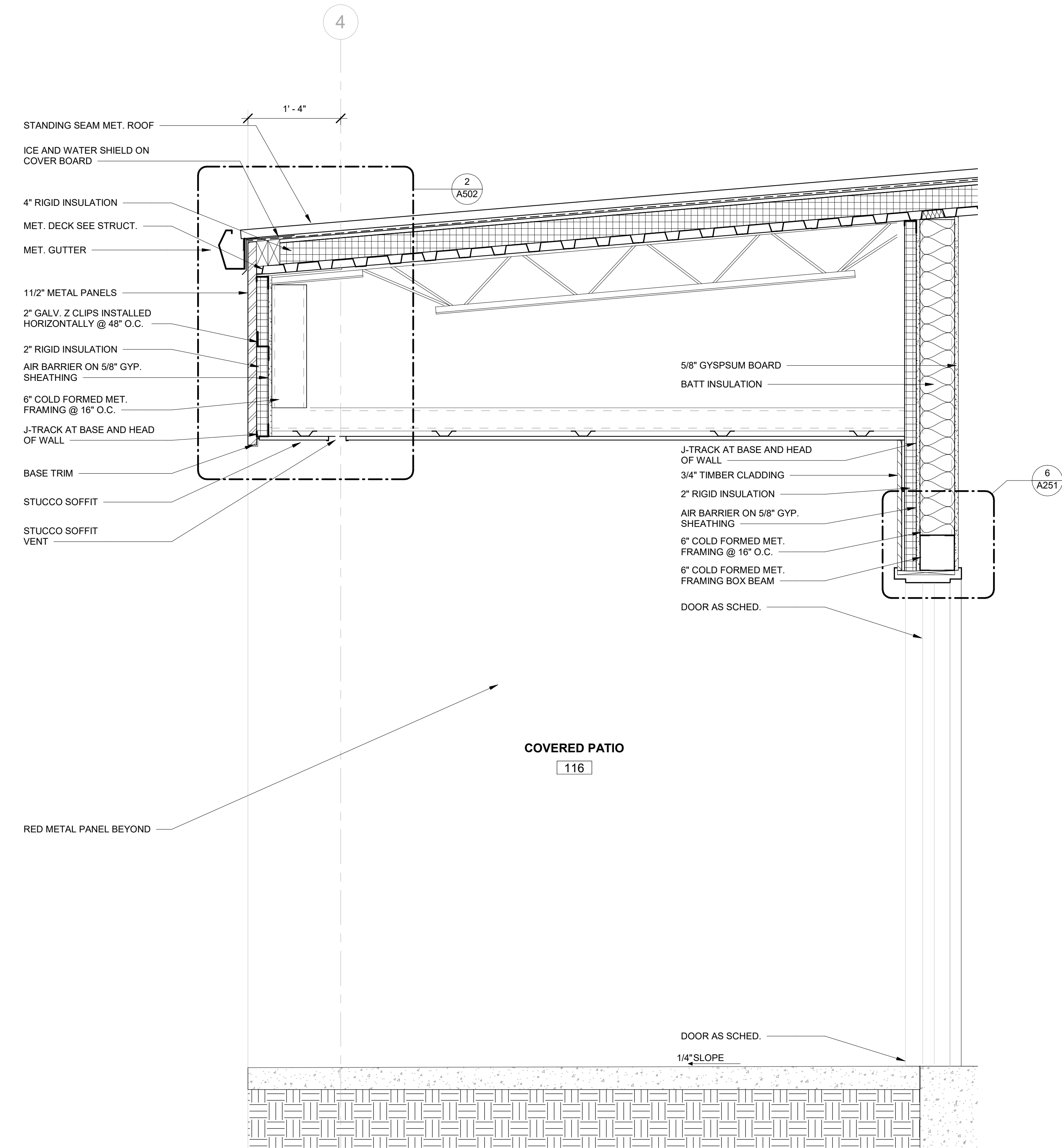
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**A402**

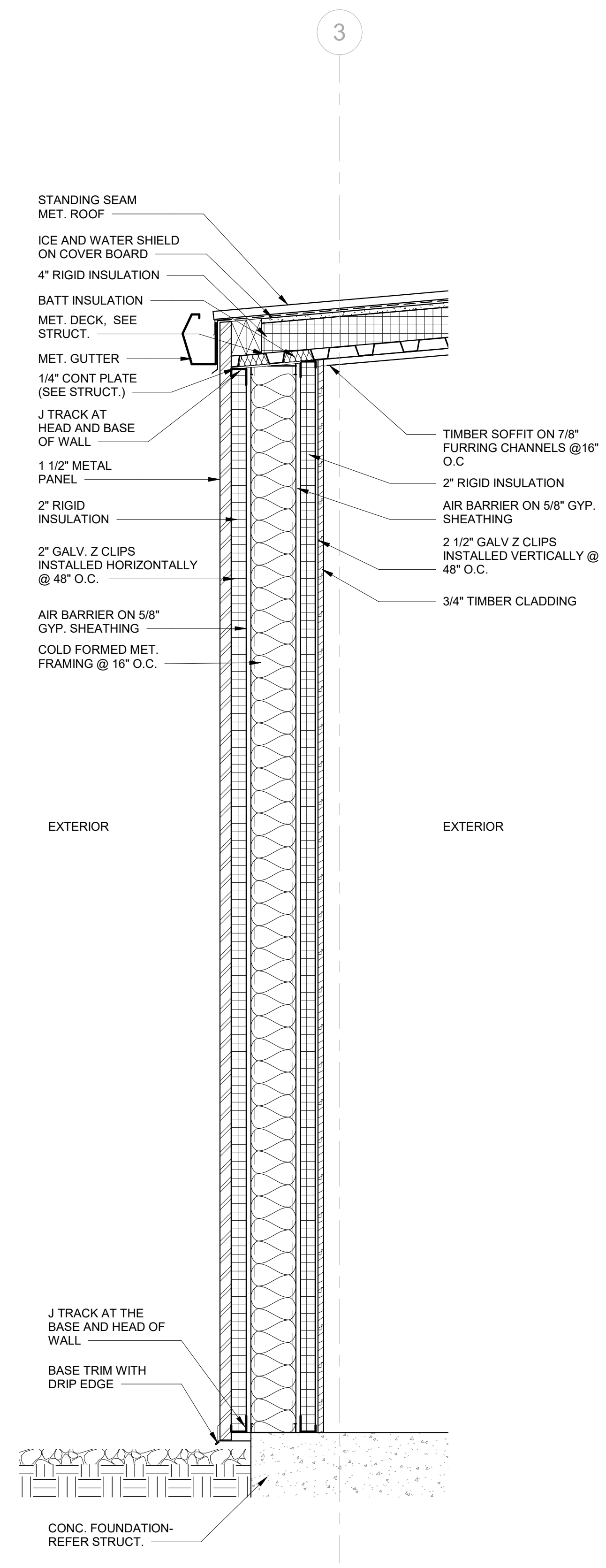
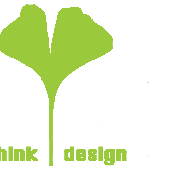
Plate



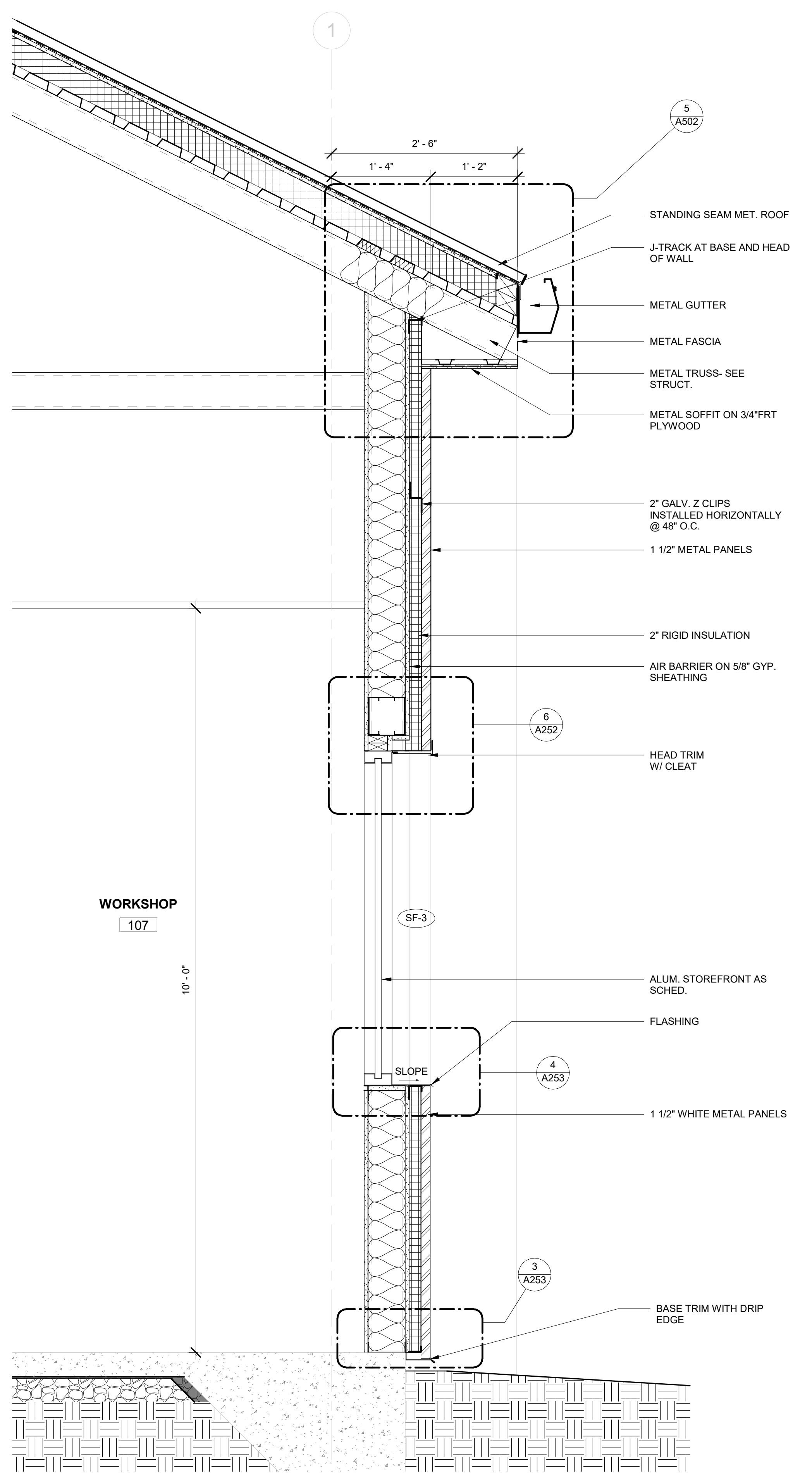
1 WALL SECTION  
A402 / 1" = 1'-0"



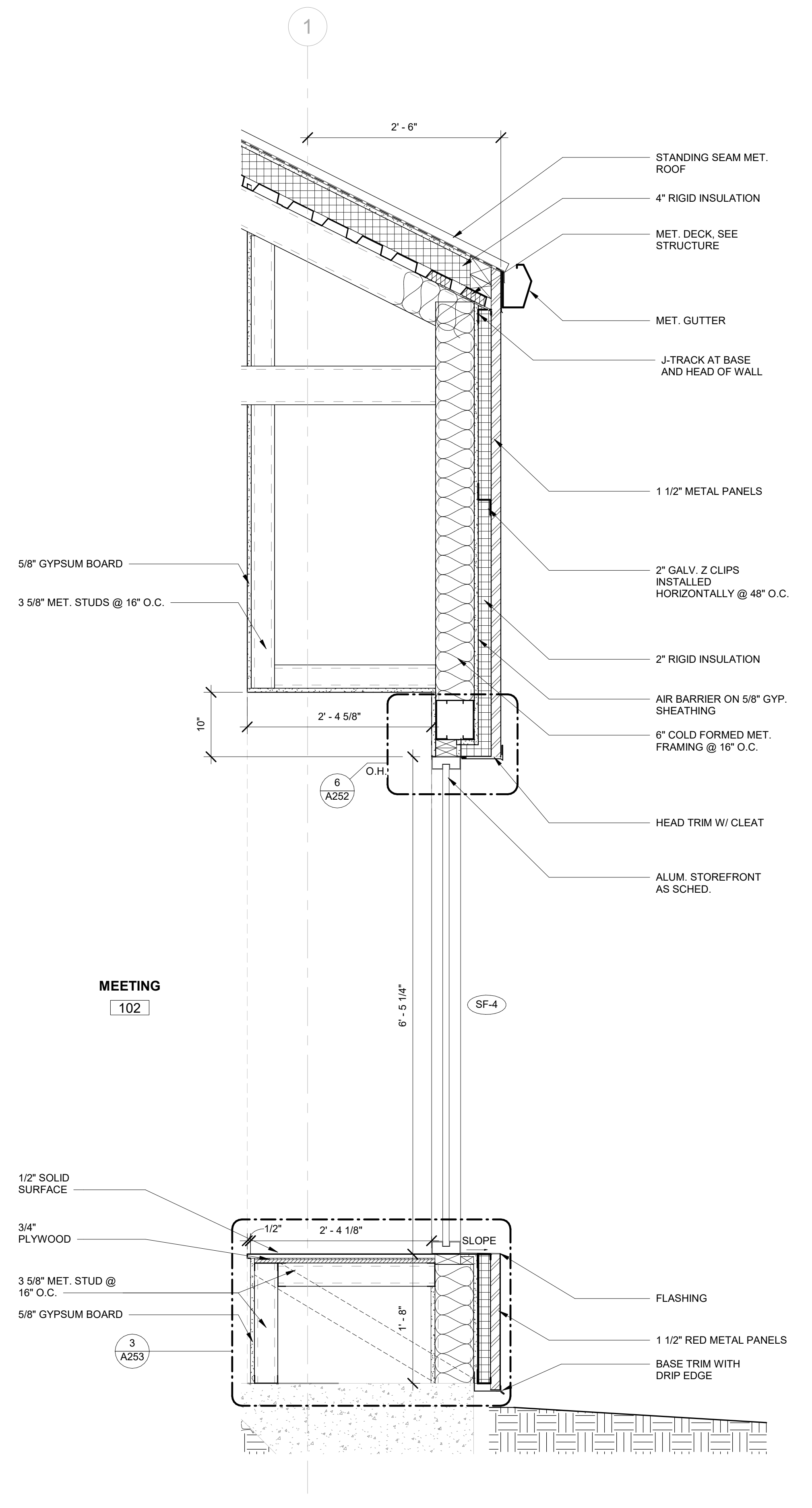
2 WALL SECTION  
A402 / 1" = 1'-0"



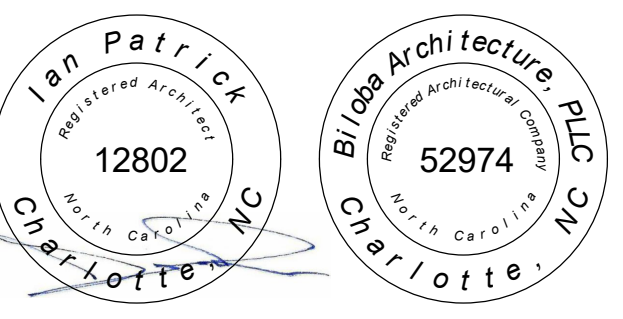
1 WALL SECTION (WING WALL)  
1" = 1'-0"



2 WALL SECTION  
1" = 1'-0"



3 WALL SECTION  
1" = 1'-0"



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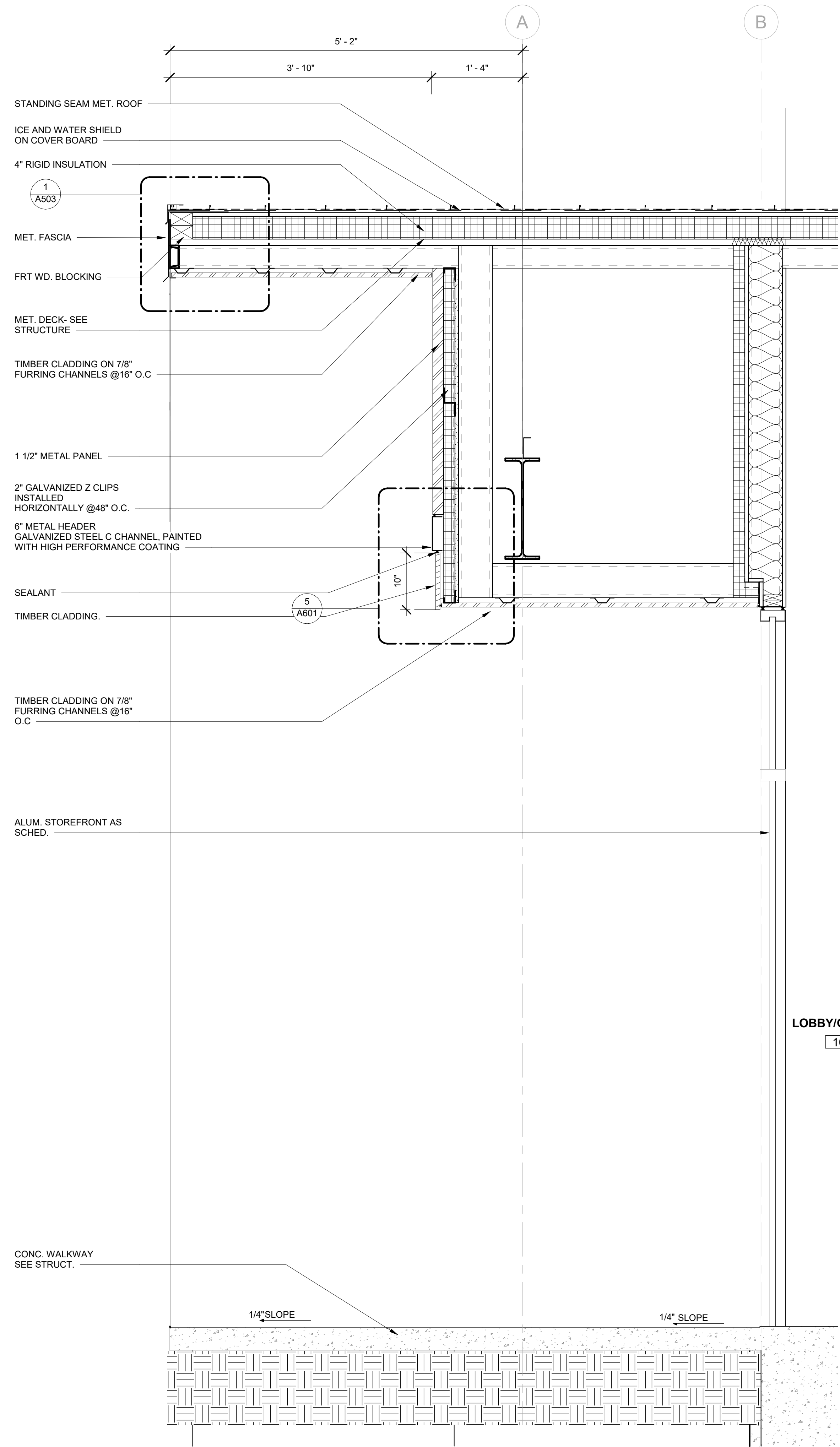
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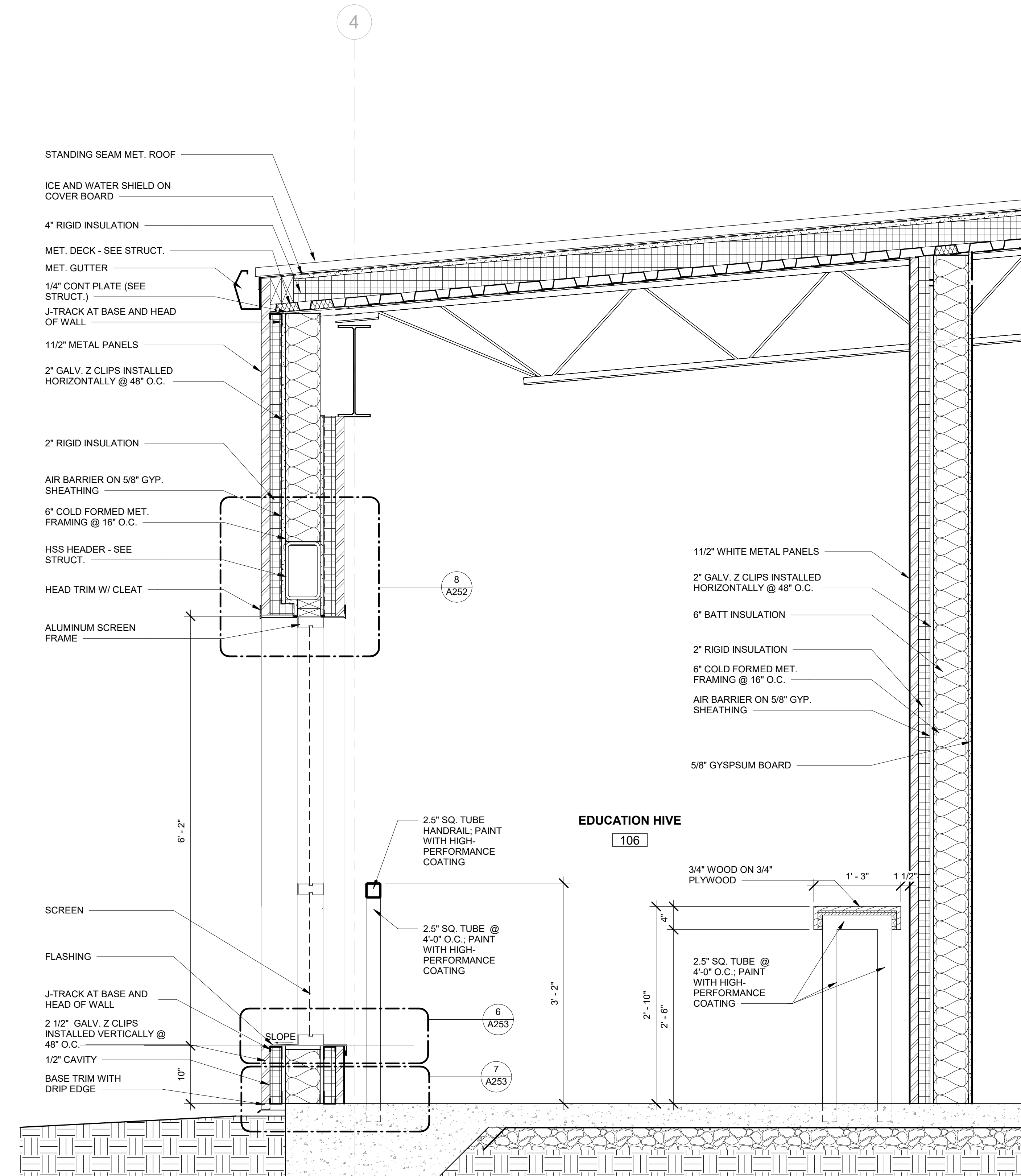
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Code: 42124 Item: 315  
NCSU: 20222007

Project Number 132  
Title  
**Wall Sections**

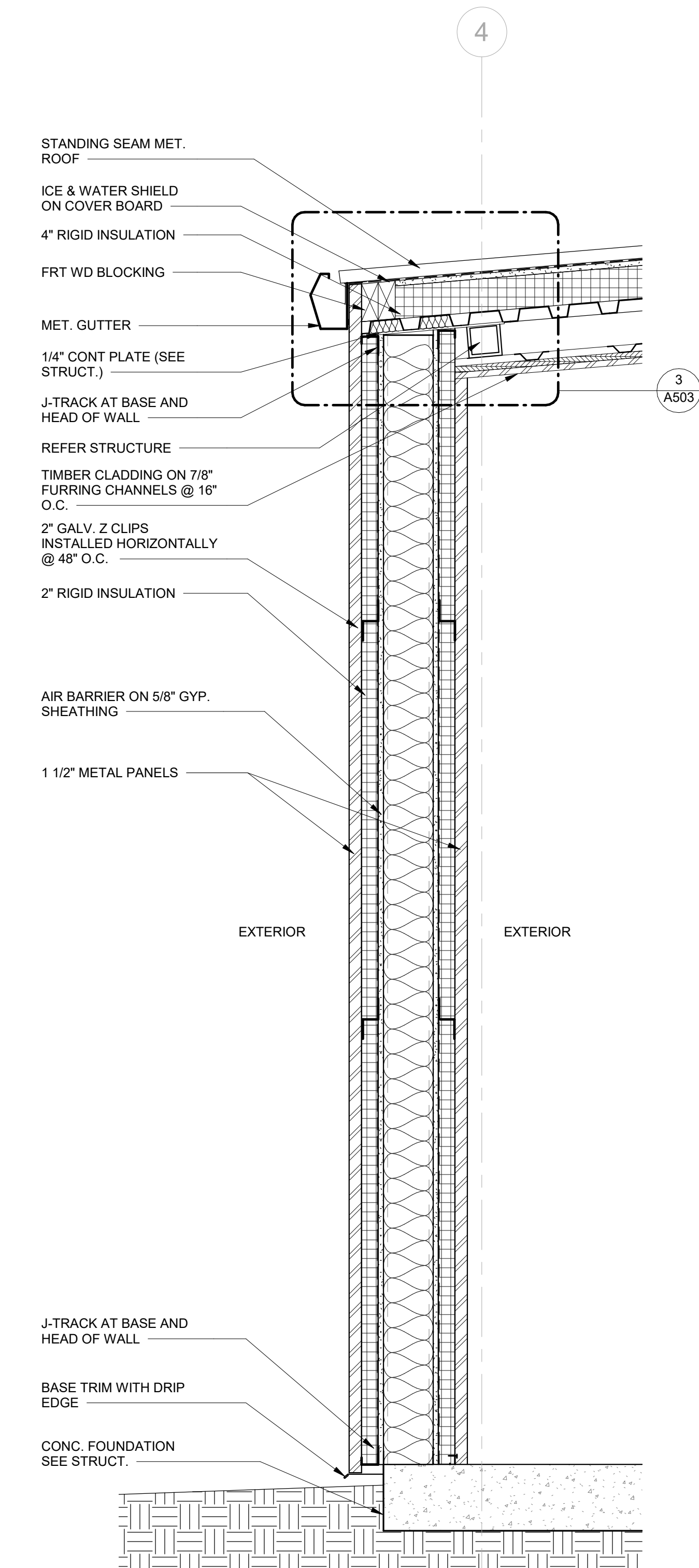
Sheet  
**A403**  
Plate



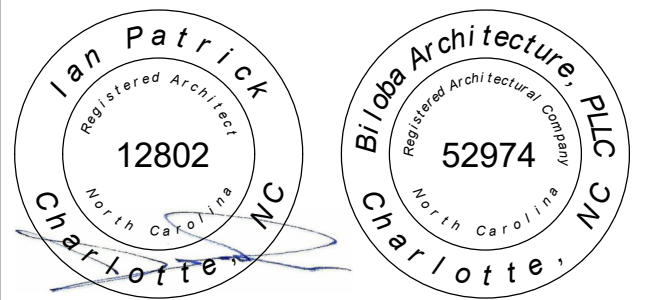
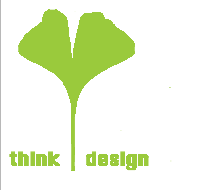
1 WALL SECTION  
A404 1" = 1'-0"



2 WALL SECTION  
A404 1" = 1'-0"



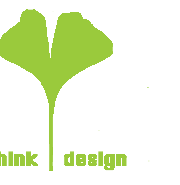
3 WALL SECTION  
A404 1" = 1'-0"



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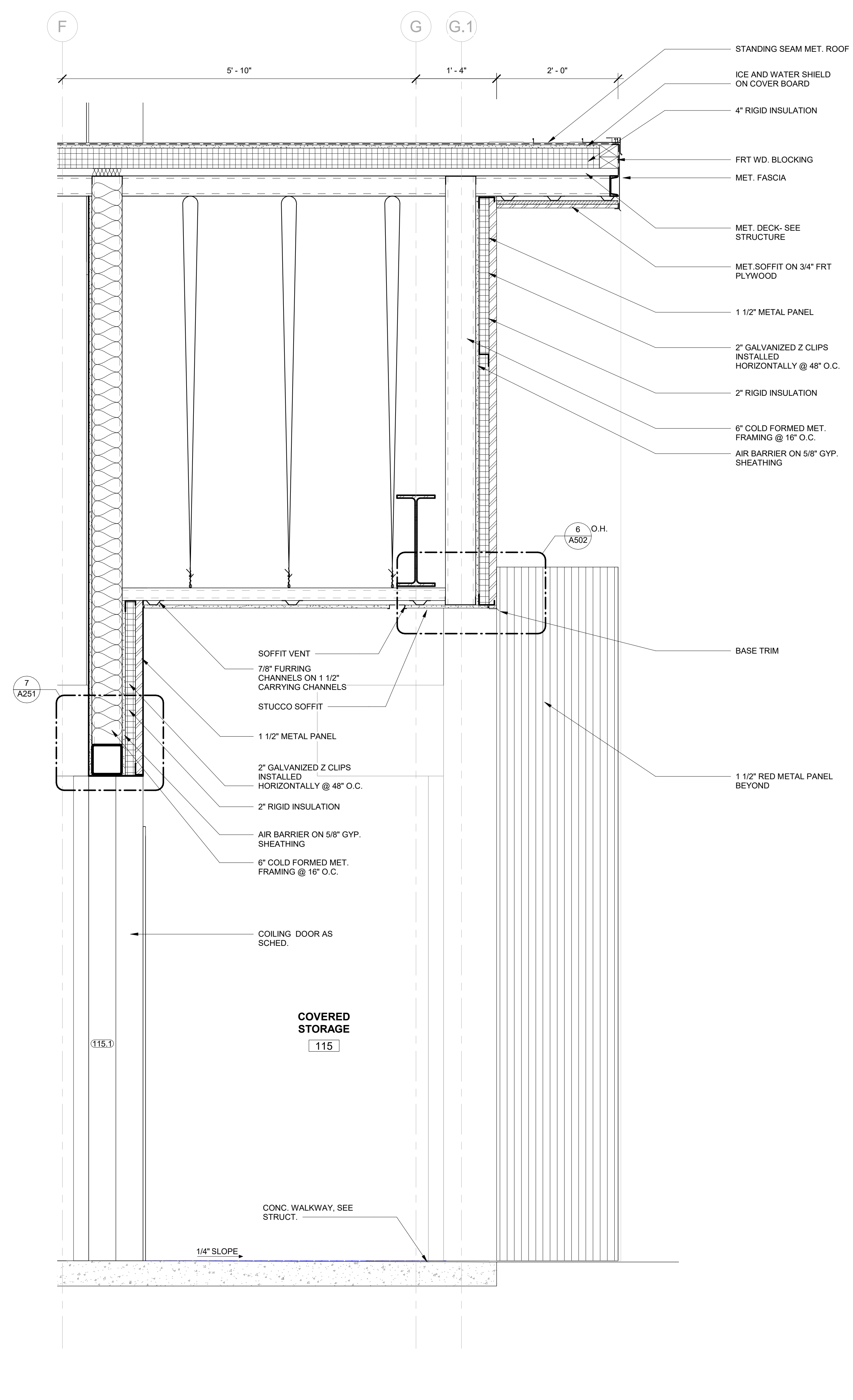
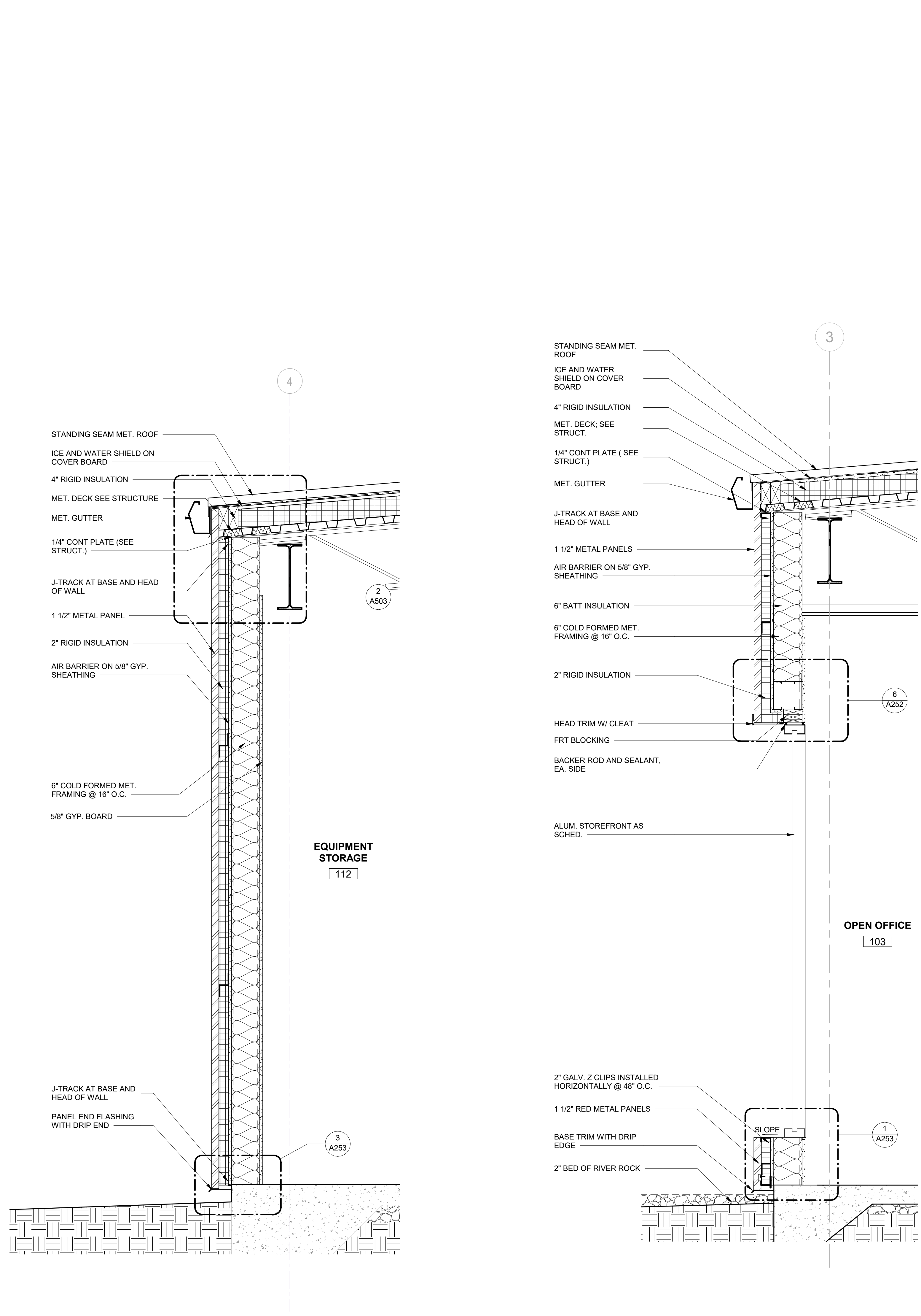
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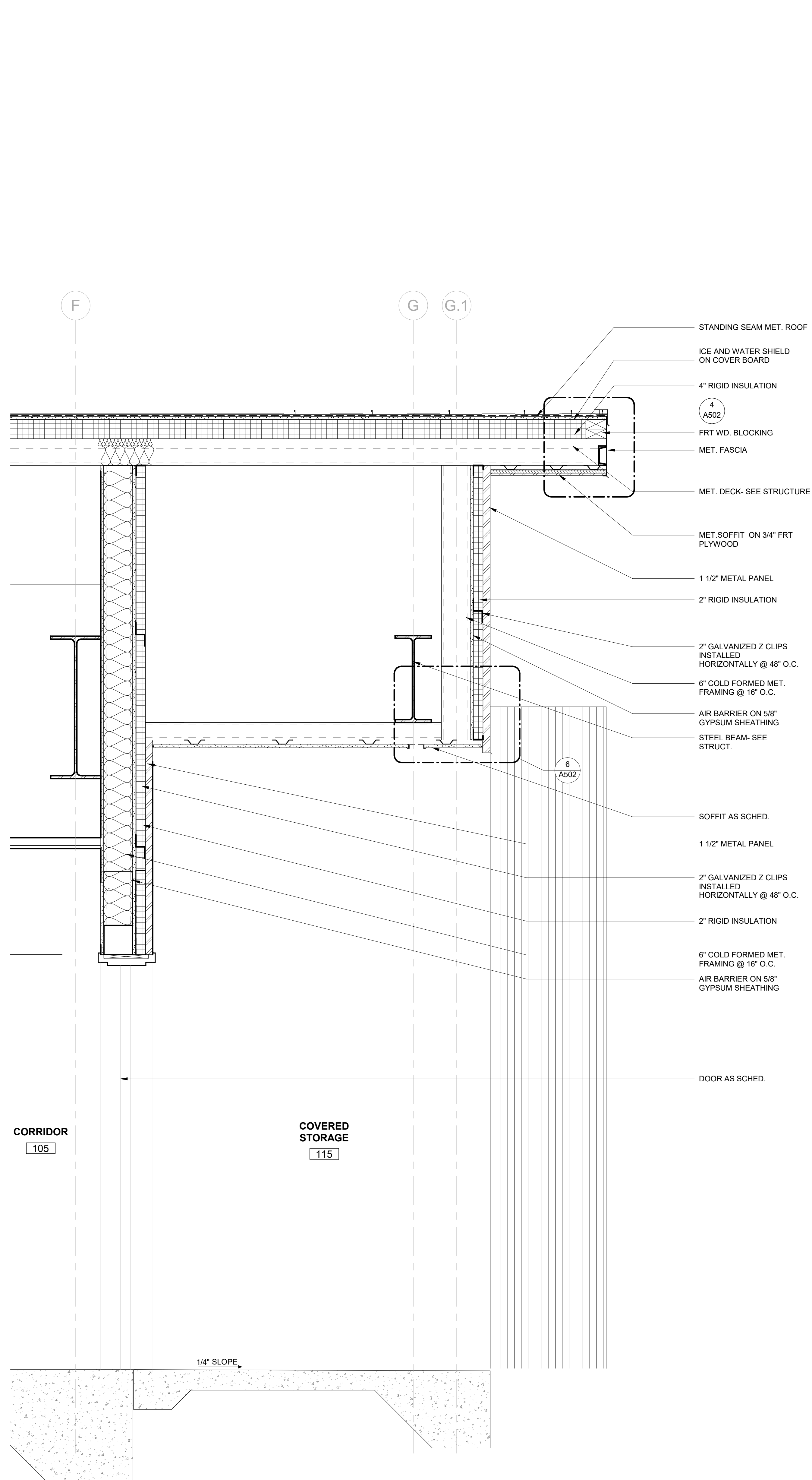
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Code: 42124 Item: 315  
NCSU: 20222007

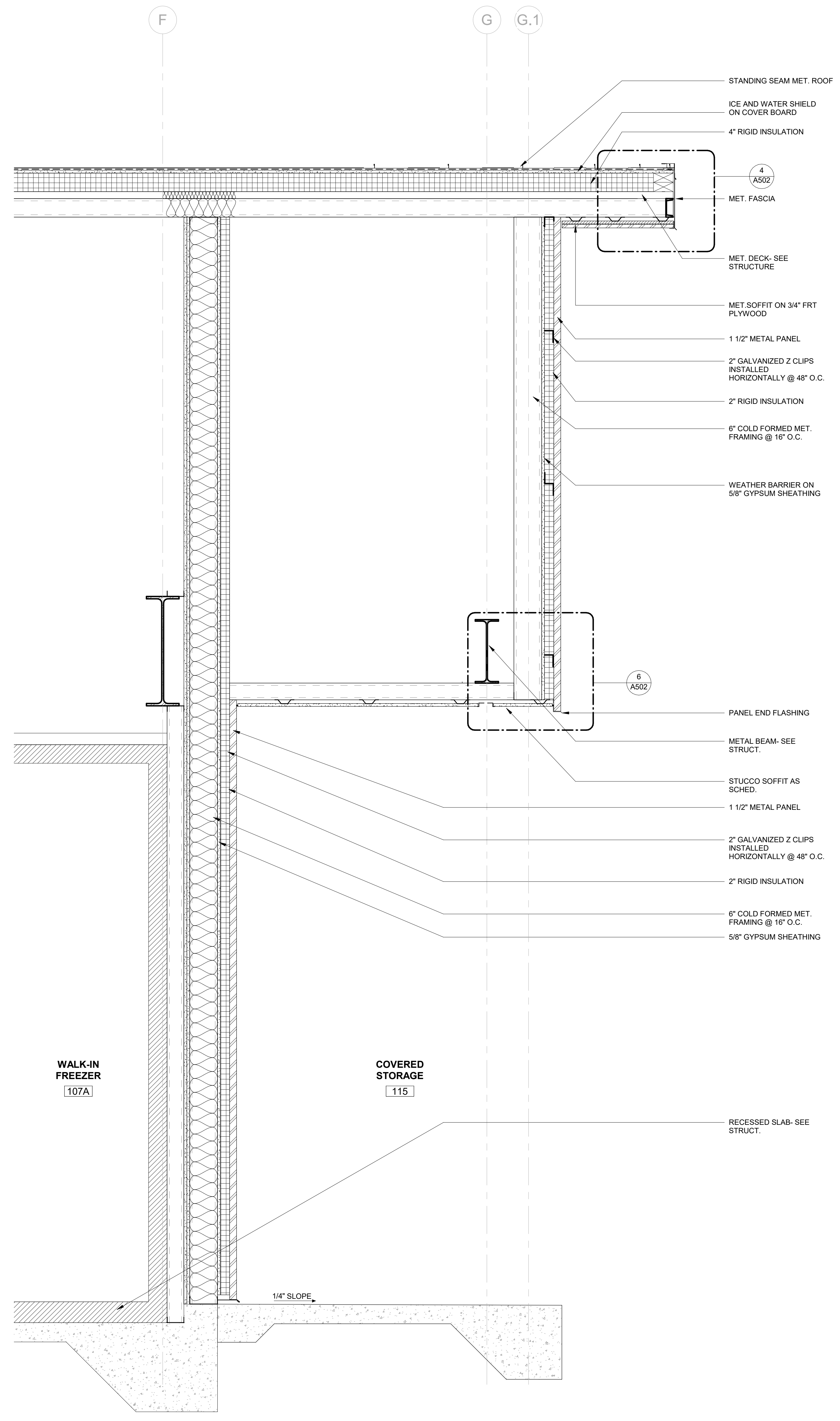
Project Number 132  
Title  
**Wall Sections**

Sheet  
**A405**  
Plate

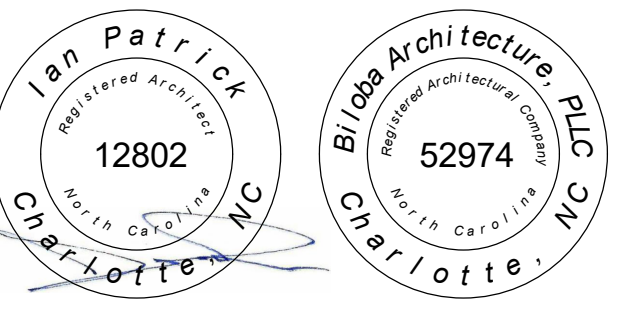
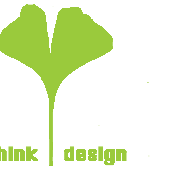




1 WALL SECTION TYPICAL  
A406 1" = 1'-0"

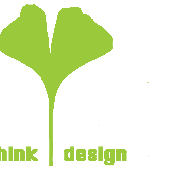


2 WALL SECTION (WALK IN FREEZER)  
A406 1" = 1'-0"



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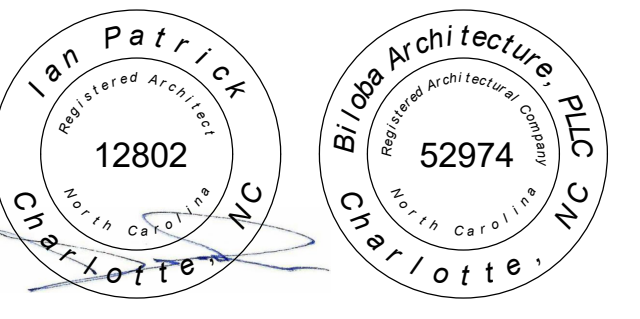




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Code: 42124 Item: 315  
NCSU: 202220007

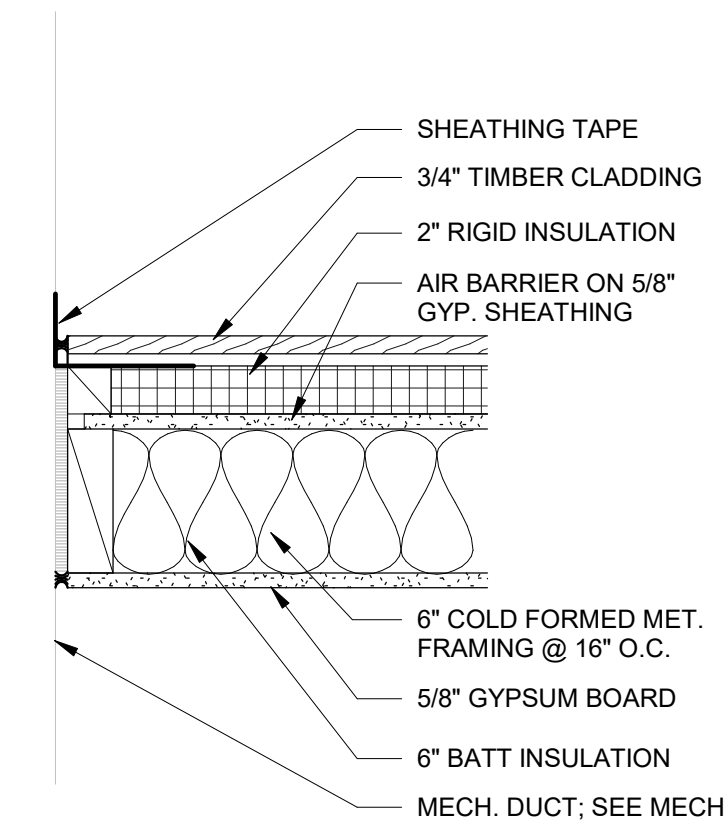
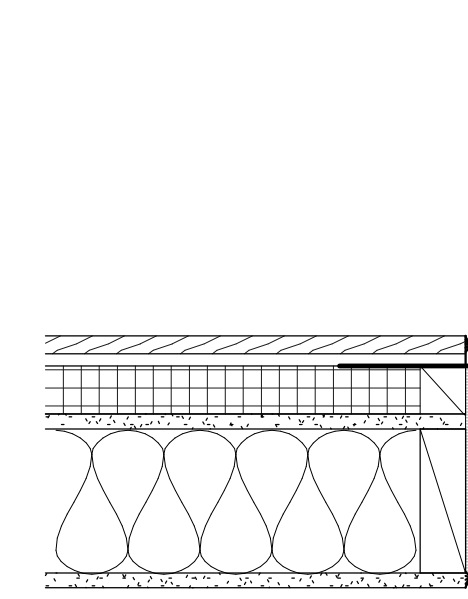
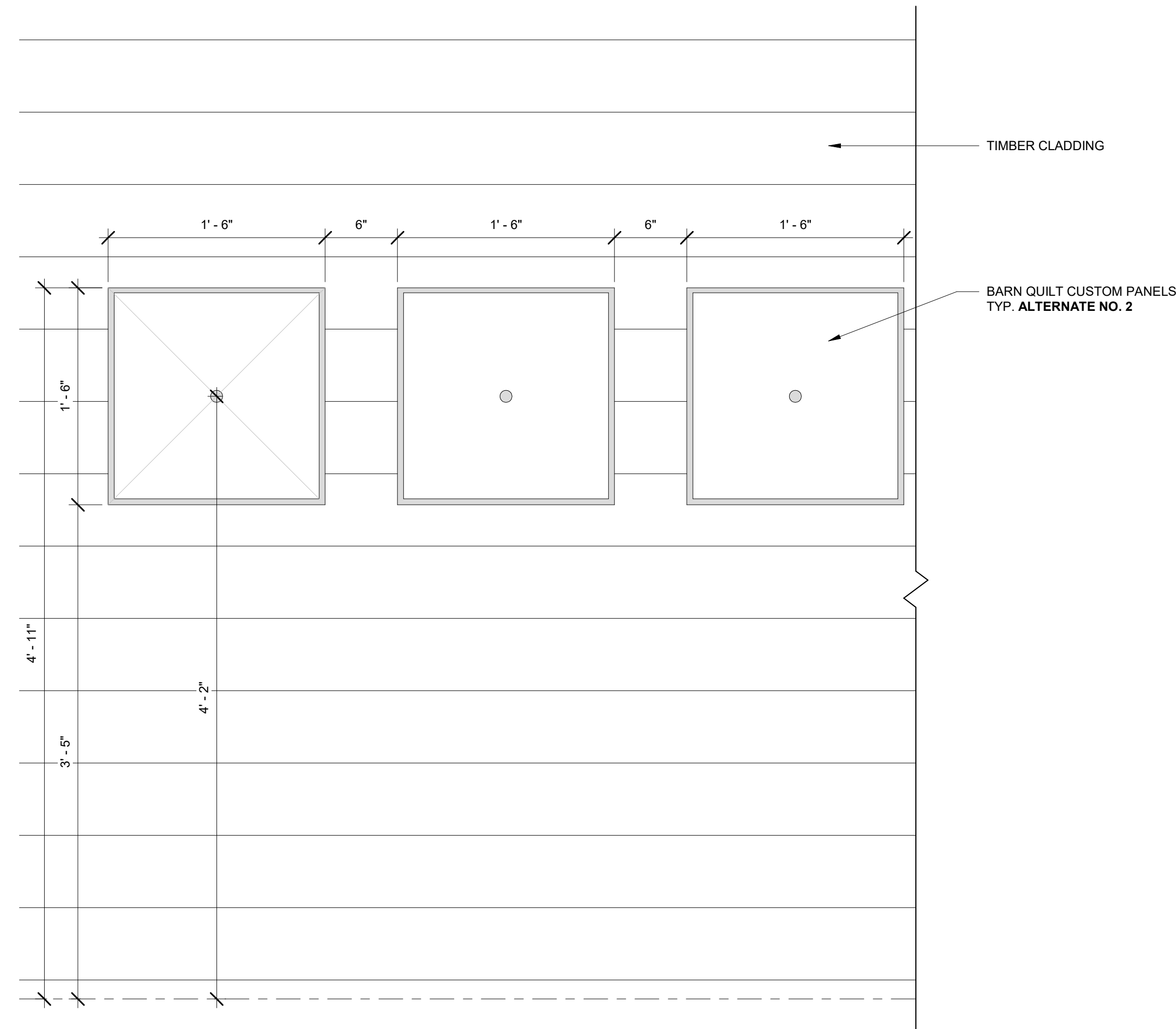
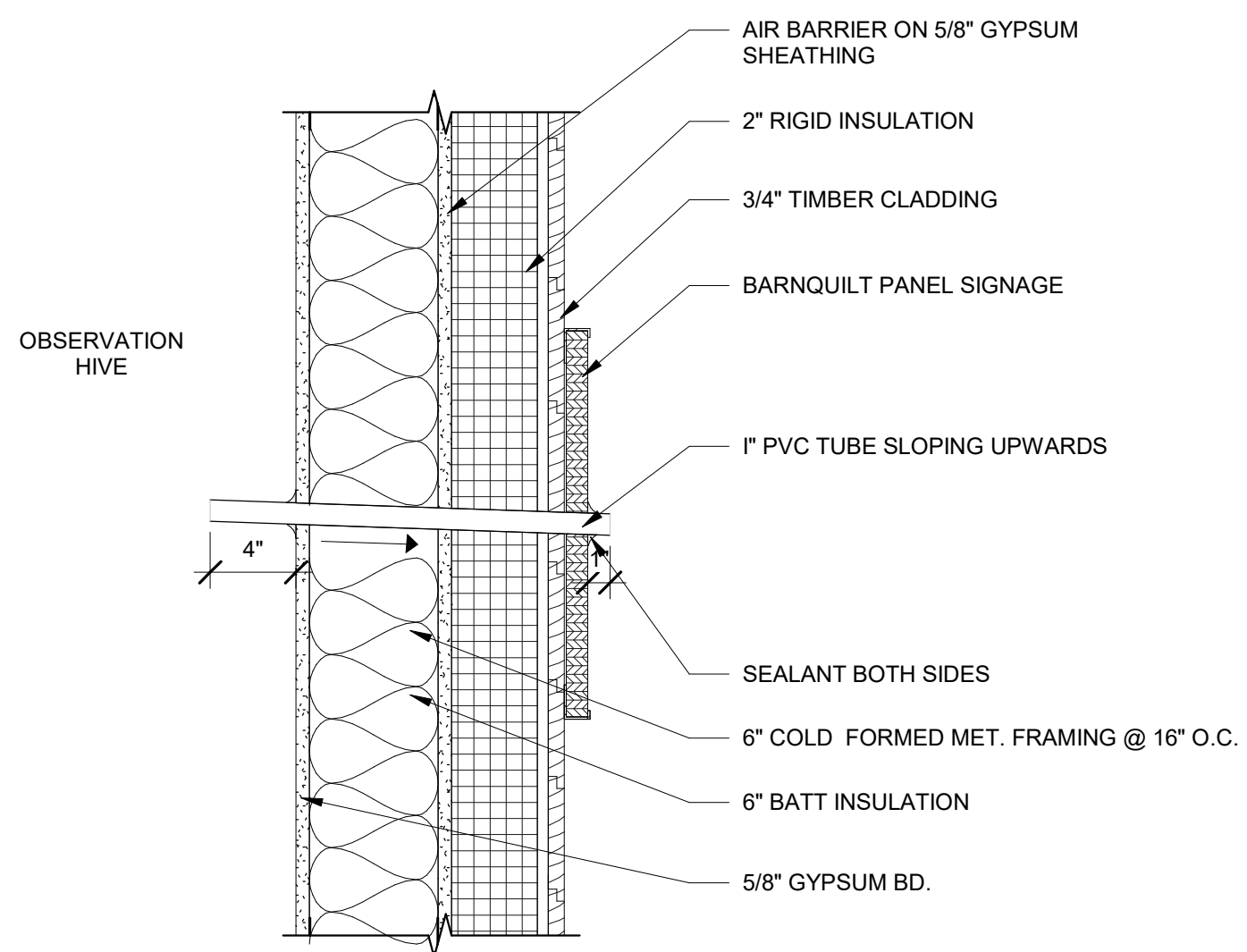
Project Number 132

Details

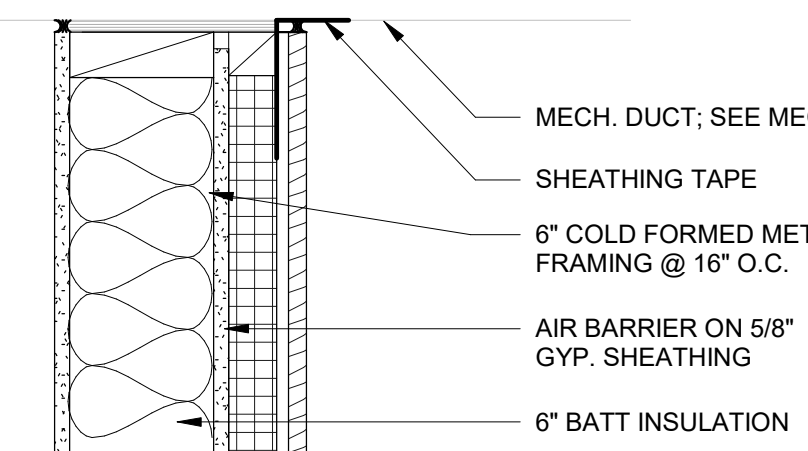
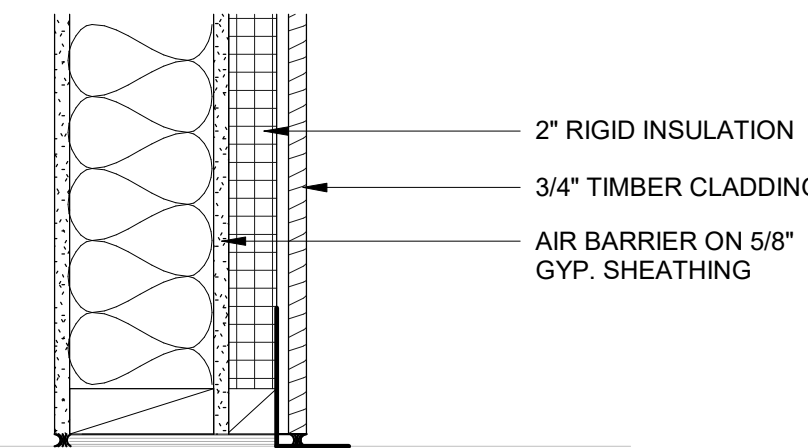
Sheet

A407

Plate



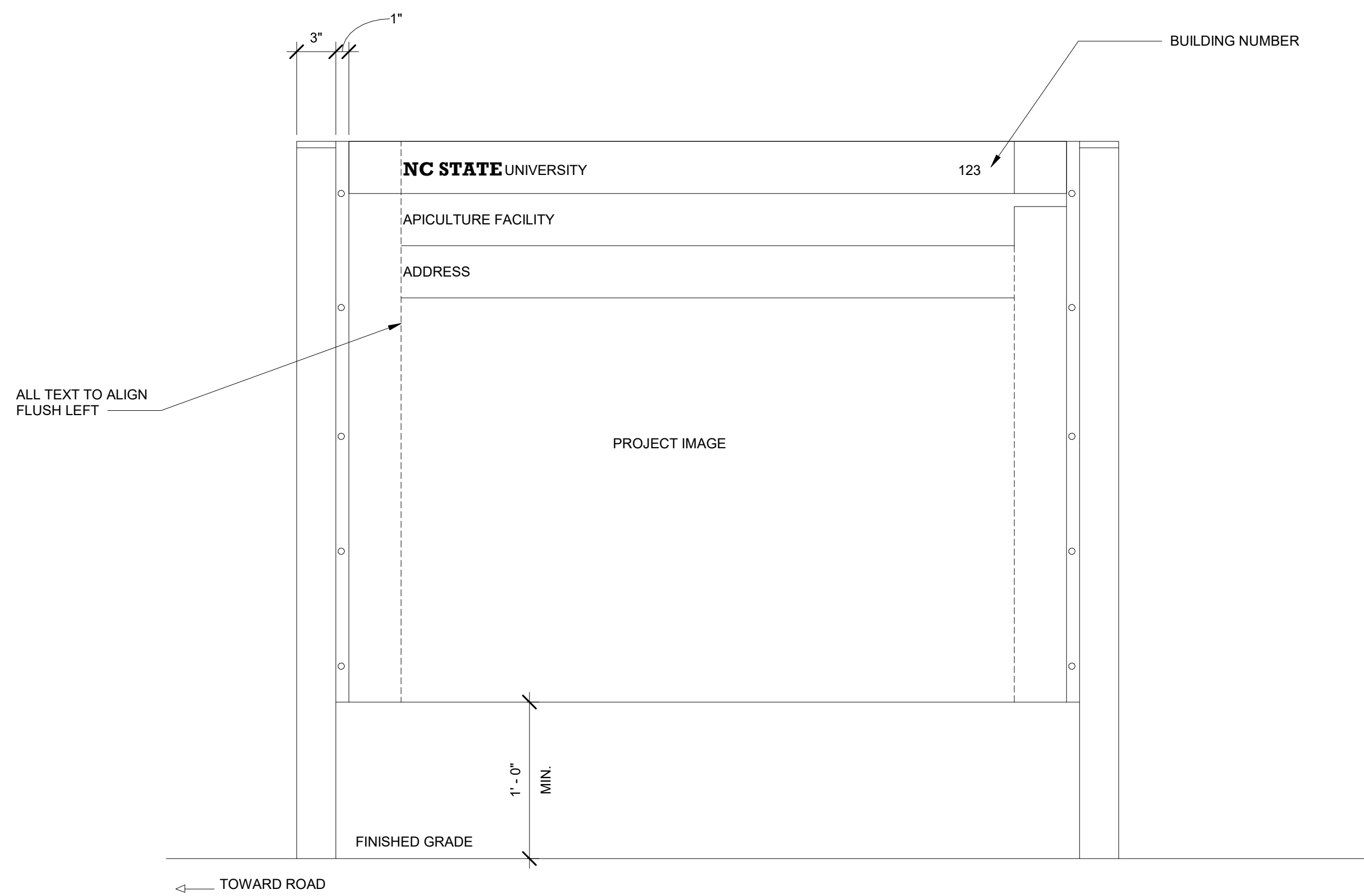
3 MECH. DUCT PENETRTION DETAIL  
A407 1 1/2\"/>



4 MECH. DUCT PENETRTION DETAIL  
A407 1 1/2\"/>

1 APIAN ENTRY DETAIL  
A407 1 1/2\"/>

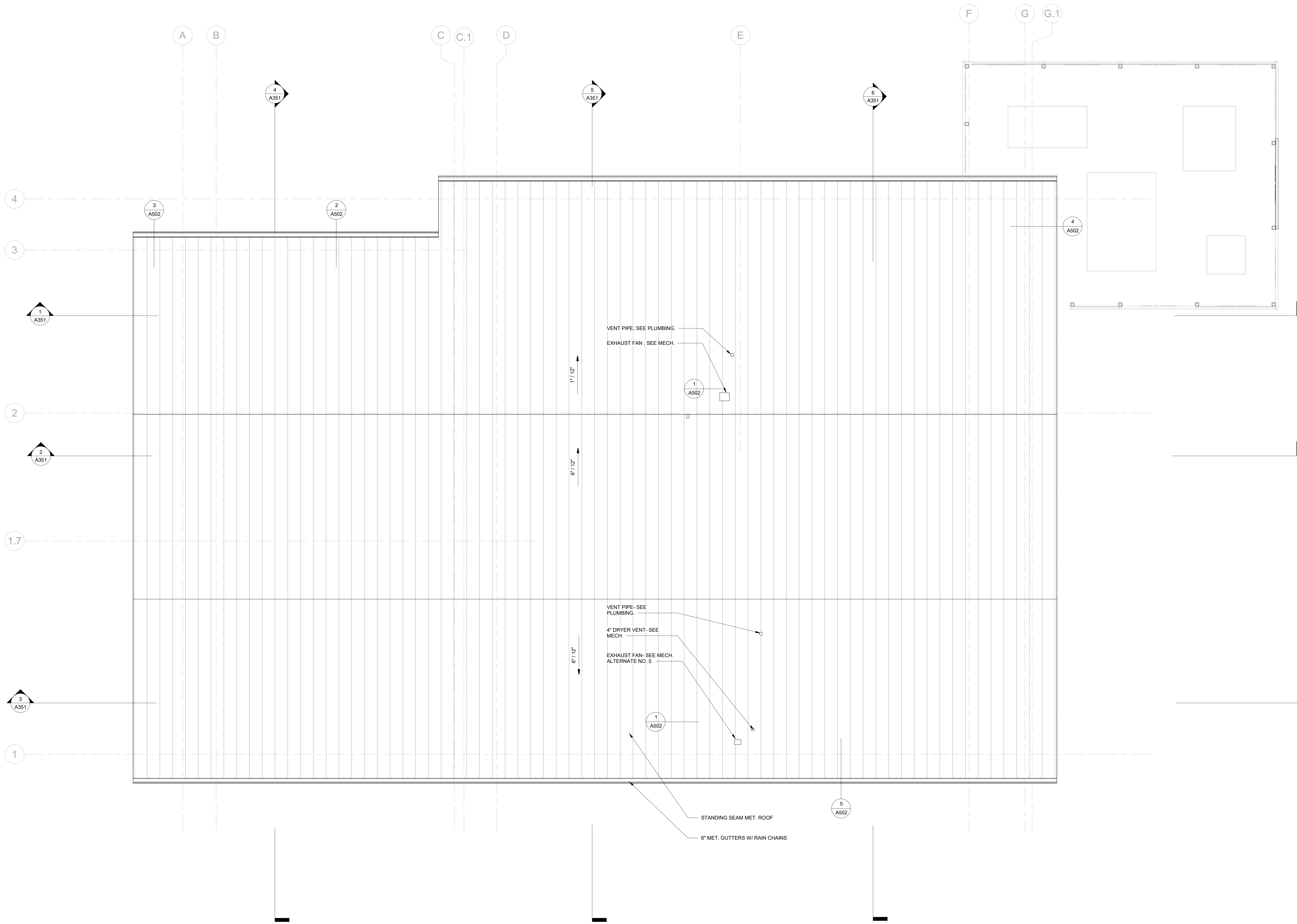
2 CUSTOM PAINTED SIGNAGE  
A407 1 1/2\"/>



REFER NC STATE UNIVERSITY SIGNAGE GUIDE FOR FONTS, SPACINGS, GRAPHICS AND OTHER GUIDELINES

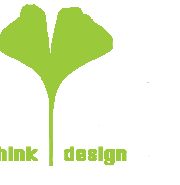
6 CONSTRUCTION SIGN  
A407 1 1/2\"/>

1/10/2025 10:31:34 AM



1 ROOF PLAN  
 A501 / 1/4" = 1'-0"

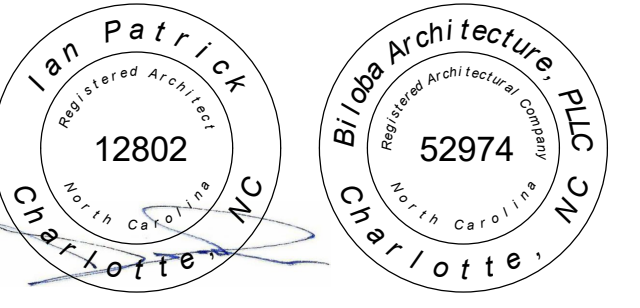
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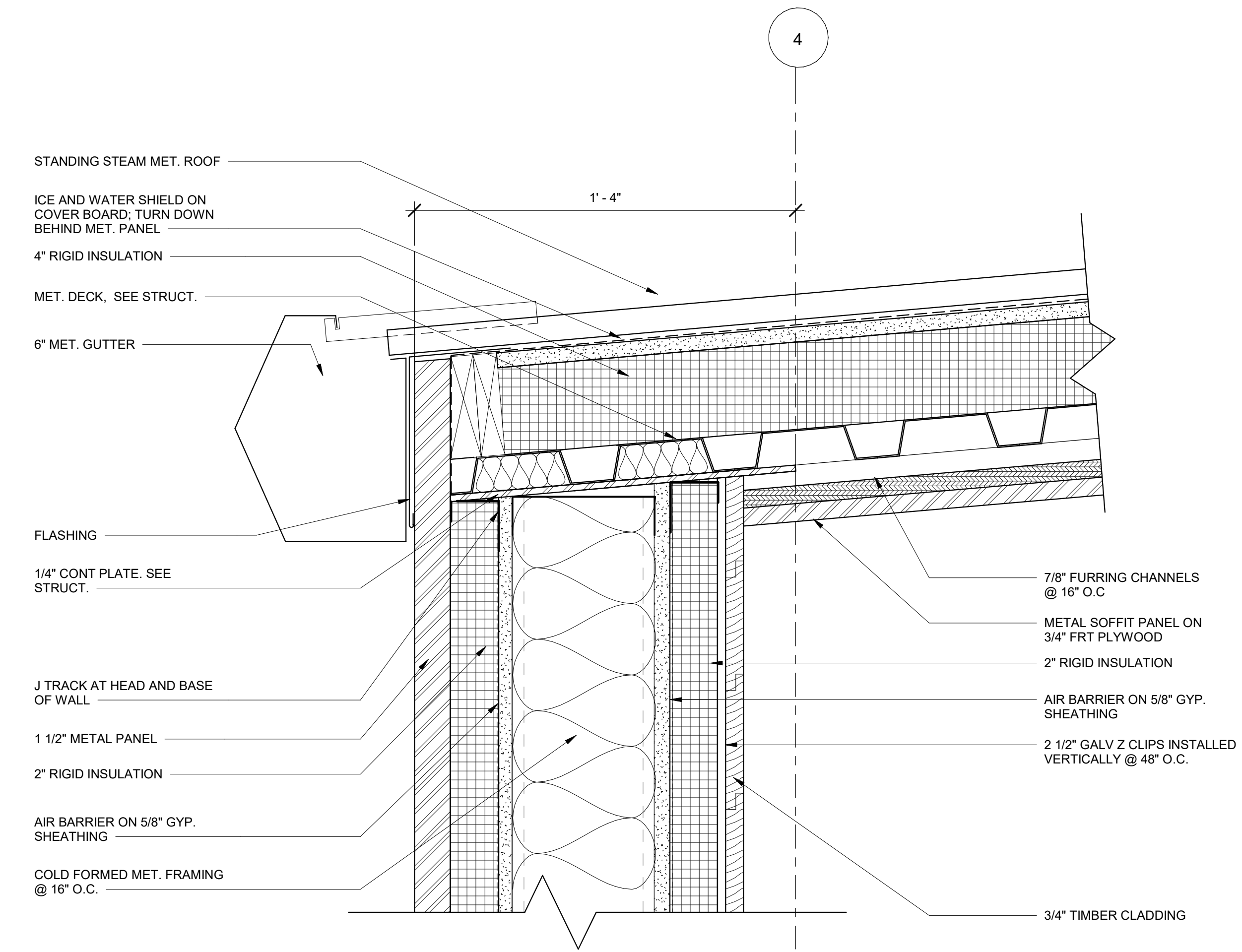
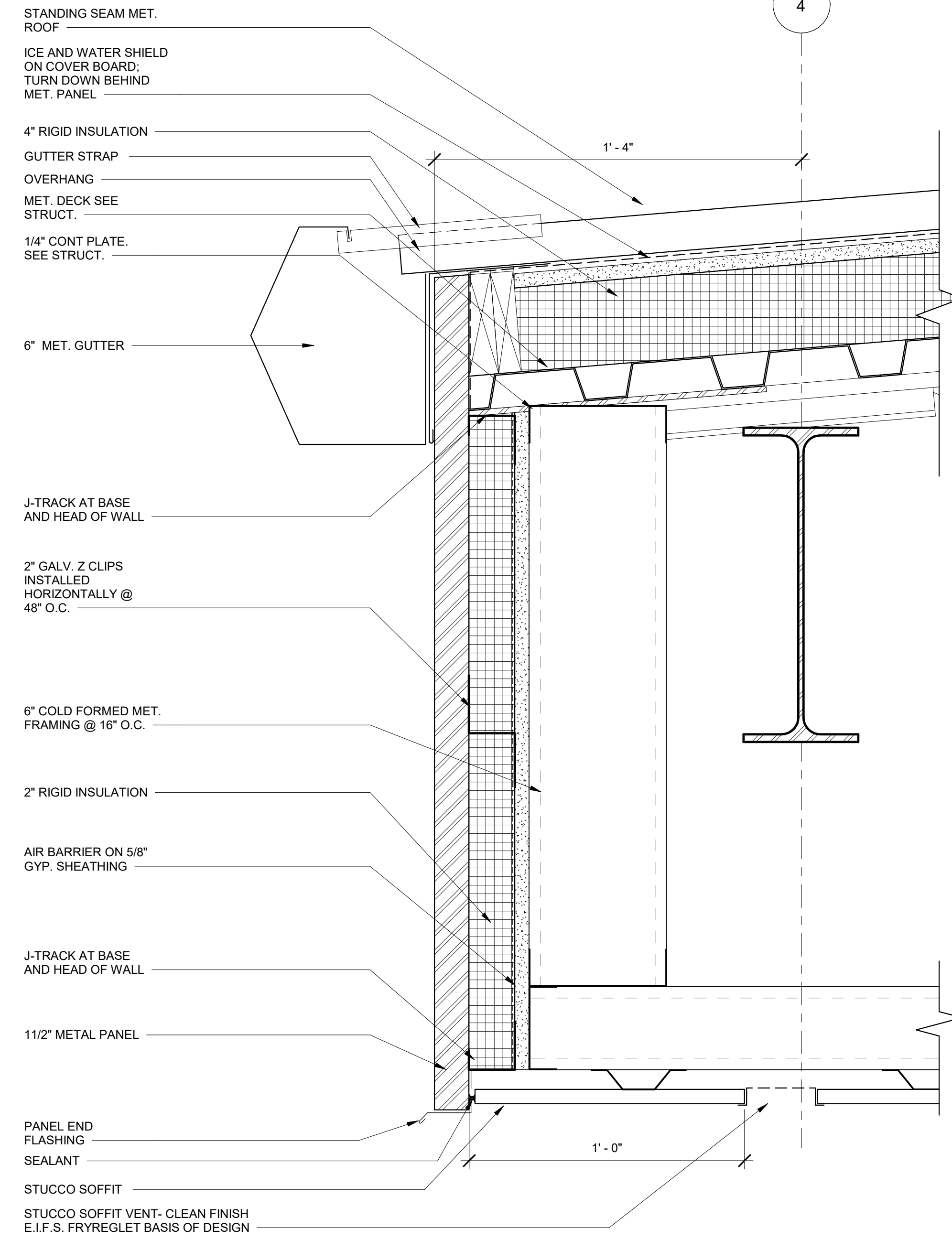
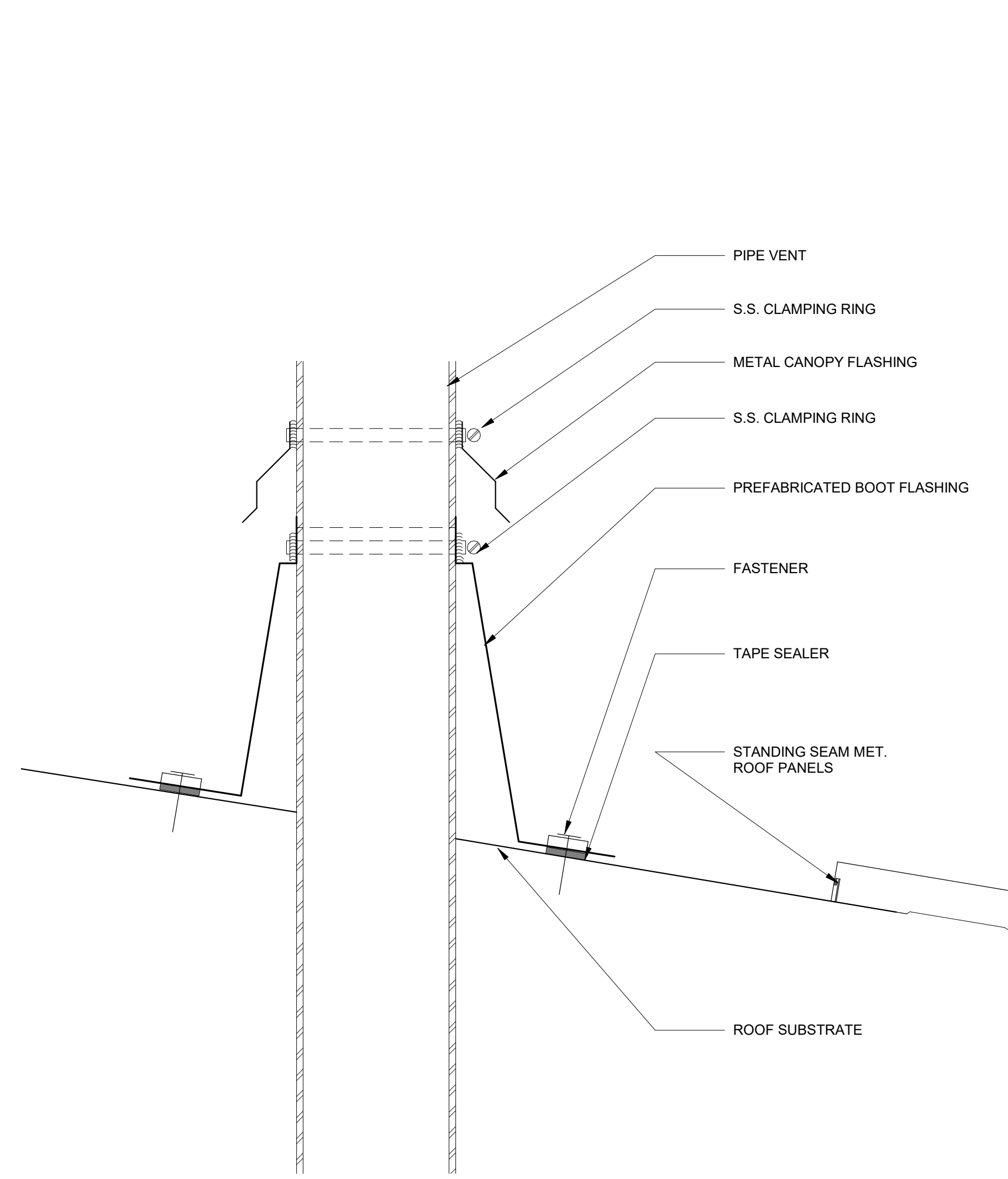
Project Number 132

Title  
**Roof Plan**

Sheet

**A501**

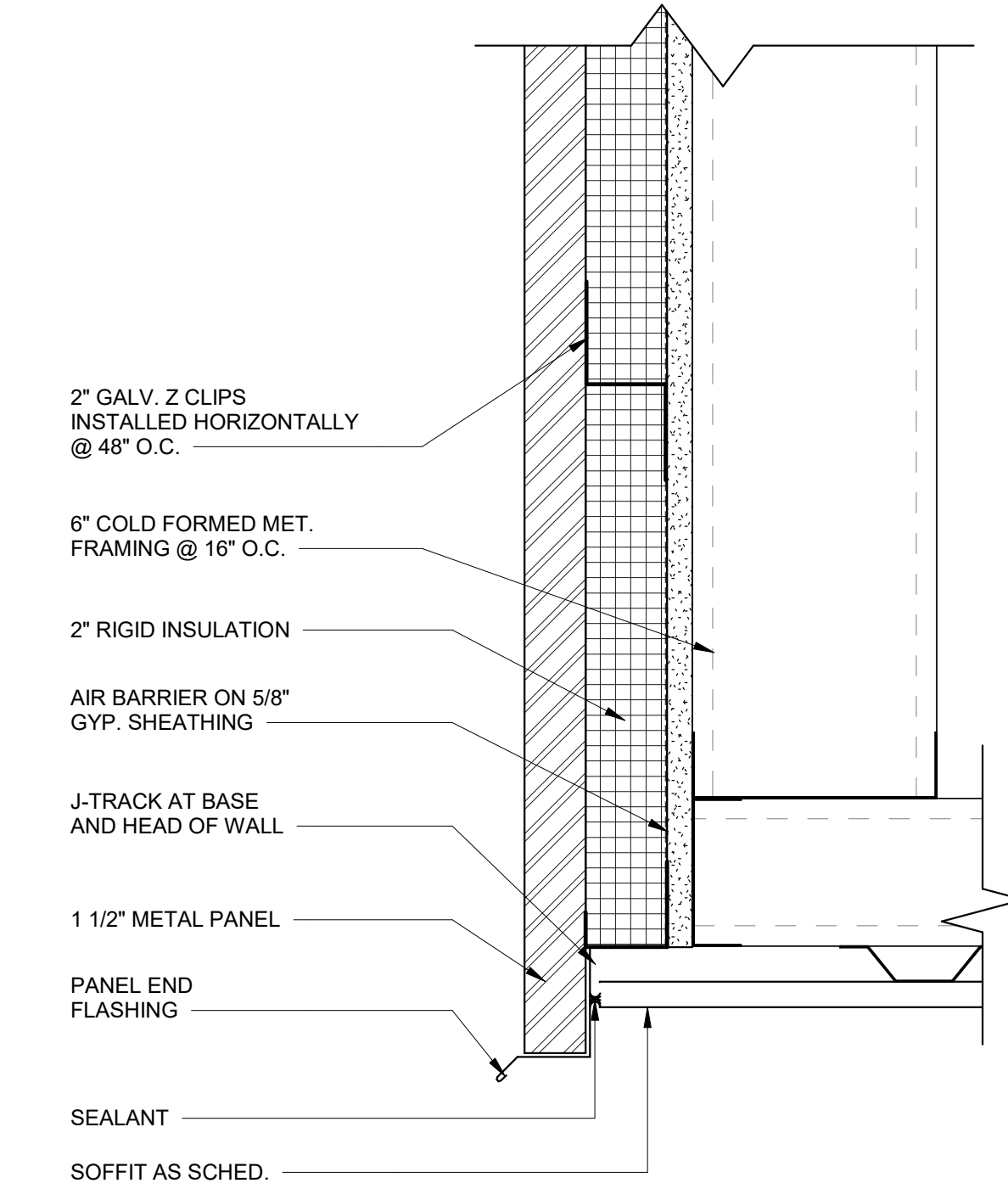
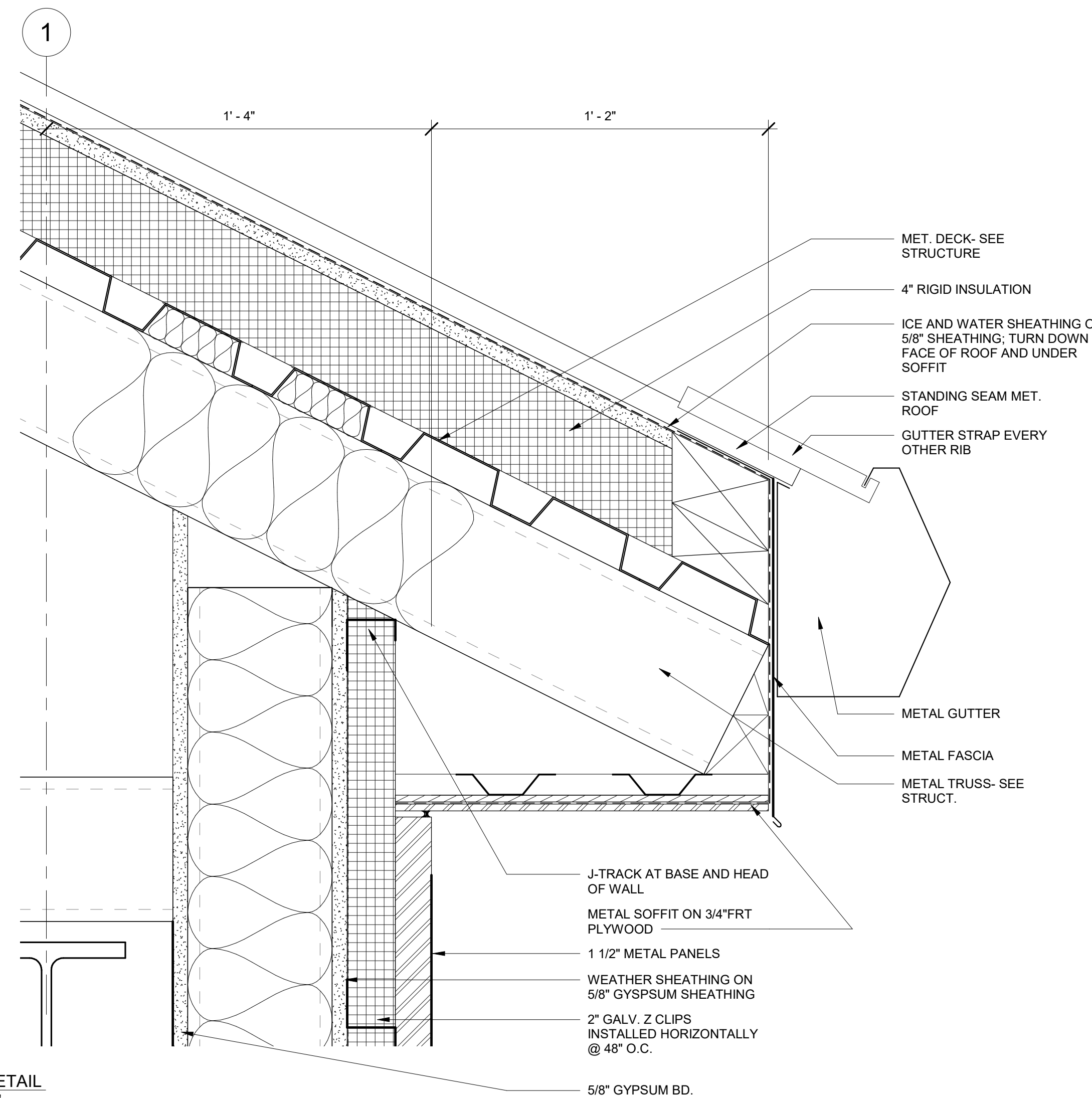
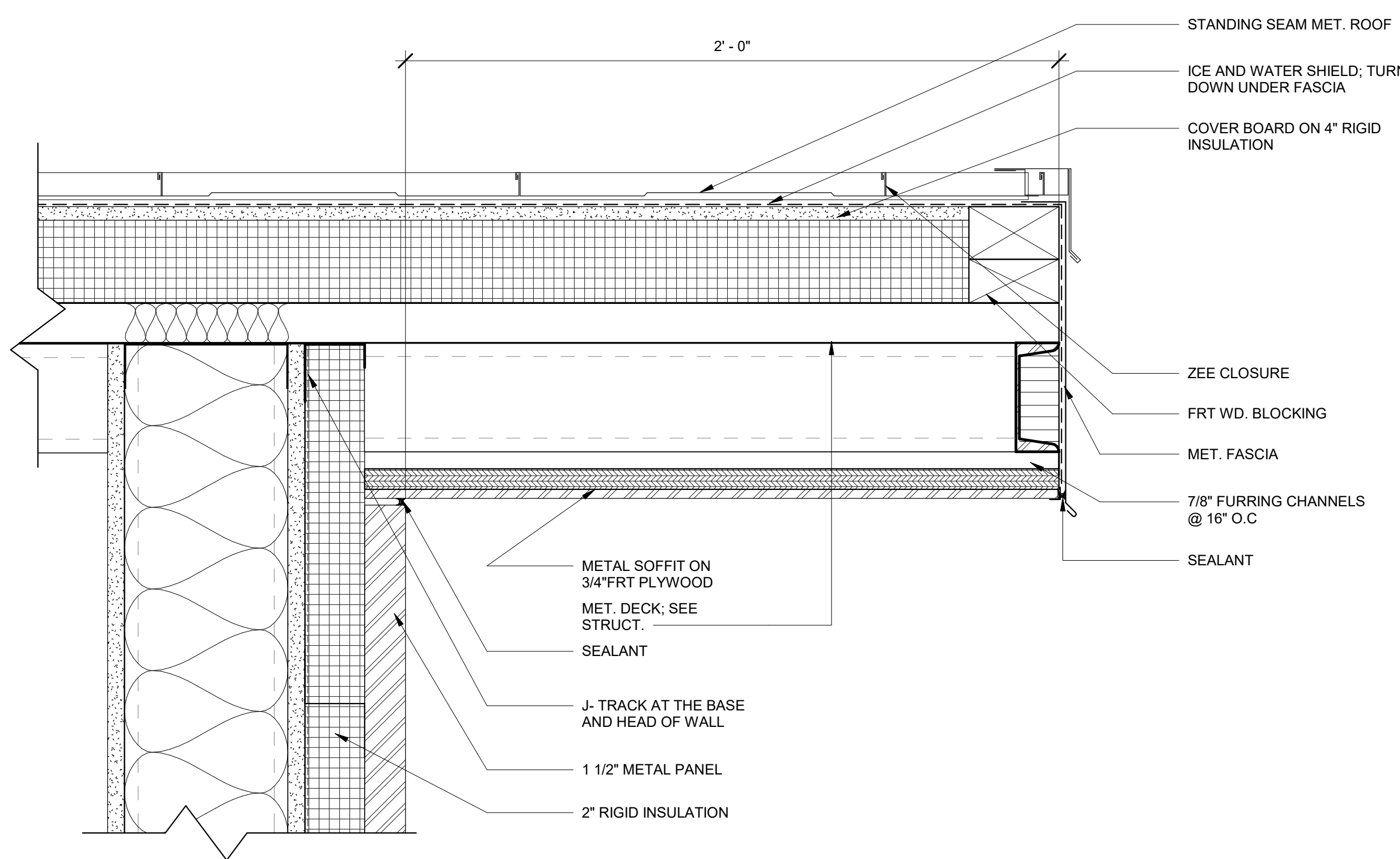
Plate



1 ROOF DETAILS- PENETRATION DETAIL  
A502 3" = 1'-0"

2 ROOF DETAIL  
A502 3" = 1'-0"

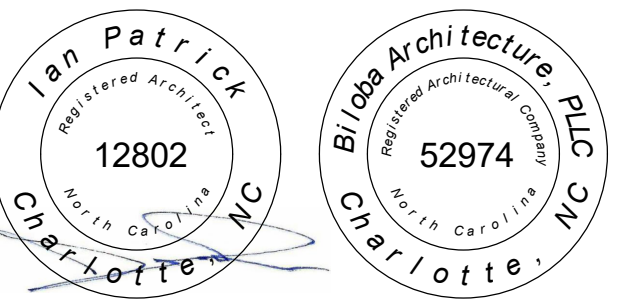
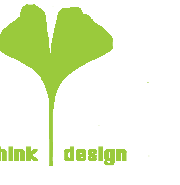
3 ROOF DETAIL  
A502 3" = 1'-0"



4 ROOF DETAIL  
A502 3" = 1'-0"

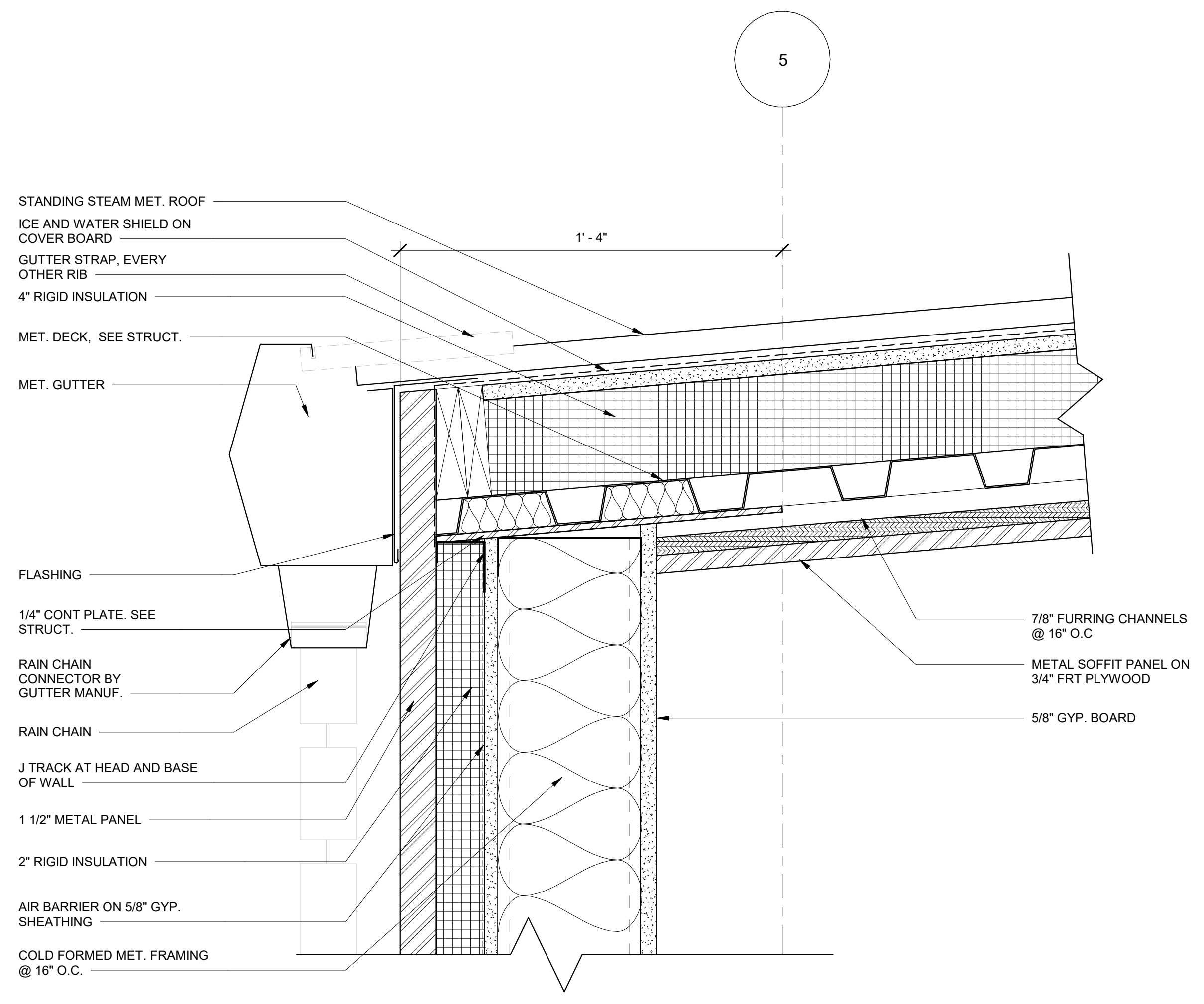
5 ROOF DETAIL  
A502 3" = 1'-0"

6 SOFFIT DETAIL  
A502 3" = 1'-0"

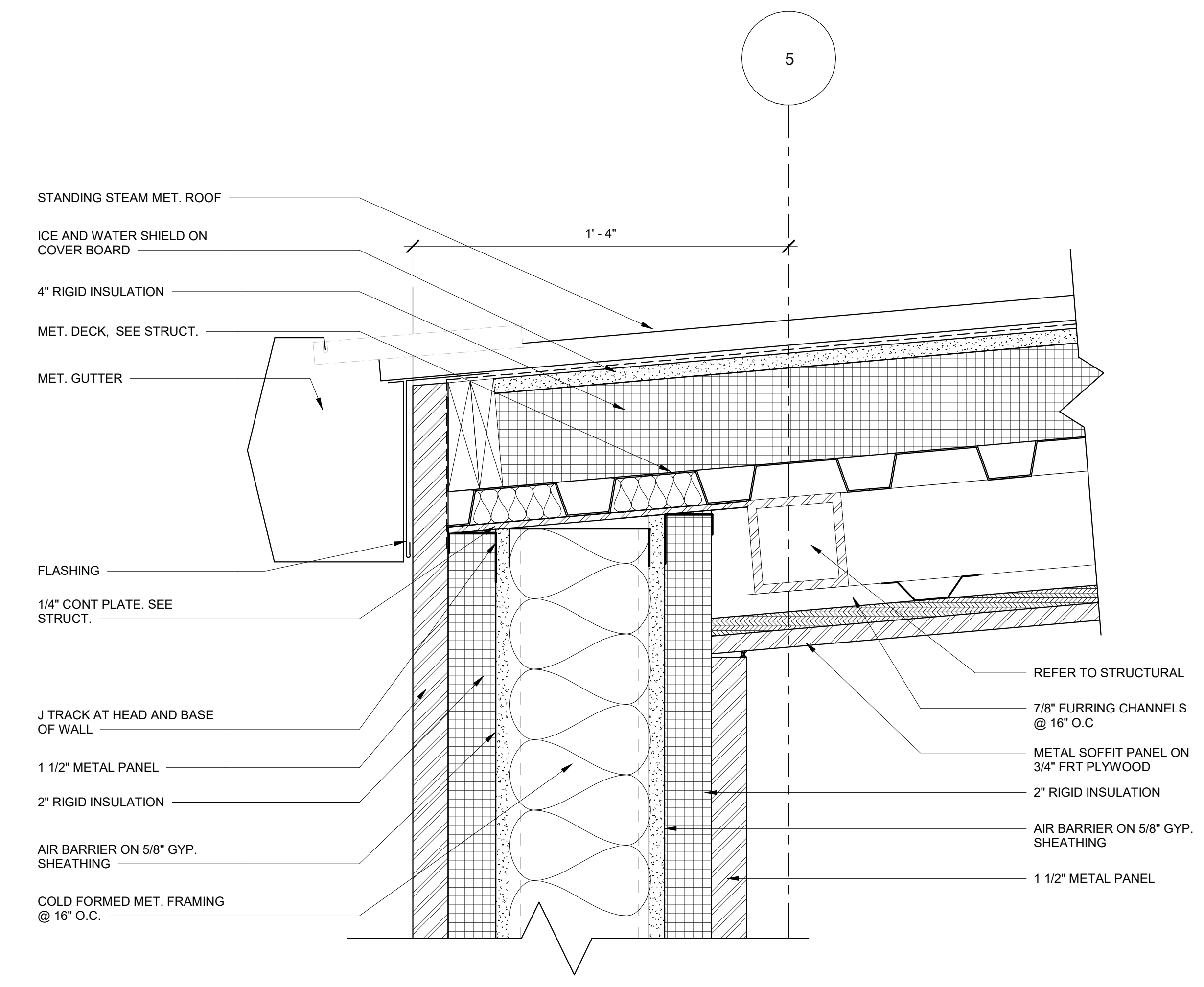


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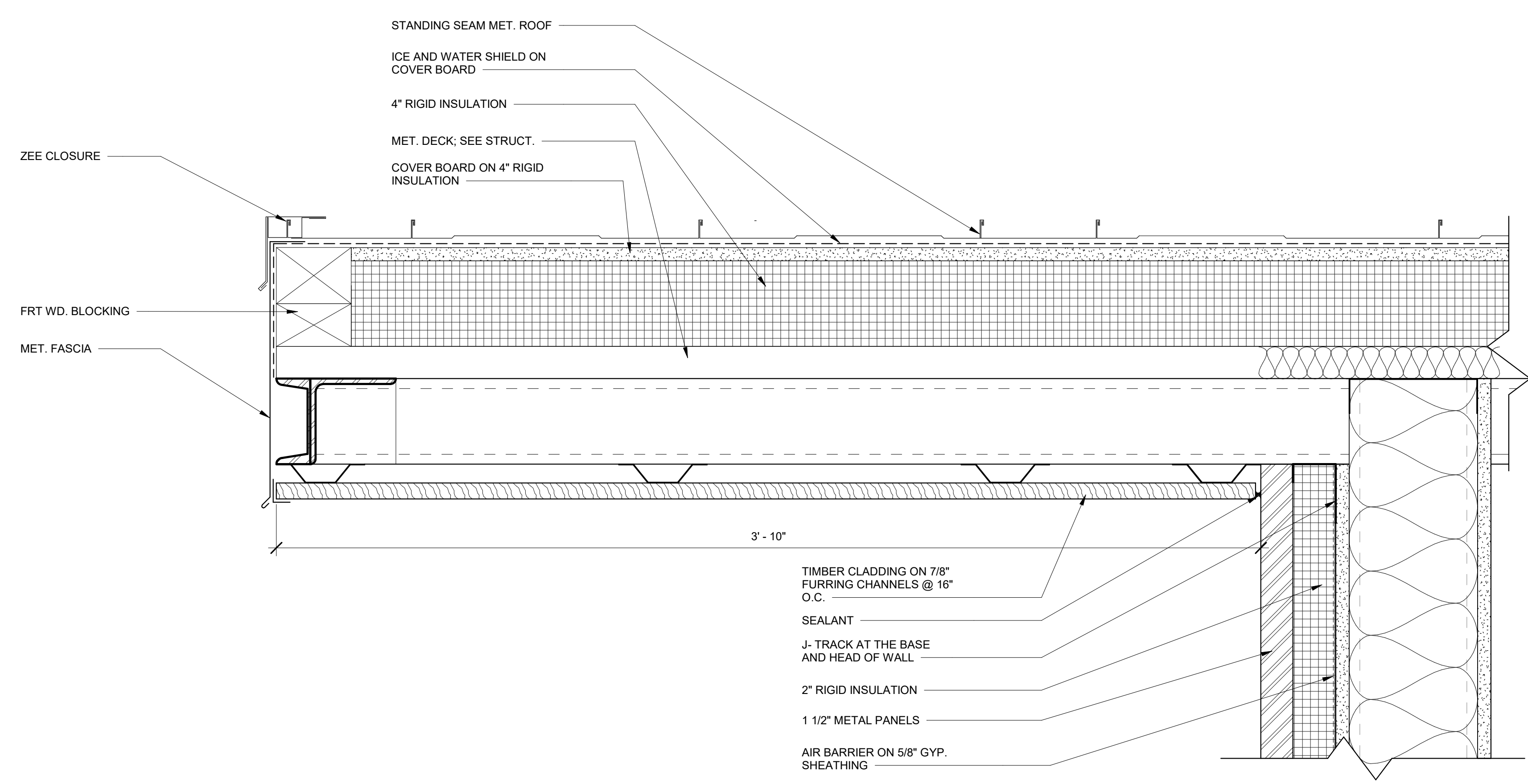
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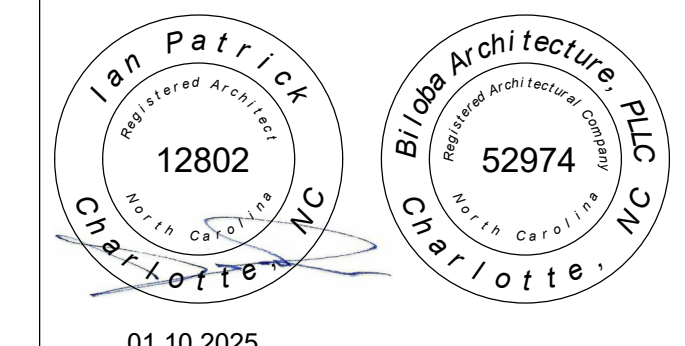
2 ROOF DETAIL  
A503 3" = 1'-0"



3 ROOF DETAIL  
A503 3" = 1'-0"

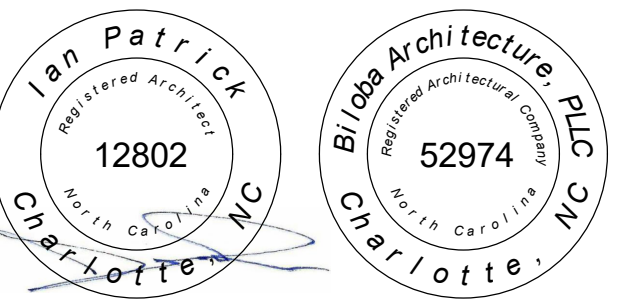
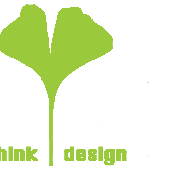


1 ROOF DETAIL  
A503 3" = 1'-0"



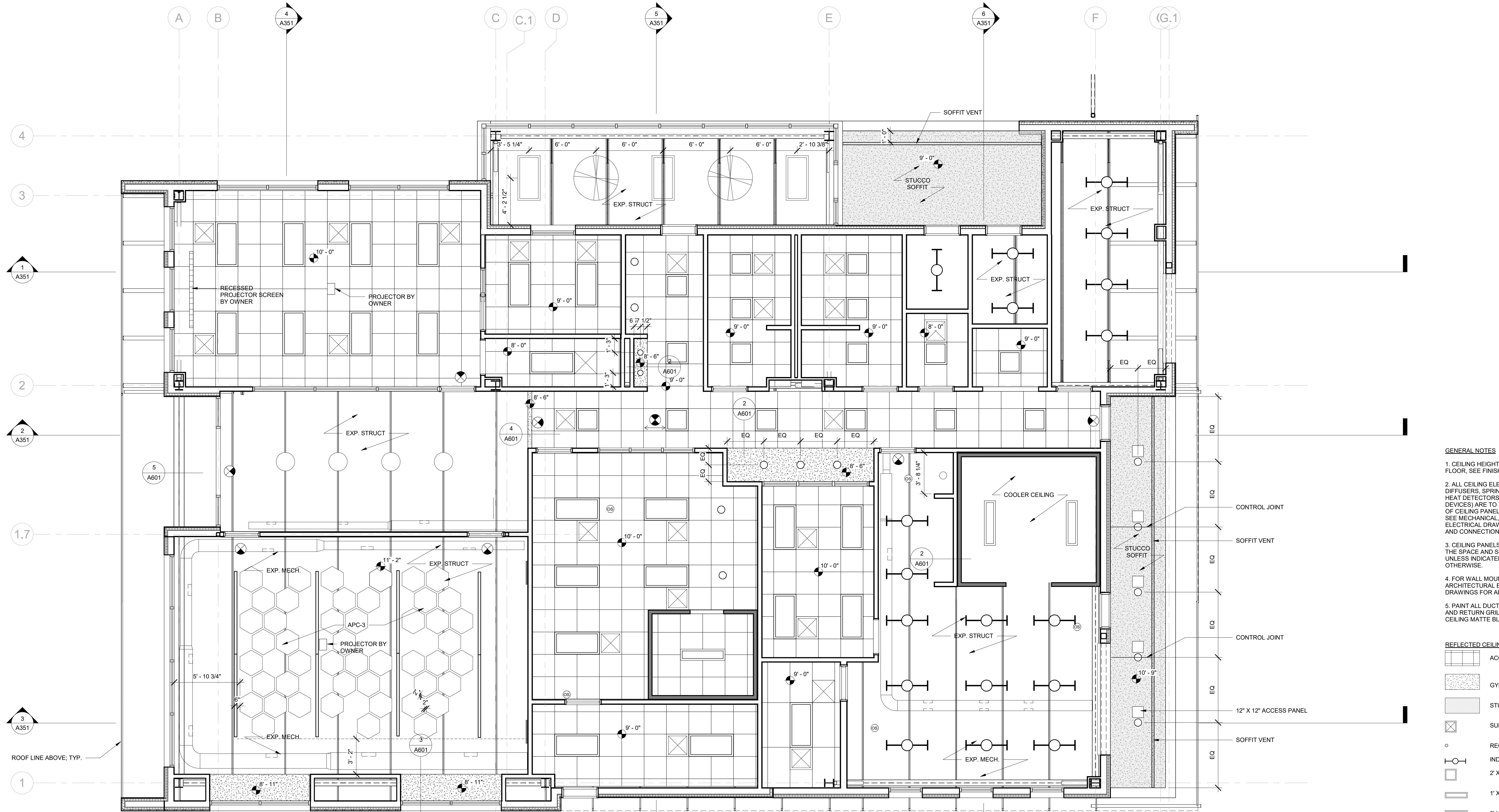
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Date	01/10/2025
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Checked IWP  
Date 01/10/2025  
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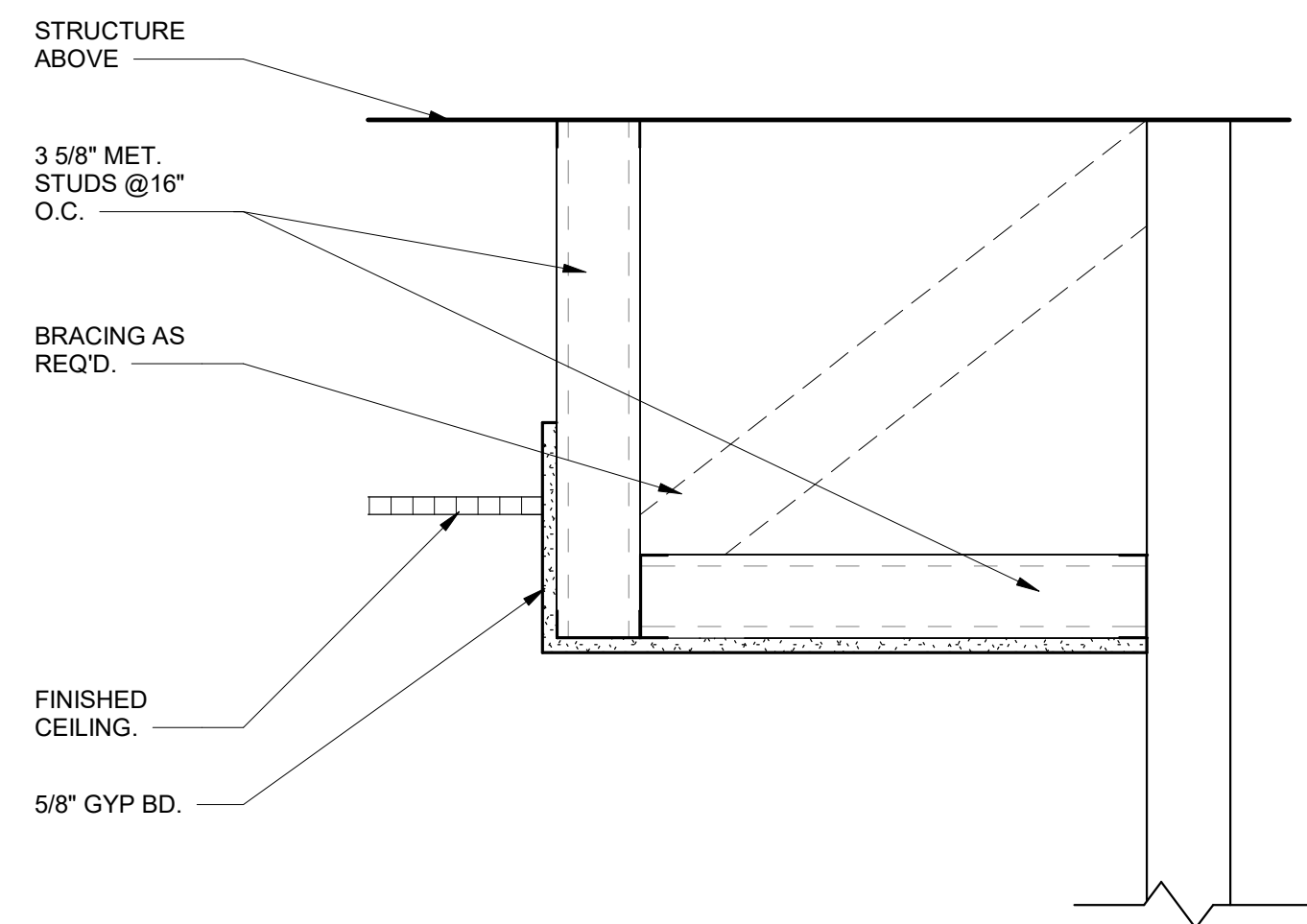
GENERAL NOTES

1. CEILING HEIGHT DIMENSIONS ARE FROM FINISH FLOOR. SEE FINISH SCHEDULE SHEET A221.
2. ALL CEILING ELEMENTS (LIGHT FIXTURES, DIFFUSERS, SPRINKLER HEADS, SMOKE AND HEAT DETECTORS, EXIT SIGNS, AND OTHER DEVICES) ARE TO BE INSTALLED IN THE CENTER OF CEILING PANELS UNLESS OTHERWISE NOTED. SEE MECHANICAL, FIRE PROTECTION, AND ELECTRICAL DRAWINGS FOR TYPE, QUANTITY, AND CONNECTION INFORMATION.
3. CEILING PANELS ARE TO BE CENTERED WITHIN THE SPACE AND SYMMETRICALLY CUT AT WALLS UNLESS INDICATED GRAPHICALLY OR NOTED OTHERWISE.
4. FOR WALL MOUNTED DEVICES, SEE INTERIOR ARCHITECTURAL ELEVATIONS AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
5. PAINT ALL DUCTWORK VISIBLE ABOVE SUPPLY AND RETURN GRILLES AND LINEAR BAFFLE CEILING MATTE BLACK.

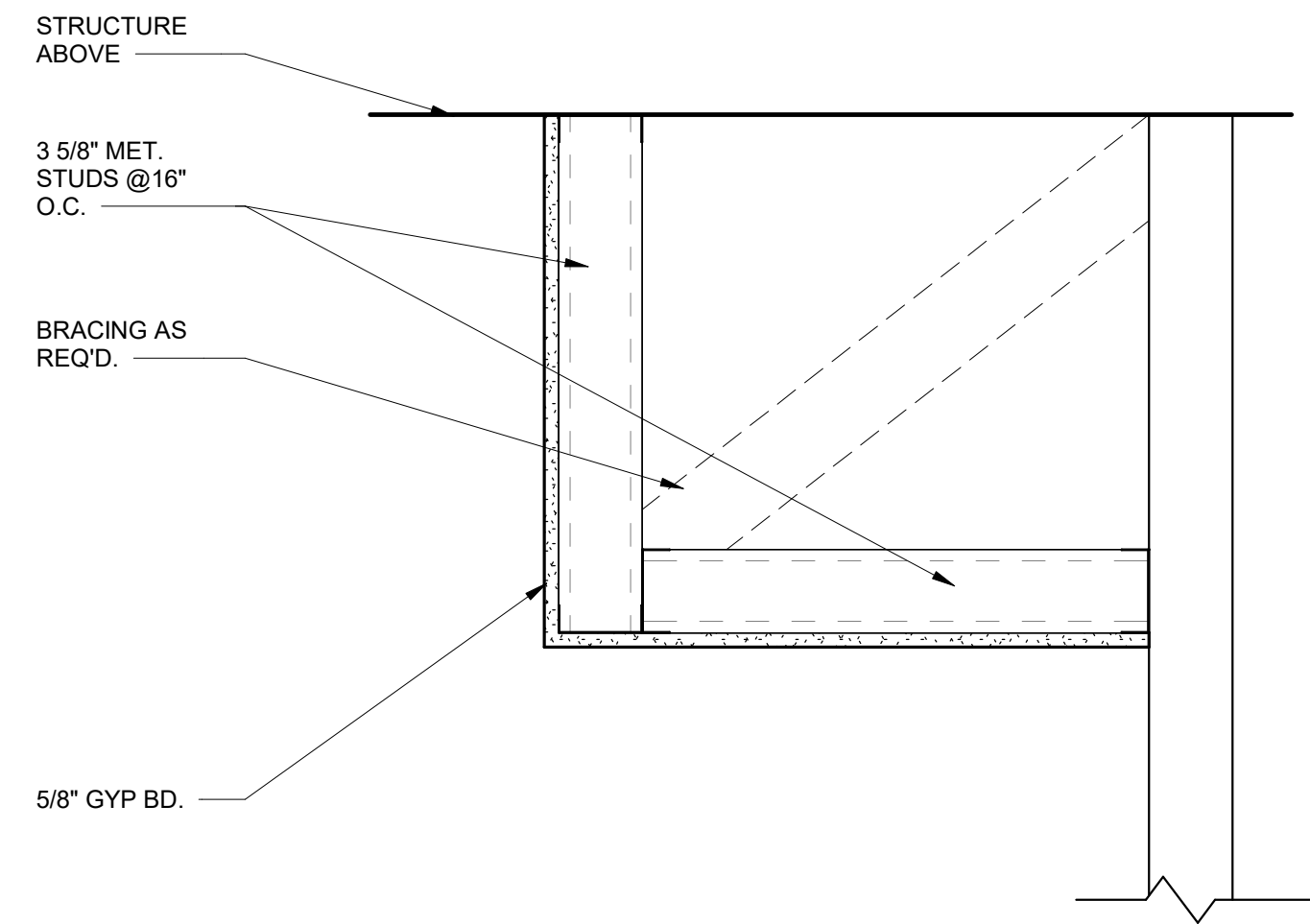
REFLECTED CEILING PLAN LEGEND

- ACOUSTICAL PANEL CEILING
- GYP. BD. CEILING/SOFFIT
- STUCCO SOFFIT
- SUPPLY AIR GRILLE
- RECESSED DOWNLIGHT
- INDUSTRIAL LIGHTING FIXTURE
- 2' X 2' CEILING LIGHT
- 1' X 4' CEILING LIGHT
- 2' X 4' CEILING LIGHT
- PENDANT LIGHT FIXTURE
- EXIT SIGN- CEILING MOUNTED
- OCCUPANCY SENSOR
- CEILING FAN

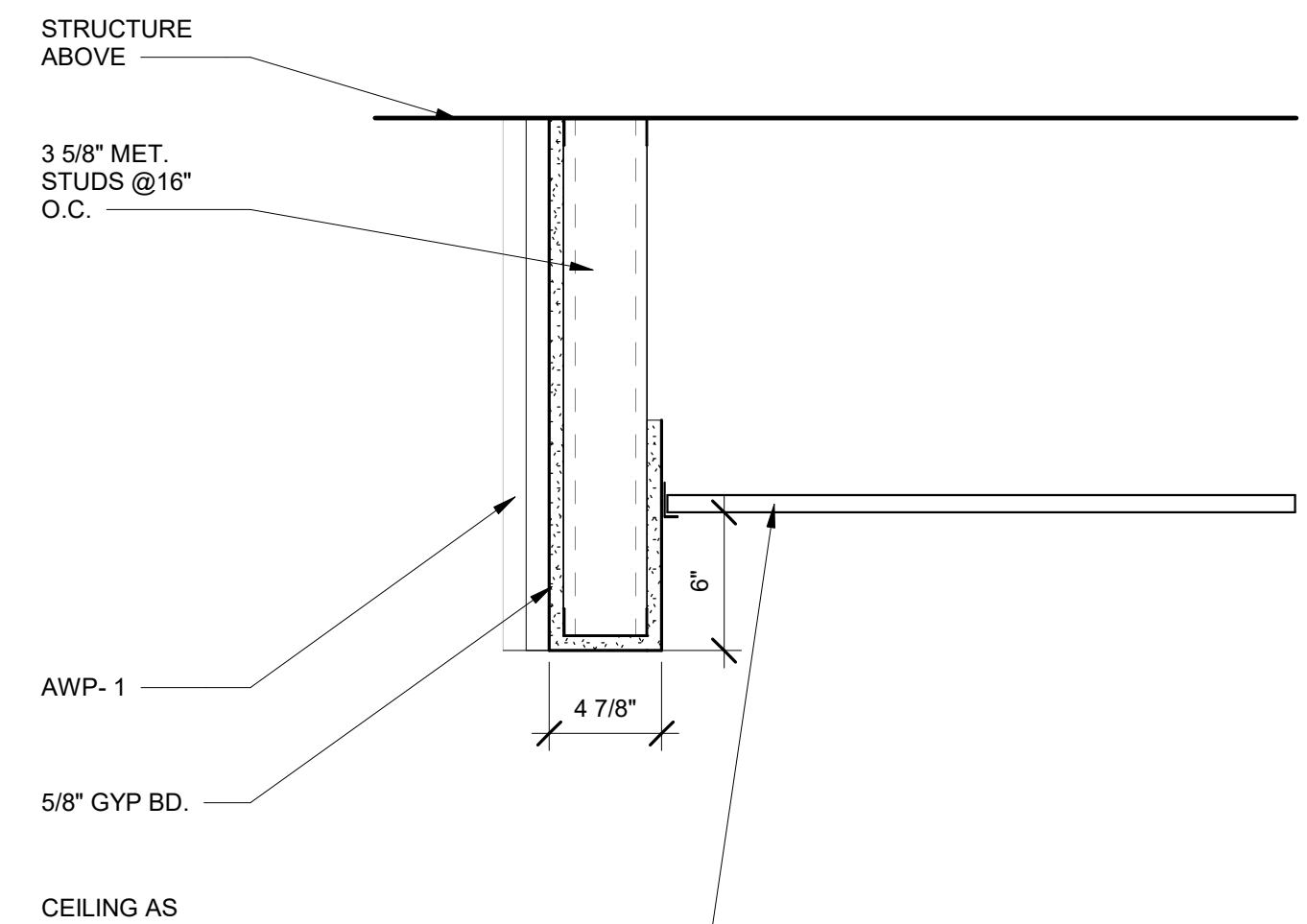
1 REFLECTED CEILING PLAN  
A601 1/4" = 1'-0"



2 BULKHEAD DETAIL  
A601 1 1/2" = 1'-0"



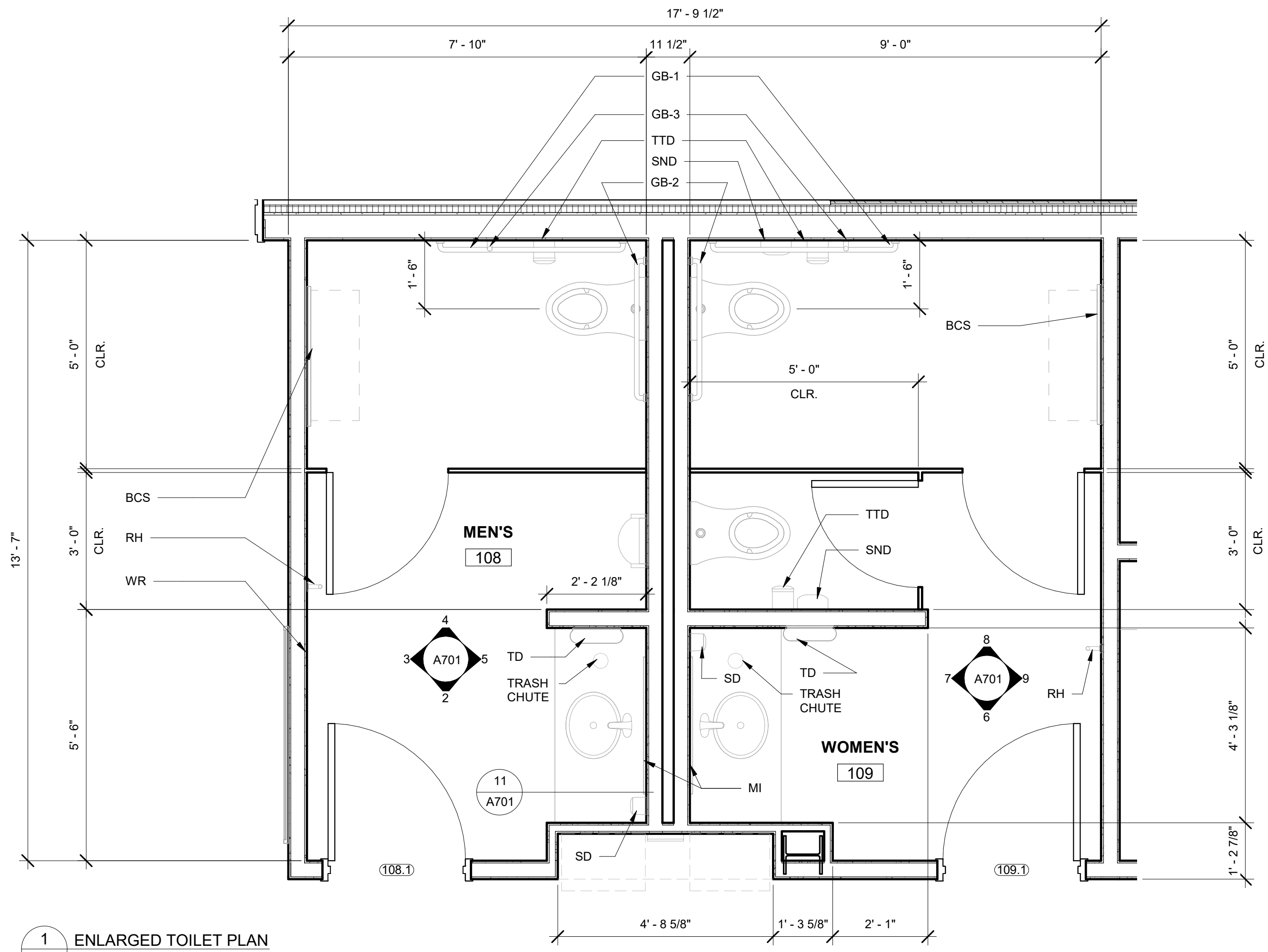
3 BULKHEAD DETAIL  
A601 1 1/2" = 1'-0"



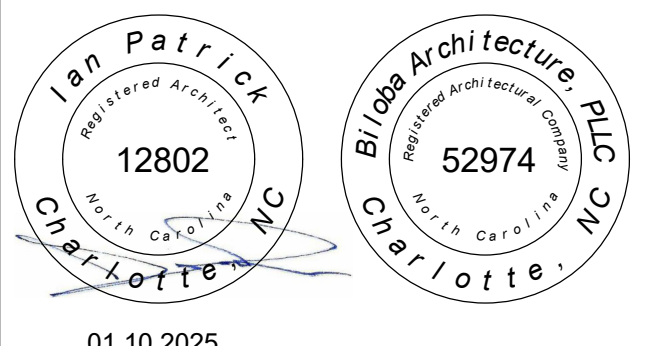
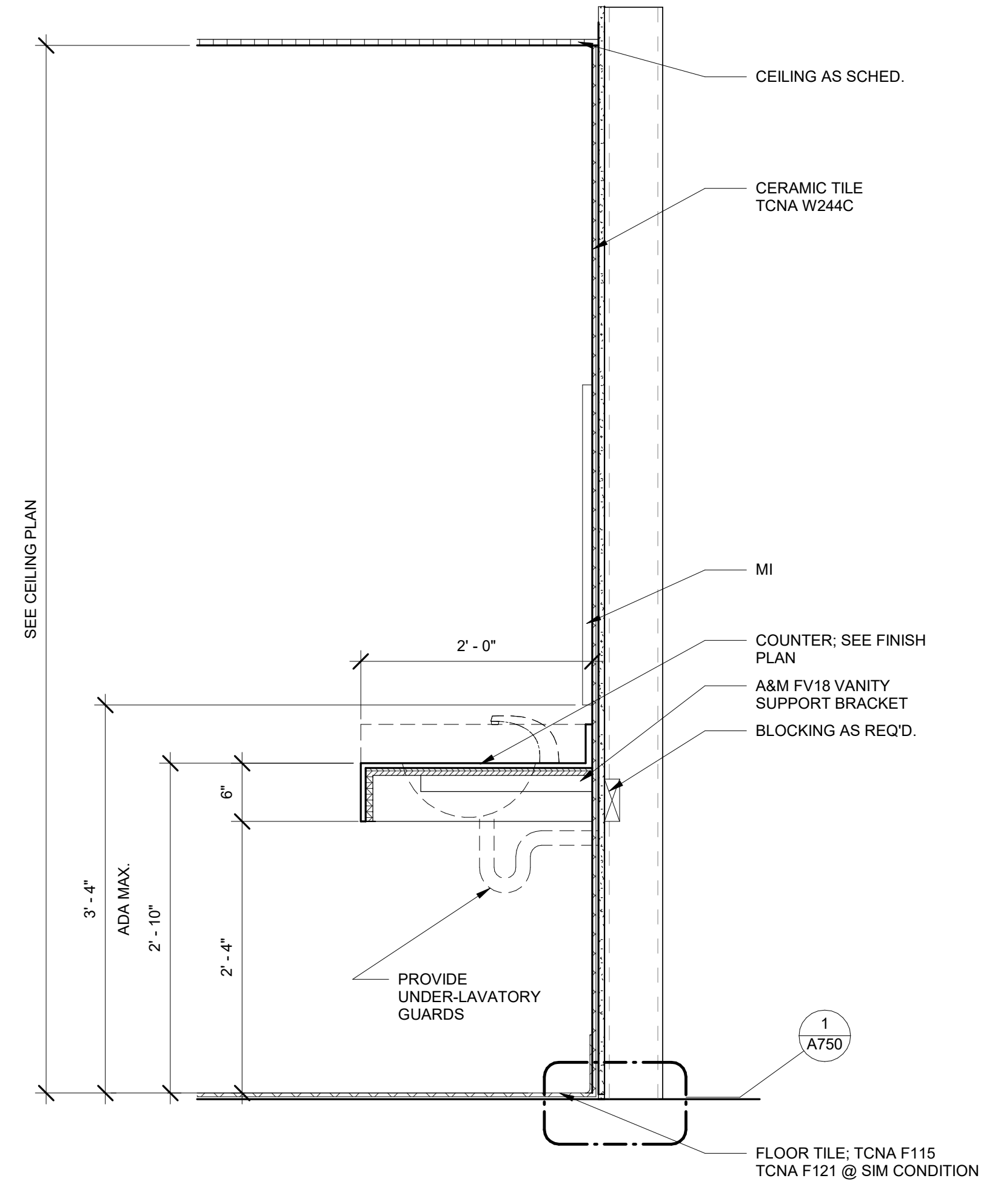
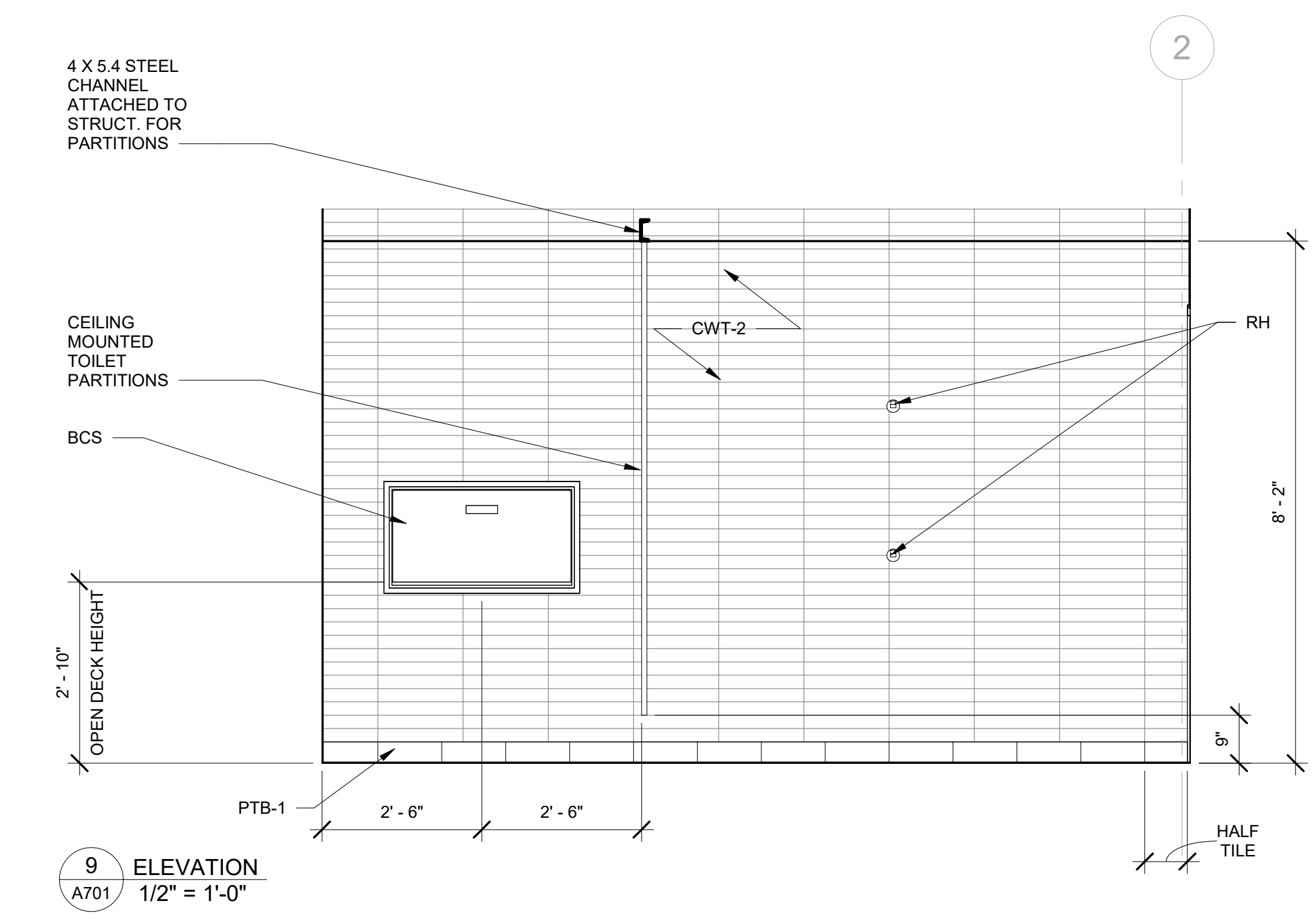
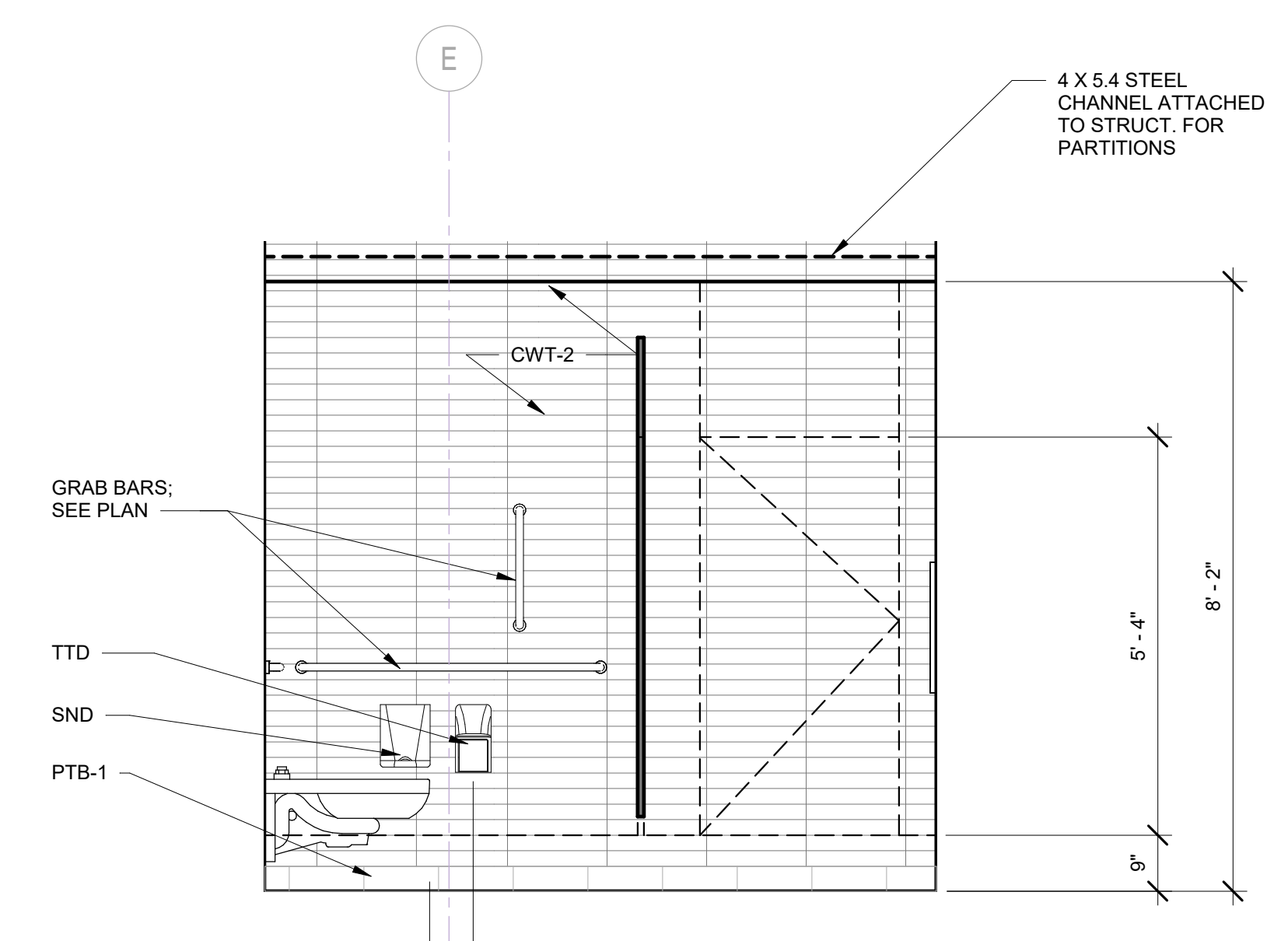
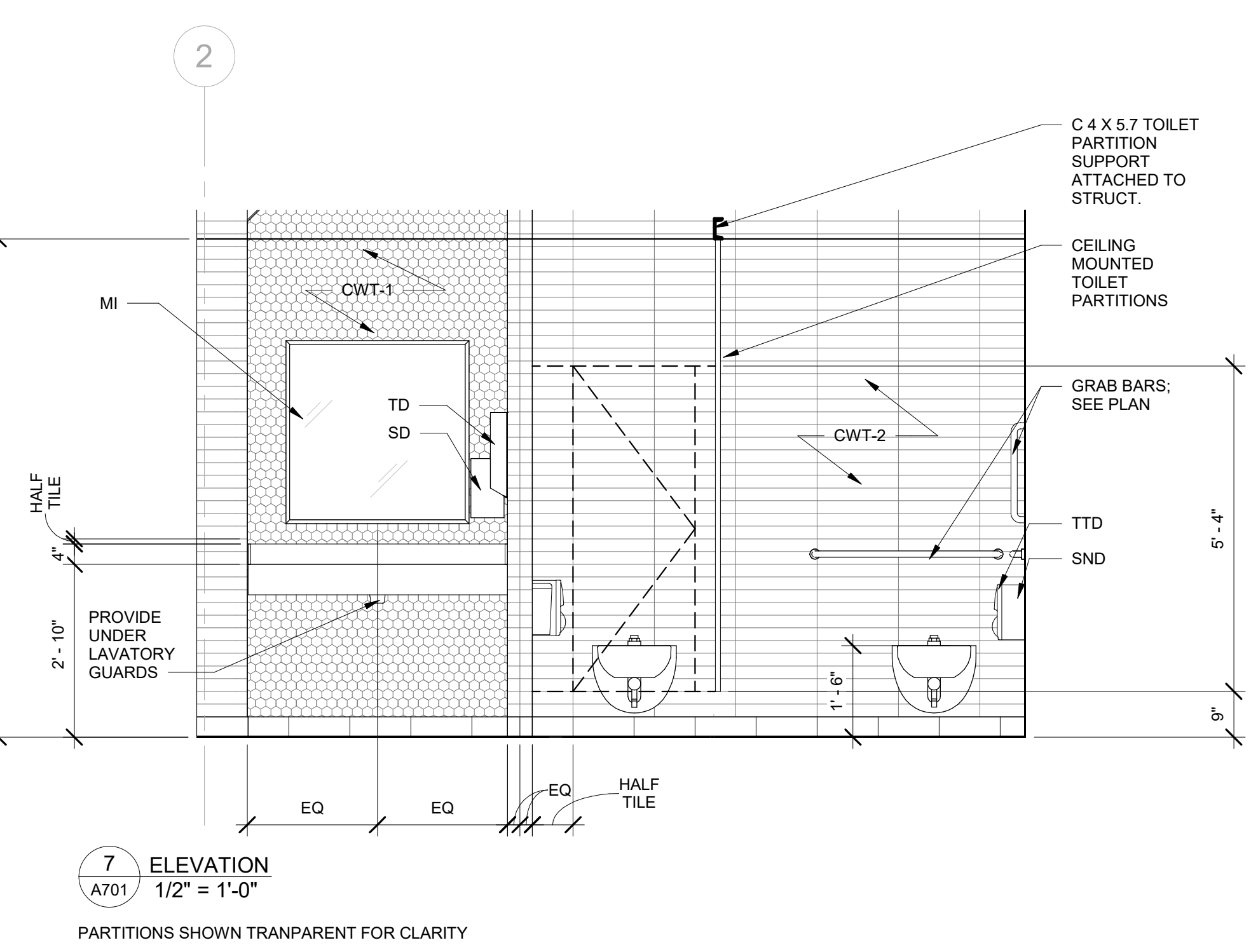
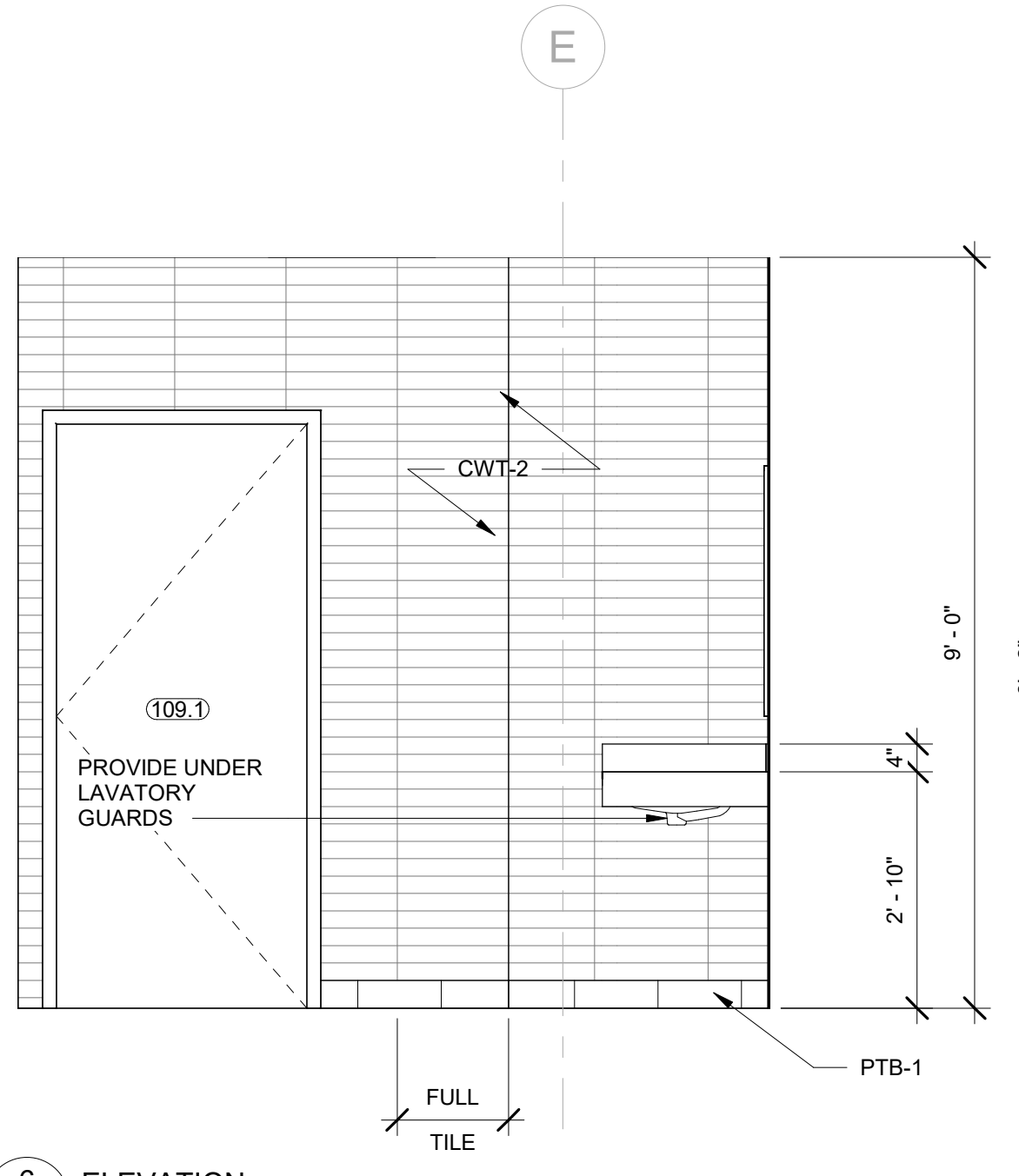
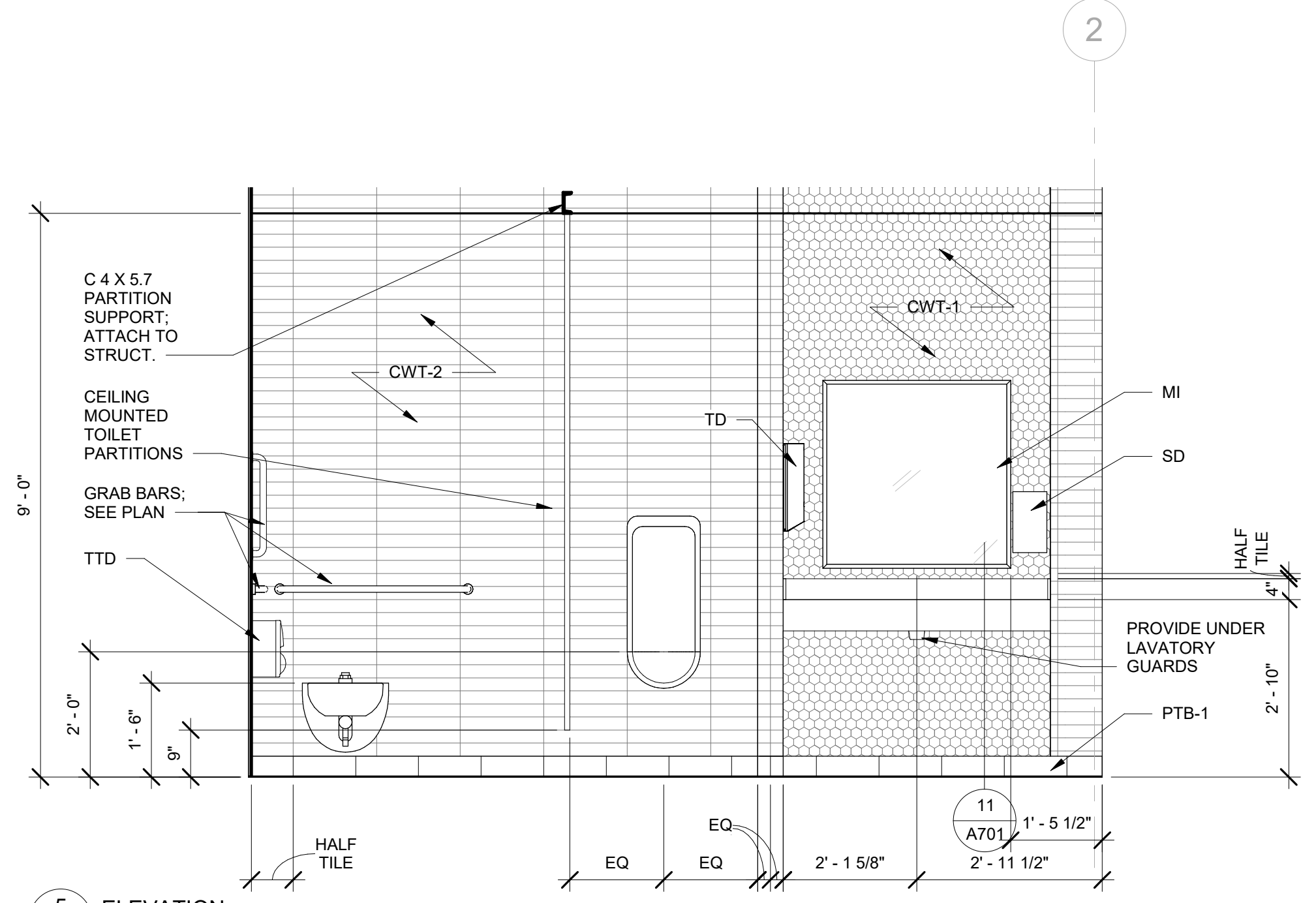
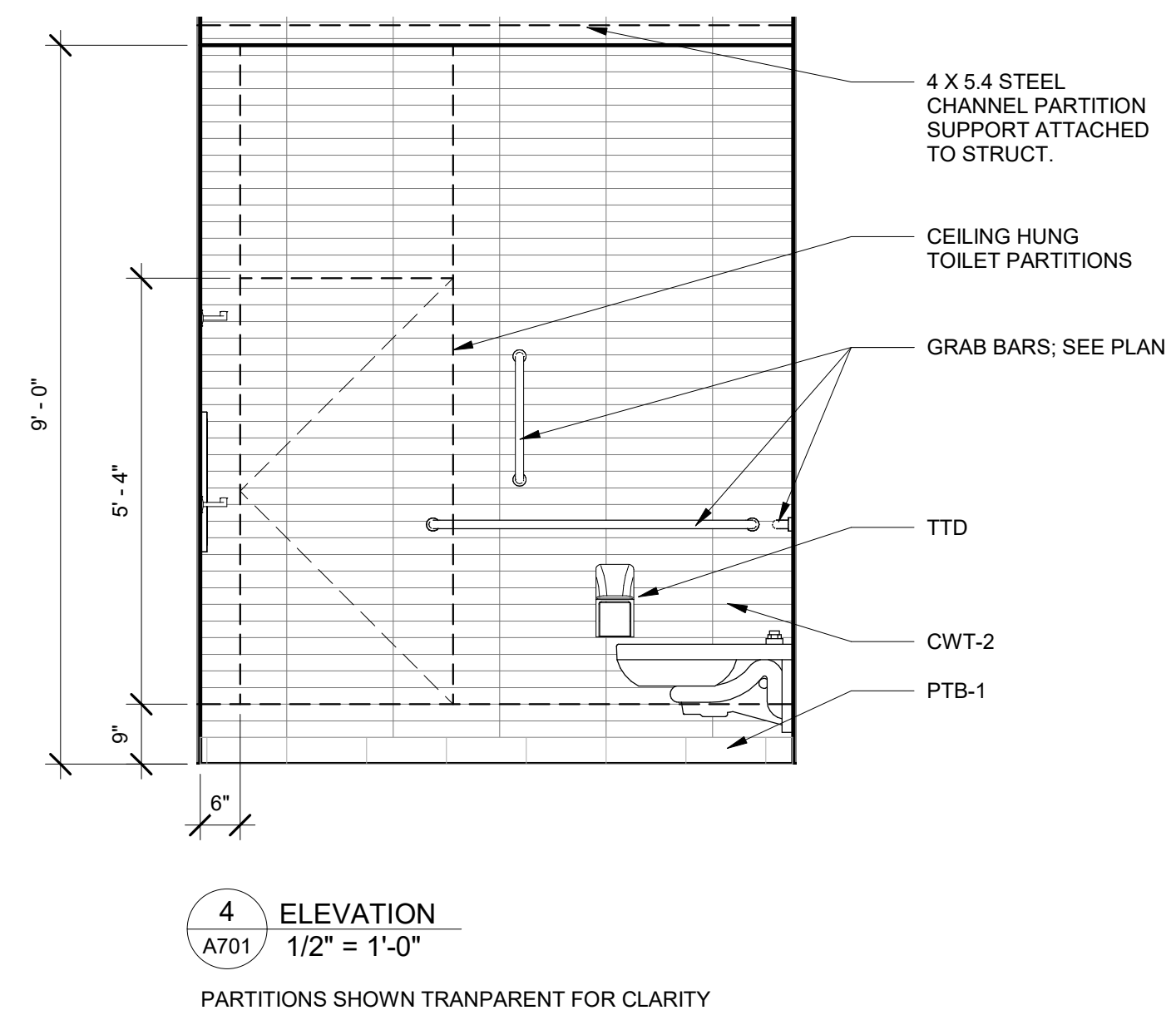
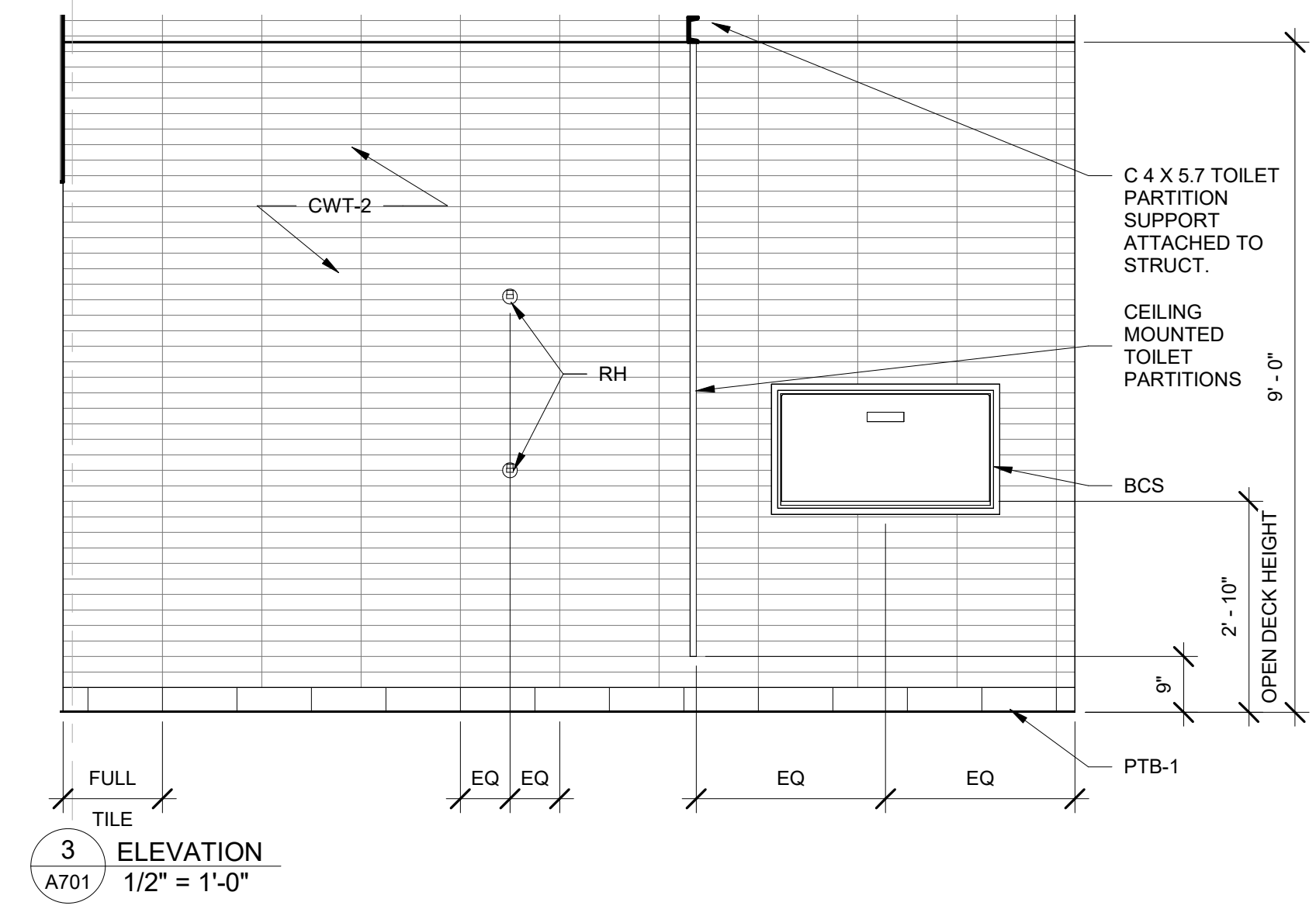
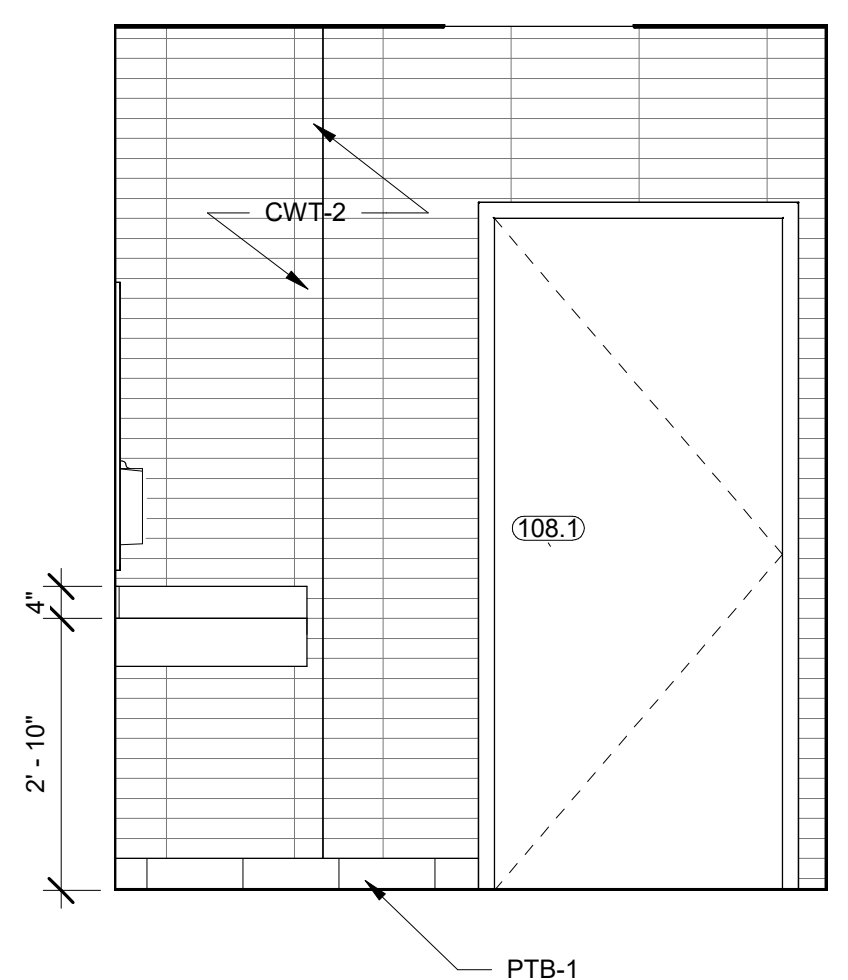
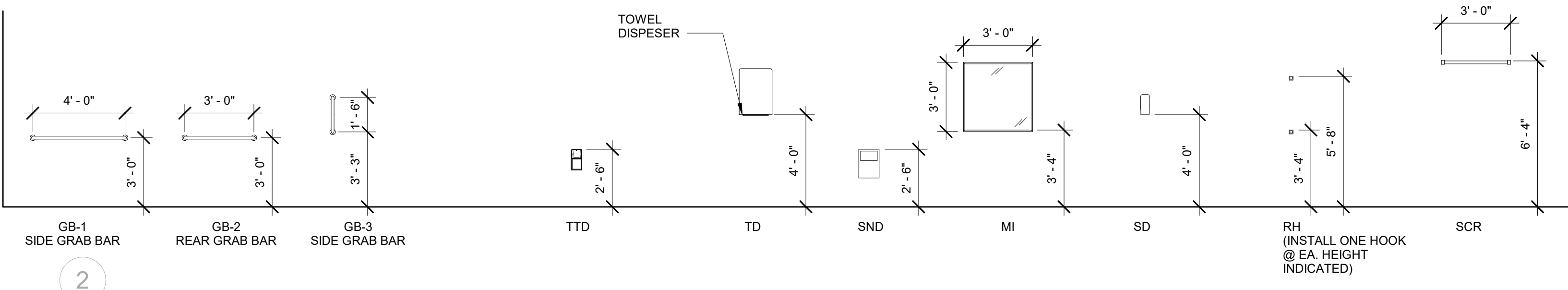
4 BULKHEAD DETAIL  
A601 1 1/2" = 1'-0"



5 SOFFIT DETAIL  
A601 3" = 1'-0"

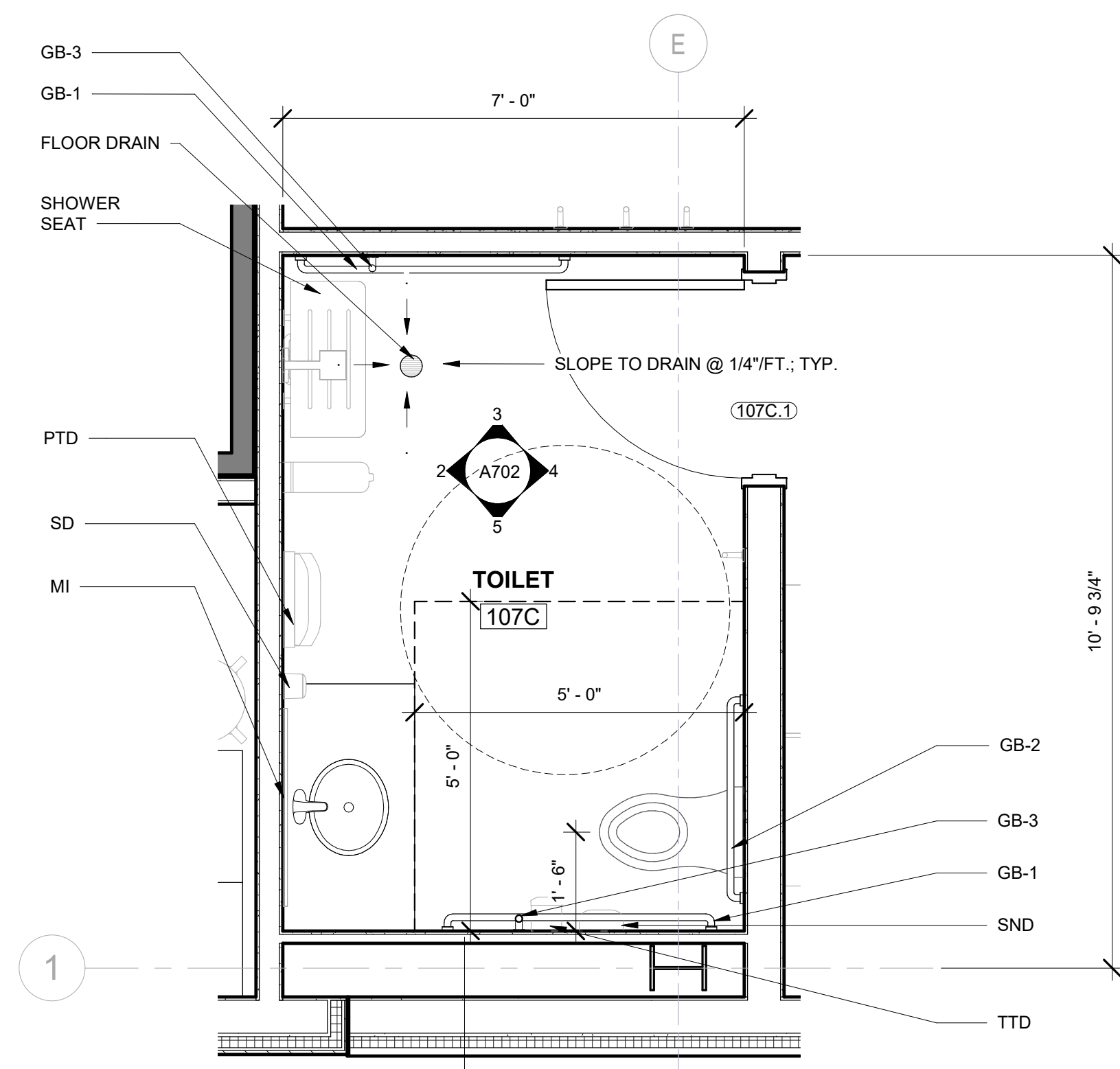


- TOILET AND BATH ACCESSORY LEGEND**
- BCS BABY CHANGING STATION
  - GB-1 GRAB BAR, 48"
  - GB-2 GRAB BAR, 36"
  - GB-3 GRAB BAR, 18"
  - GB-4 GRAB BAR, 24"
  - MI MIRROR, WALL MOUNTED
  - SND SOAP DISPENSER, WALL MOUNTED
  - TTD SANITARY NAPKIN DISPOSAL
  - TD TOILET TISSUE DISPENSER
  - UTILITY / COAT / ROBE HOOK
  - WR WASTE RECEPTACLE AND TOWEL DISPENSER, RECESSED
  - SCR SHOWER CURTAIN ROD

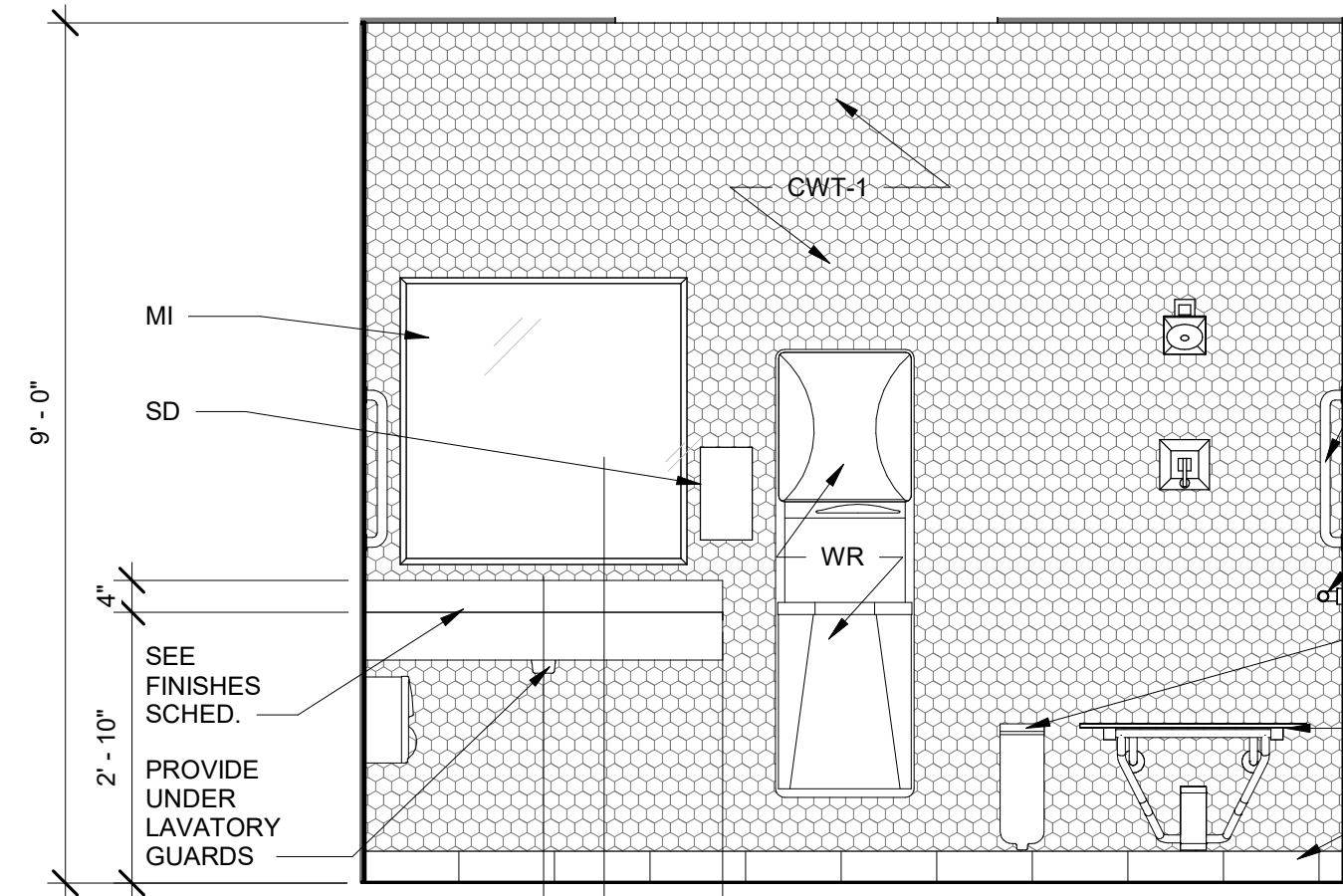


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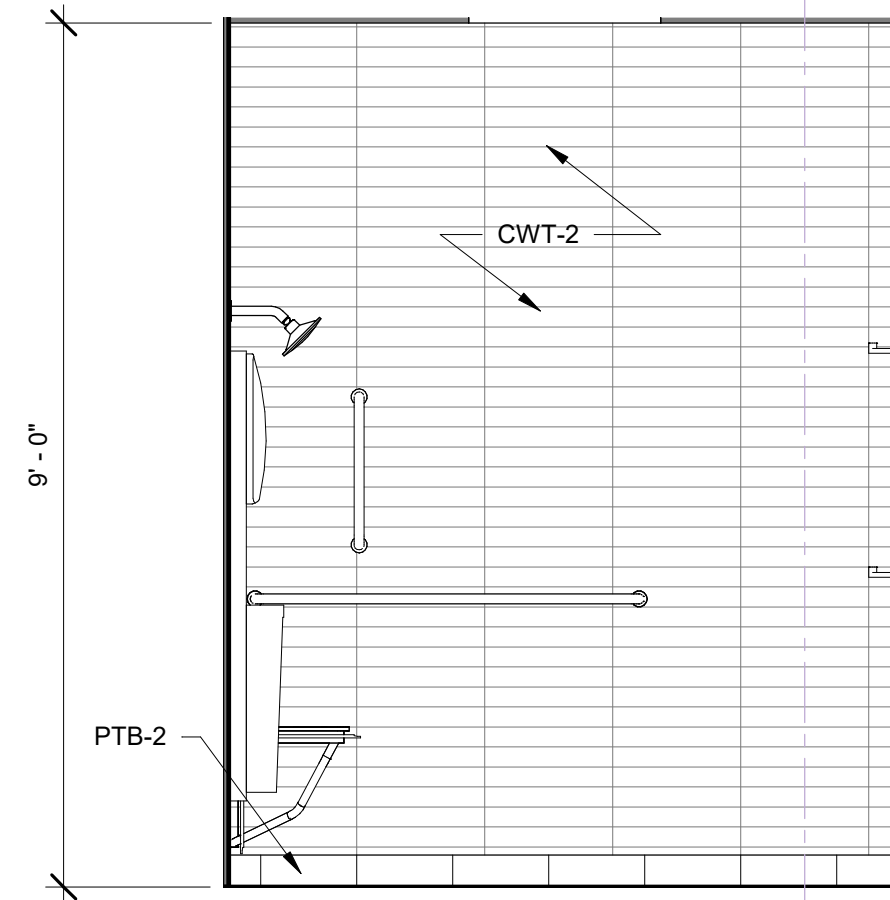
1/10/2025 10:31:58 AM



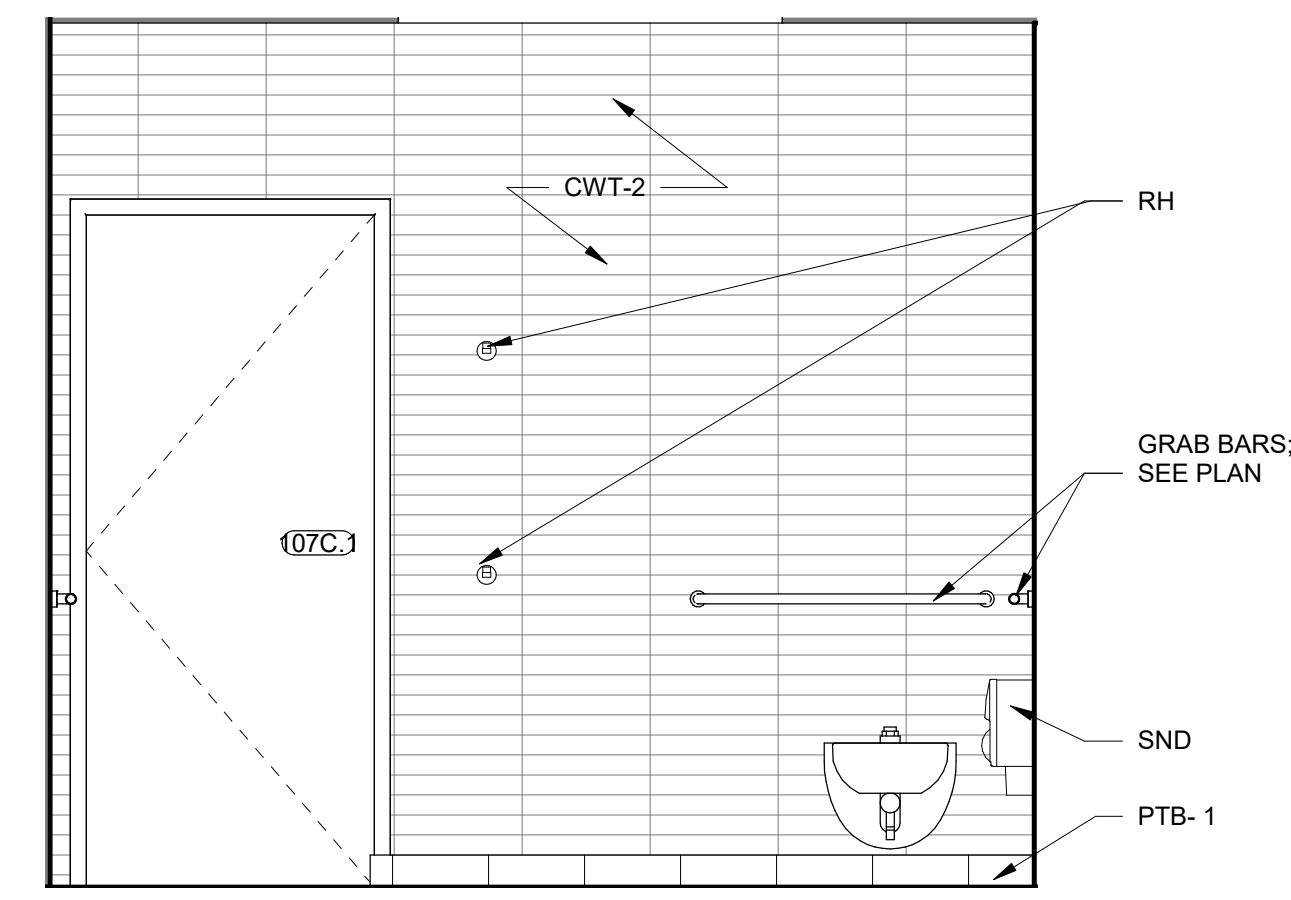
1 ENLARGE PLAN- ALTERNATE NO. 4  
A702 / 1/2" = 1'-0"



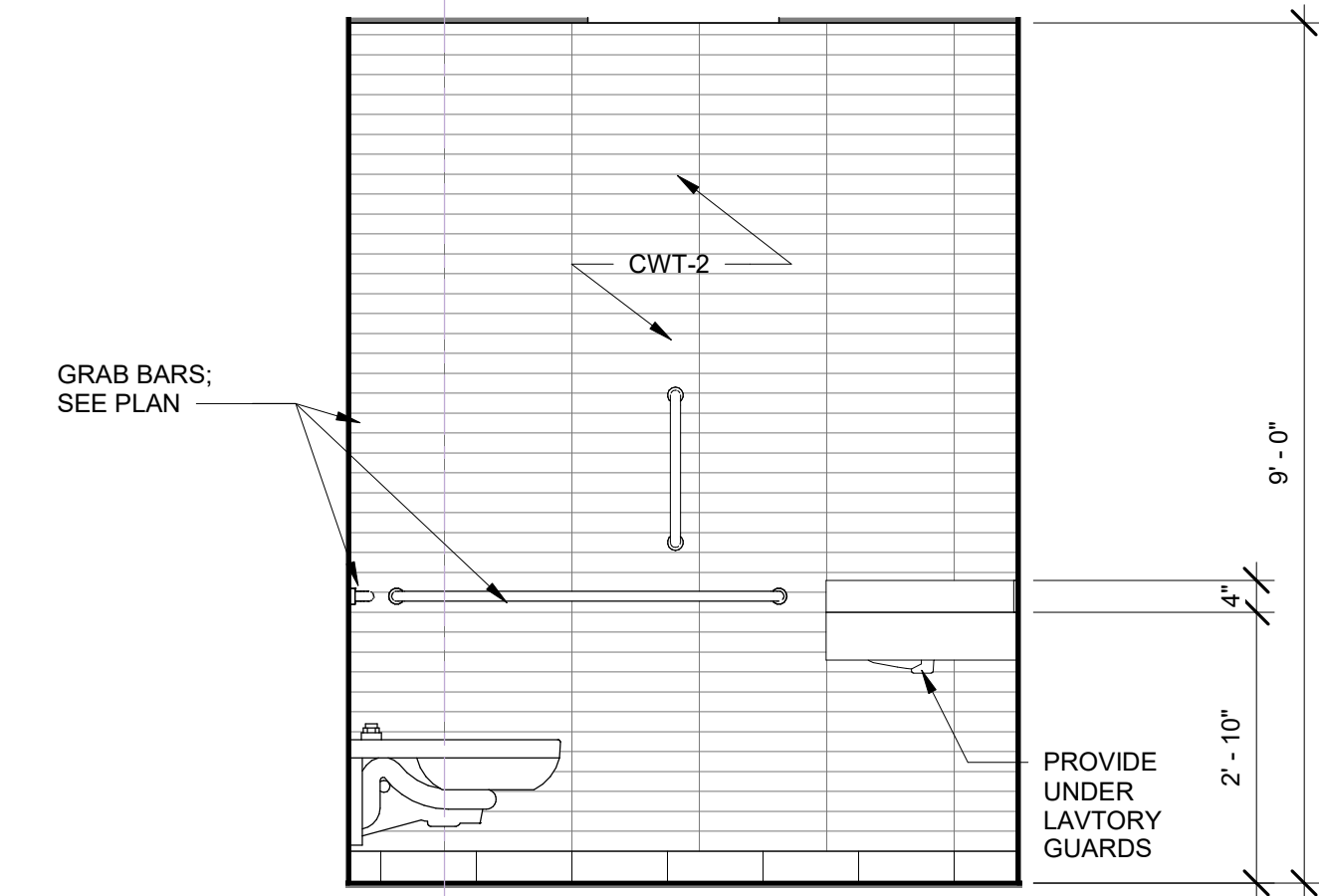
2 ELEVATION  
A702 / 1/2" = 1'-0"



3 ELEVATION  
A702 / 1/2" = 1'-0"

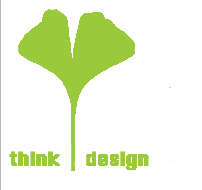


4 ELEVATION  
A702 / 1/2" = 1'-0"



5 ELEVATION  
A702 / 1/2" = 1'-0"

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NCSU Apiculture Facility  
Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

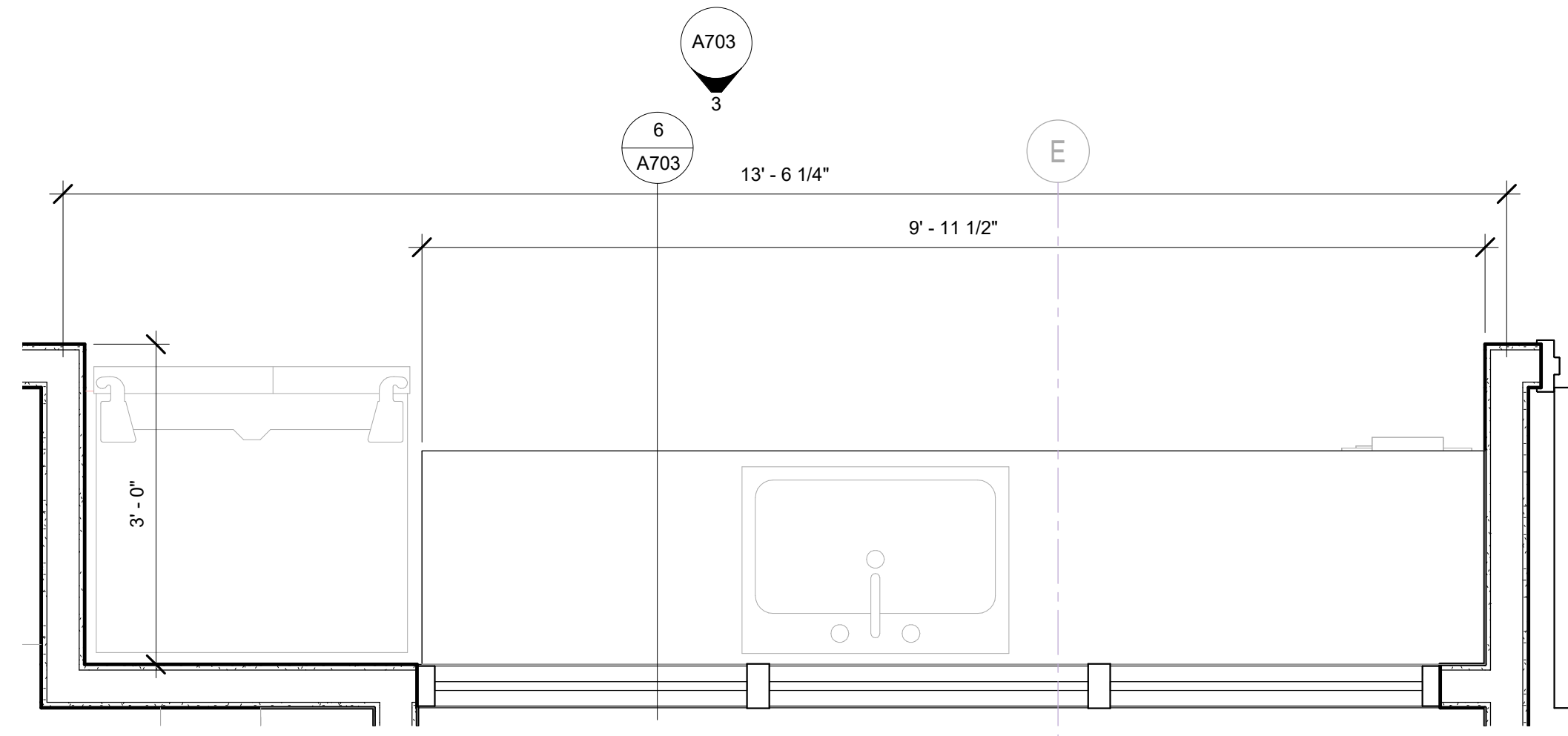
Project Number 132

Title  
**Interior Elevations and Details**

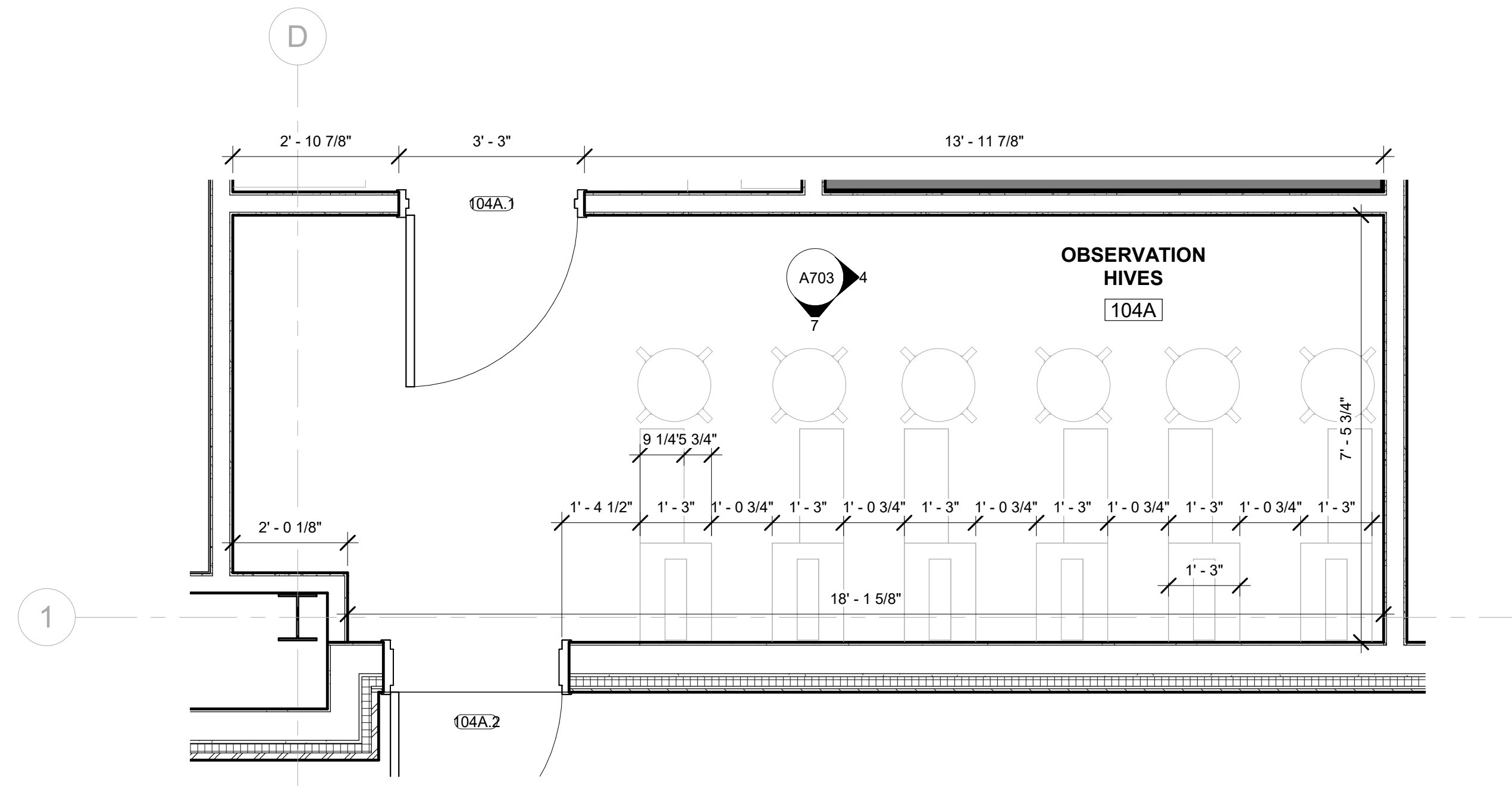
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**A702**

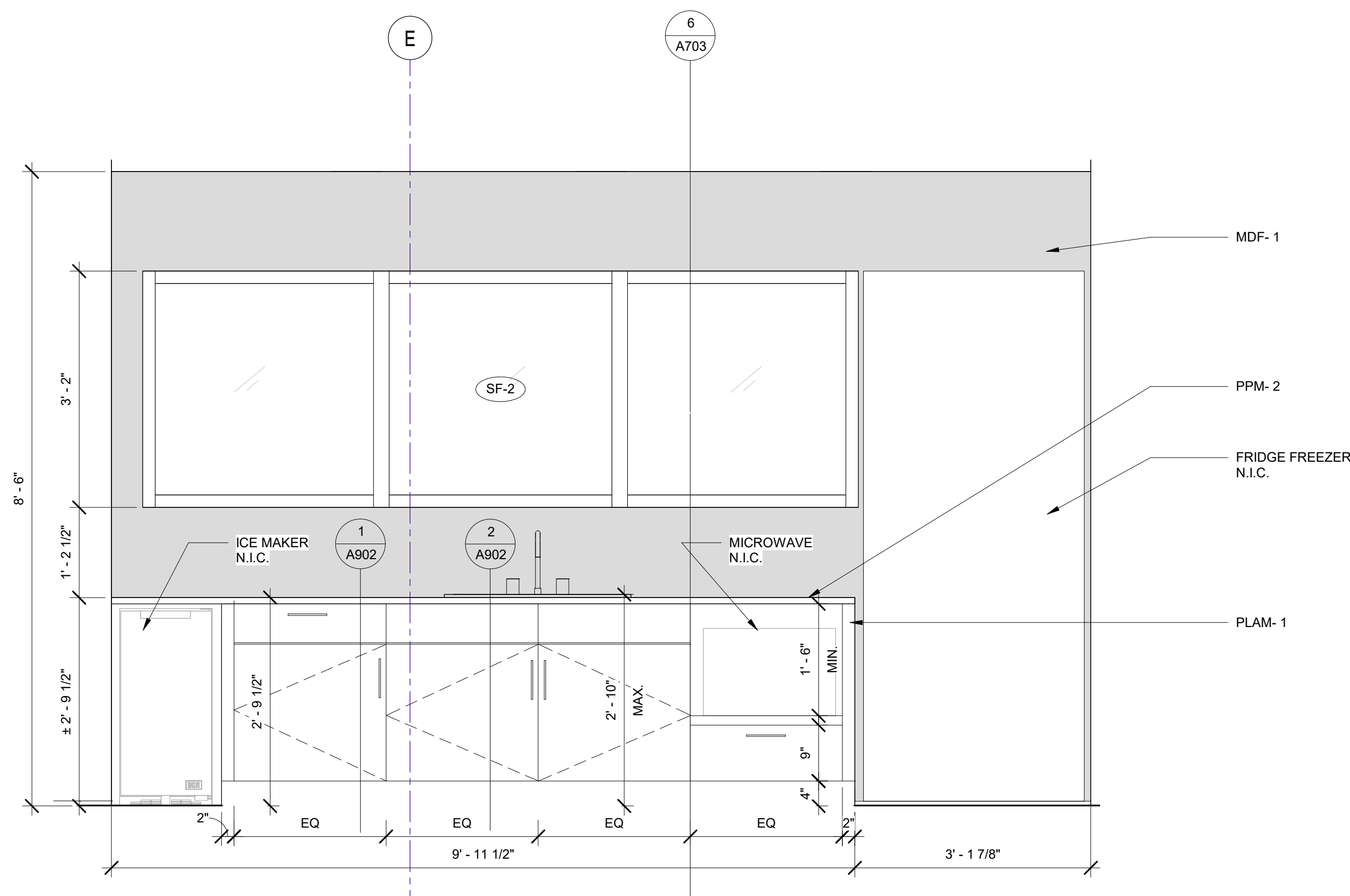
Plate



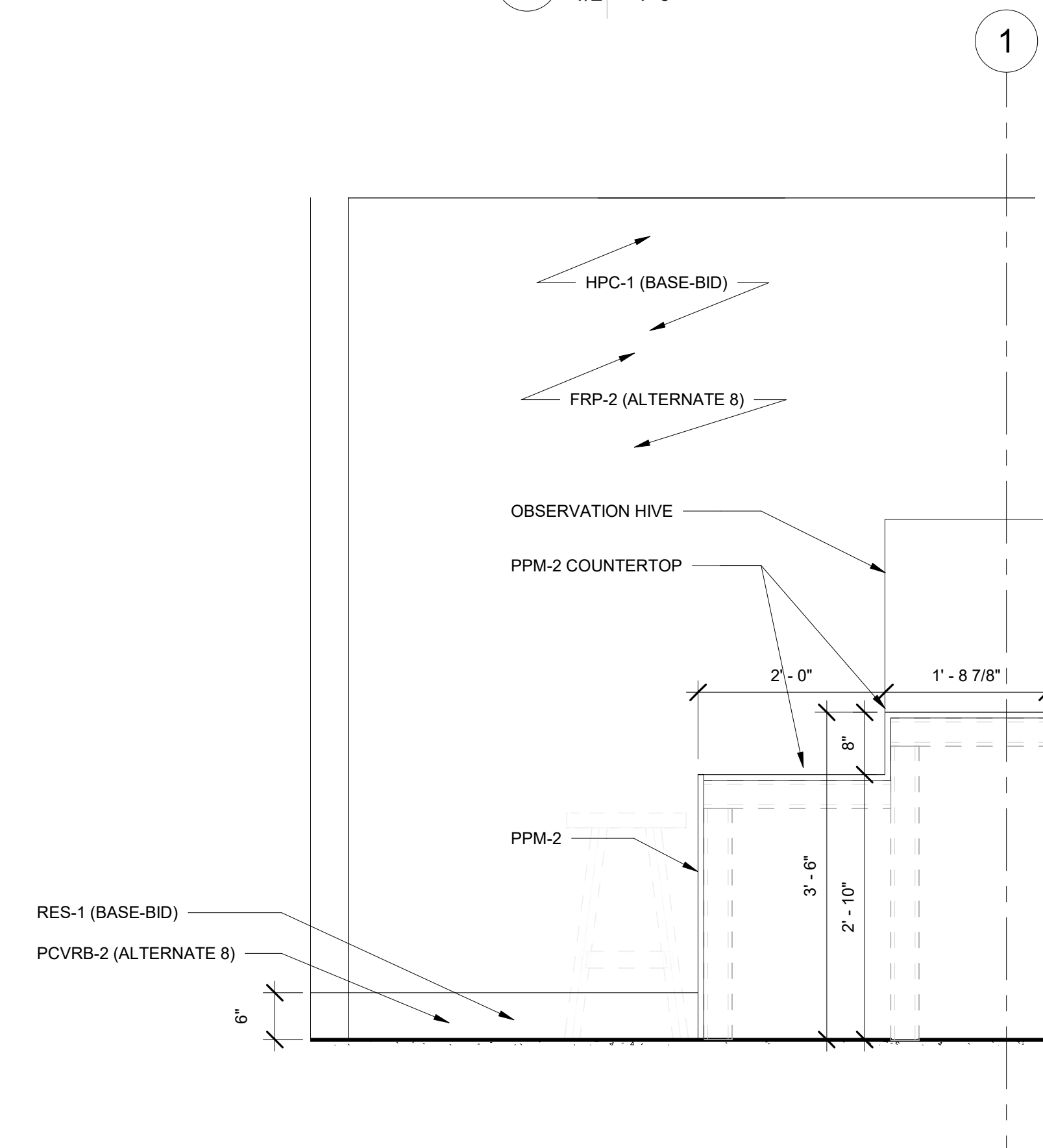
1 ENLARGED FLOOR PLAN  
A703 3/4" = 1'-0"



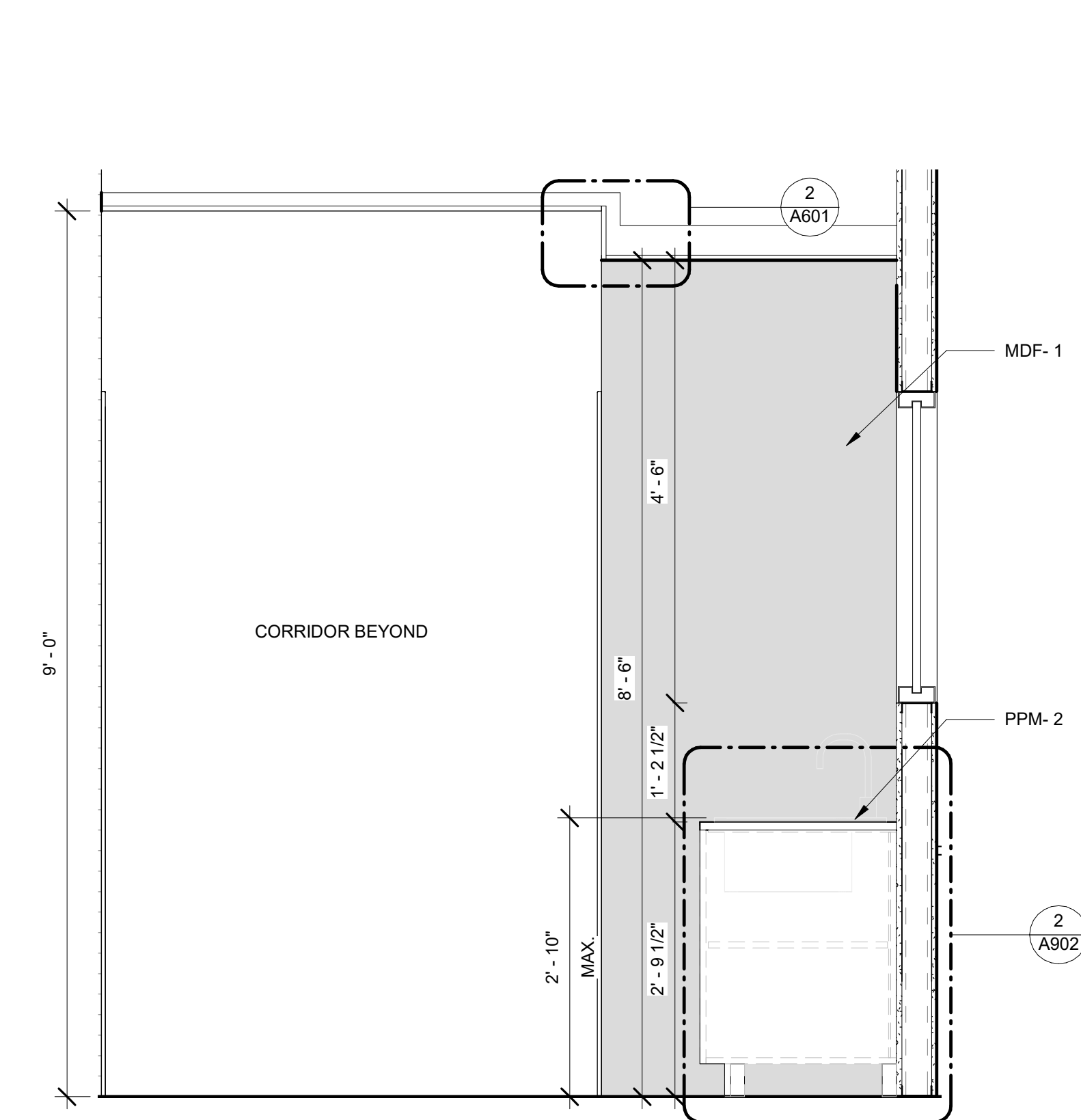
2 ENLARGED FLOOR PLAN  
A703 1/2" = 1'-0"



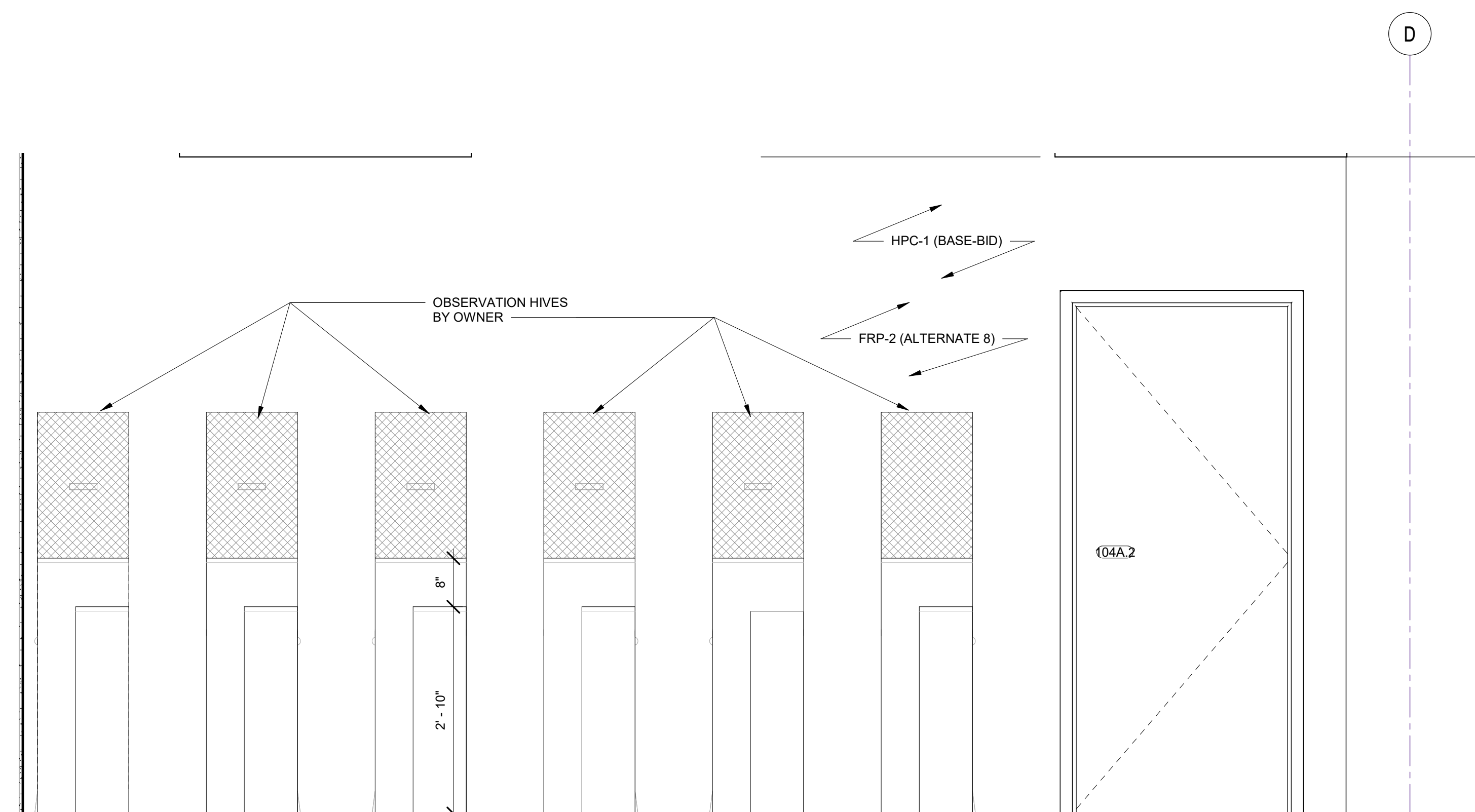
3 ELEVATION  
A703 3/4" = 1'-0"



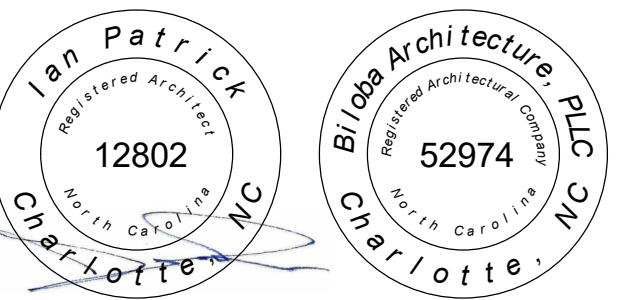
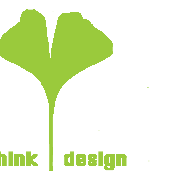
4 ELEVATION  
A703 3/4" = 1'-0"



6 SECTION  
A703 3/4" = 1'-0"



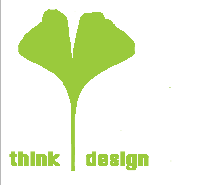
7 ELEVATION  
A703 3/4" = 1'-0"



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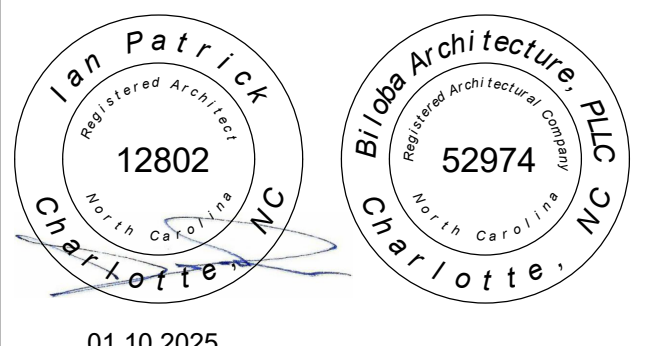




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NCSU Apiculture Facility  
Raleigh, NC

SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

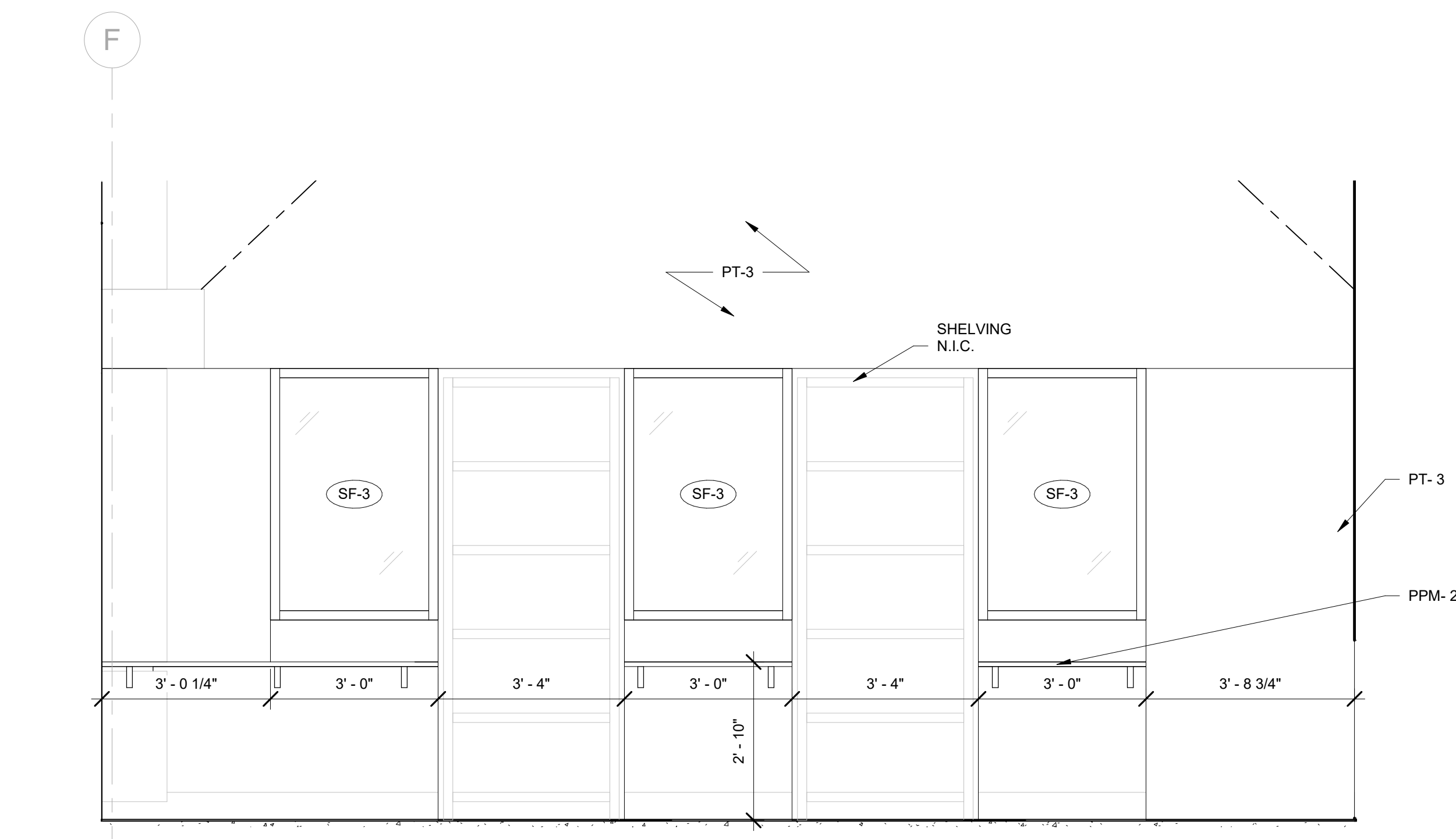
Project Number 132

Interior Elevations and Details

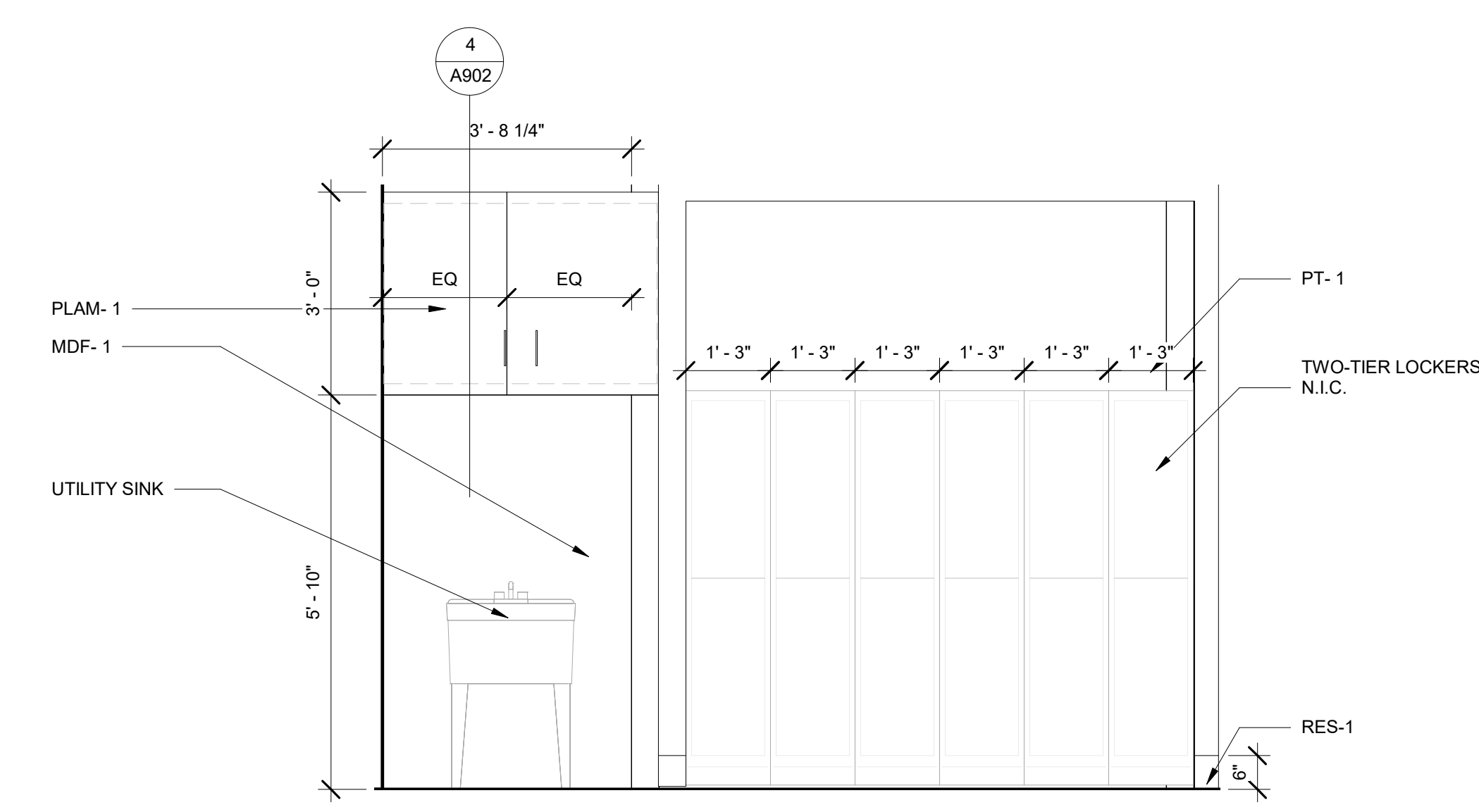
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A704

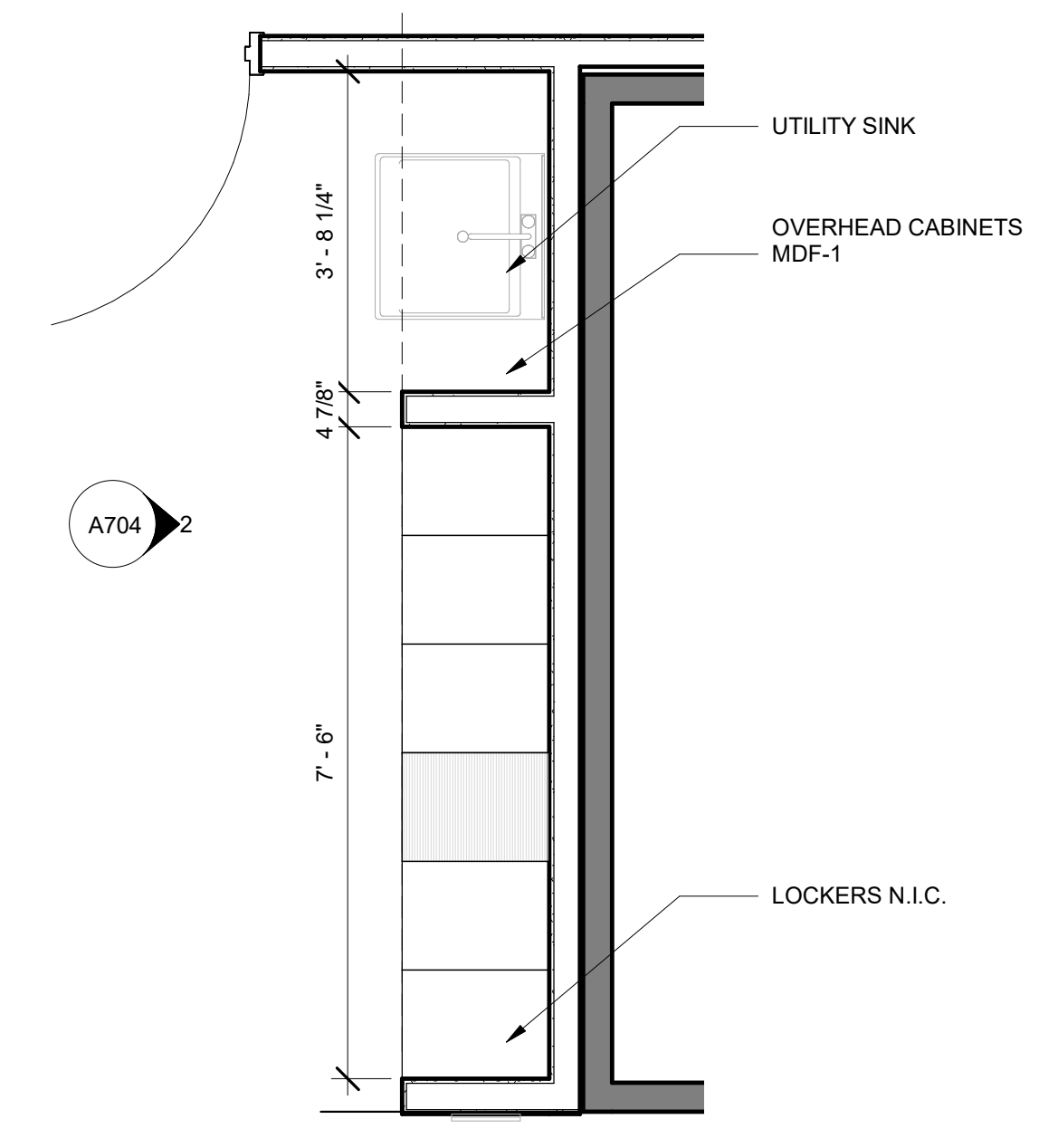
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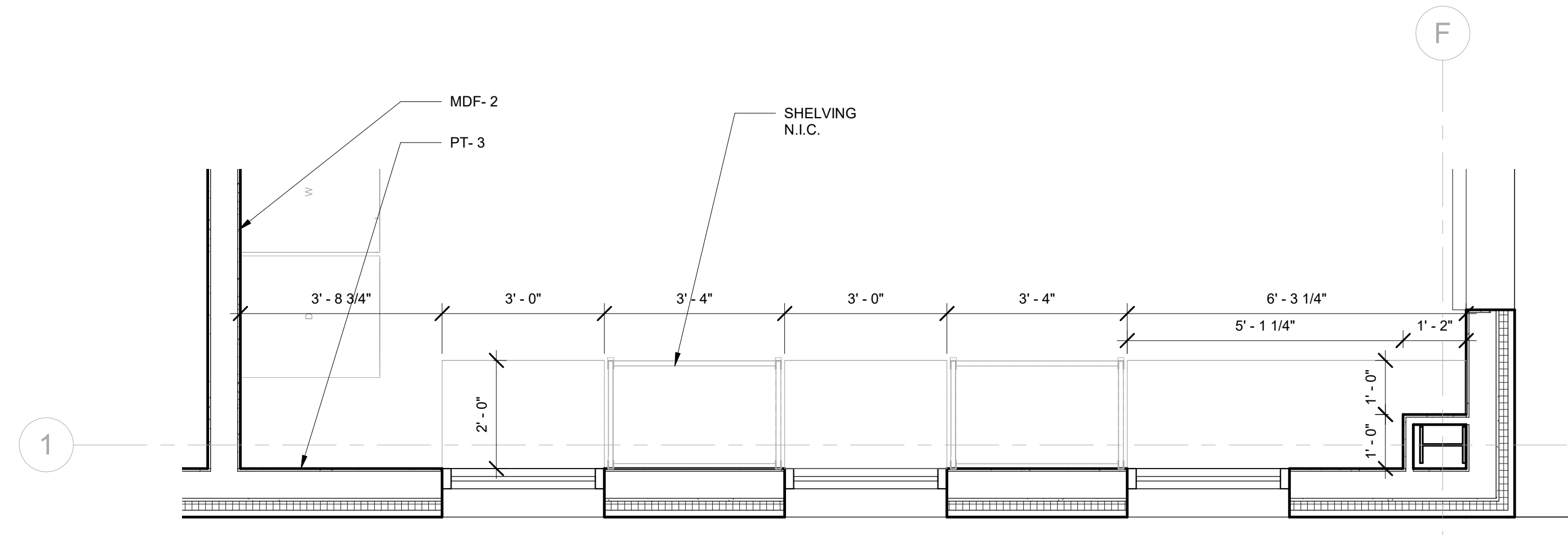
1 ELEVATION  
A704 1/2" = 1'-0"



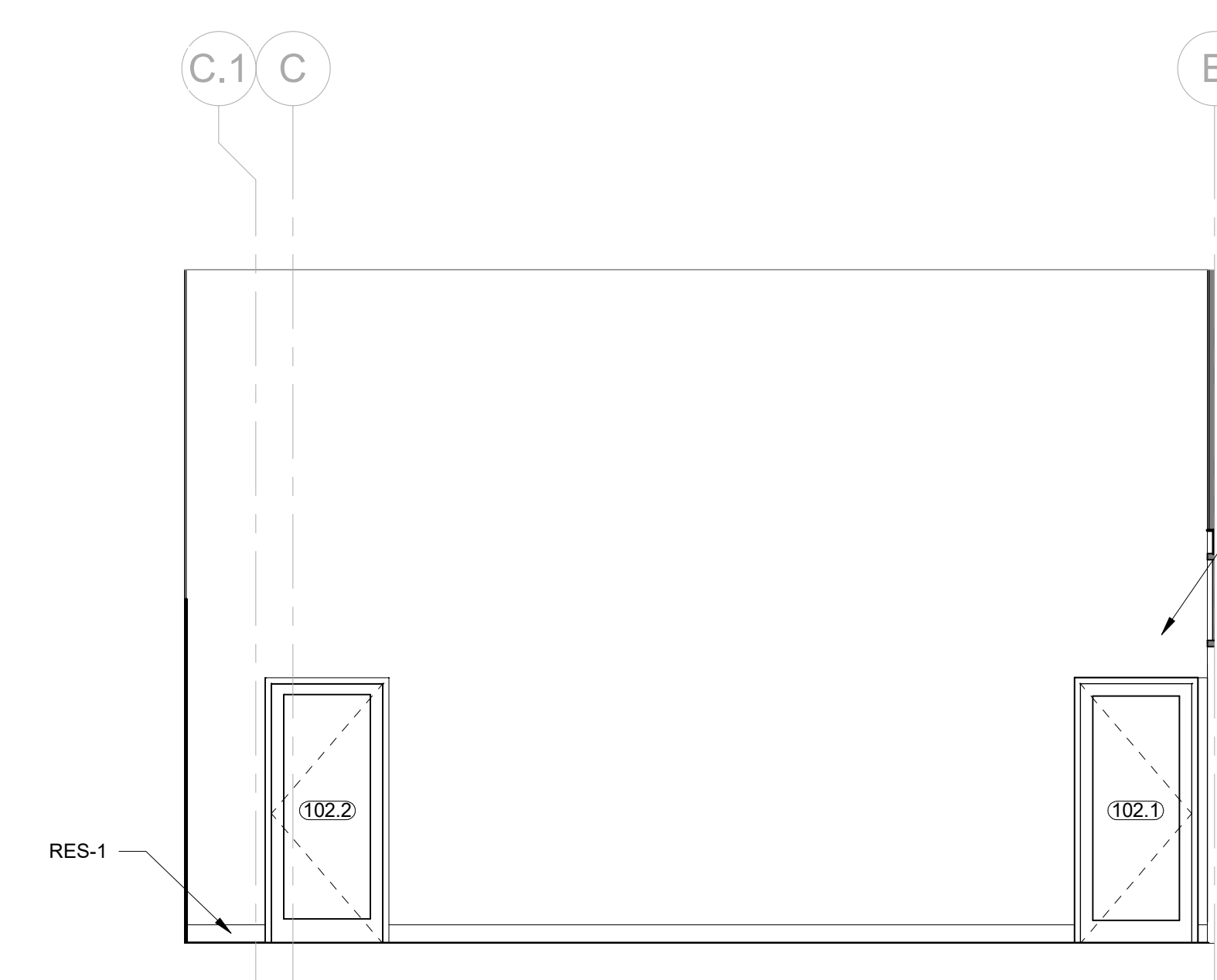
2 ELEVATION  
A704 1/2" = 1'-0"



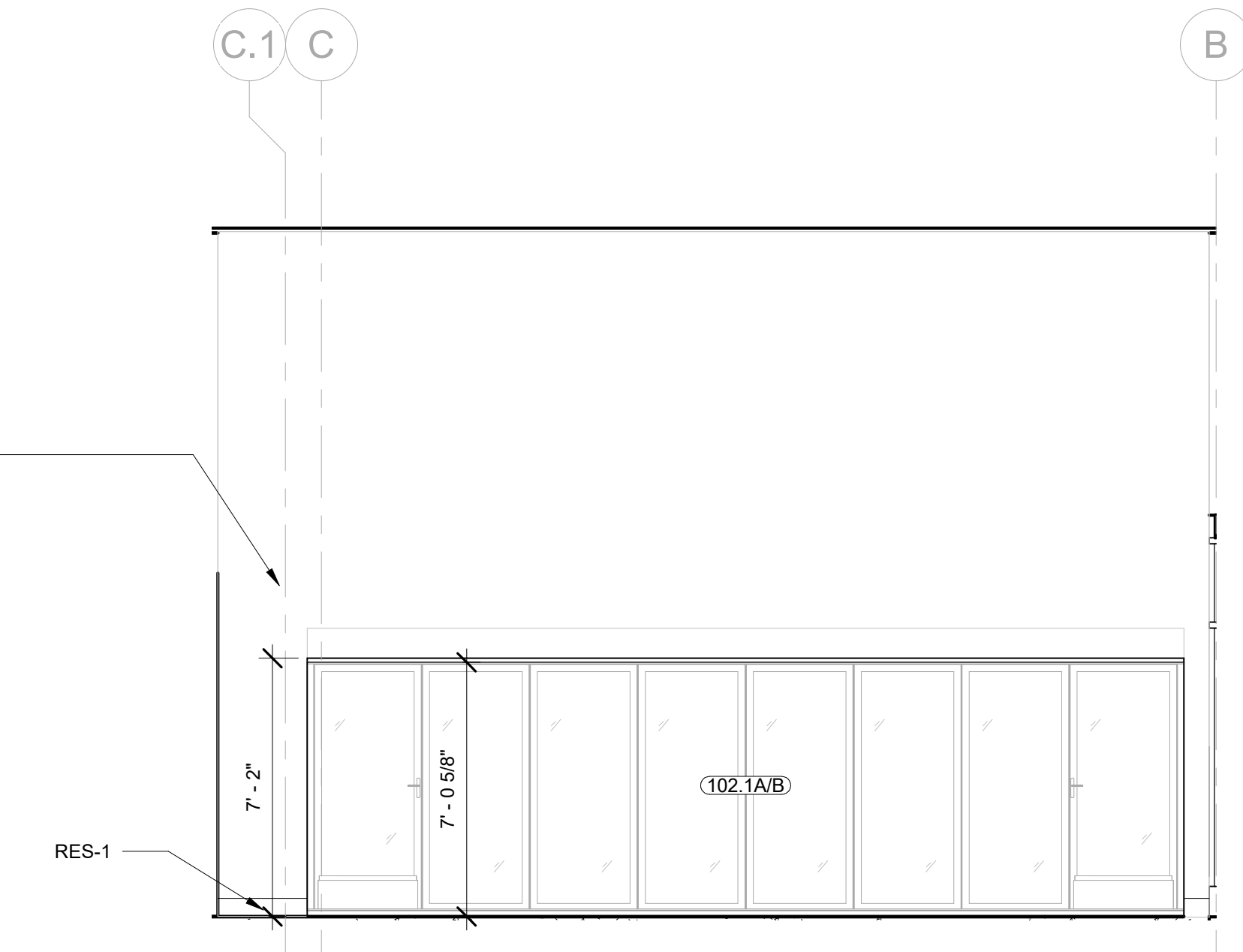
4 01-LEVEL 1 PLAN - WORKSHOP- ENT LOCKERS  
A704 1/2" = 1'-0"



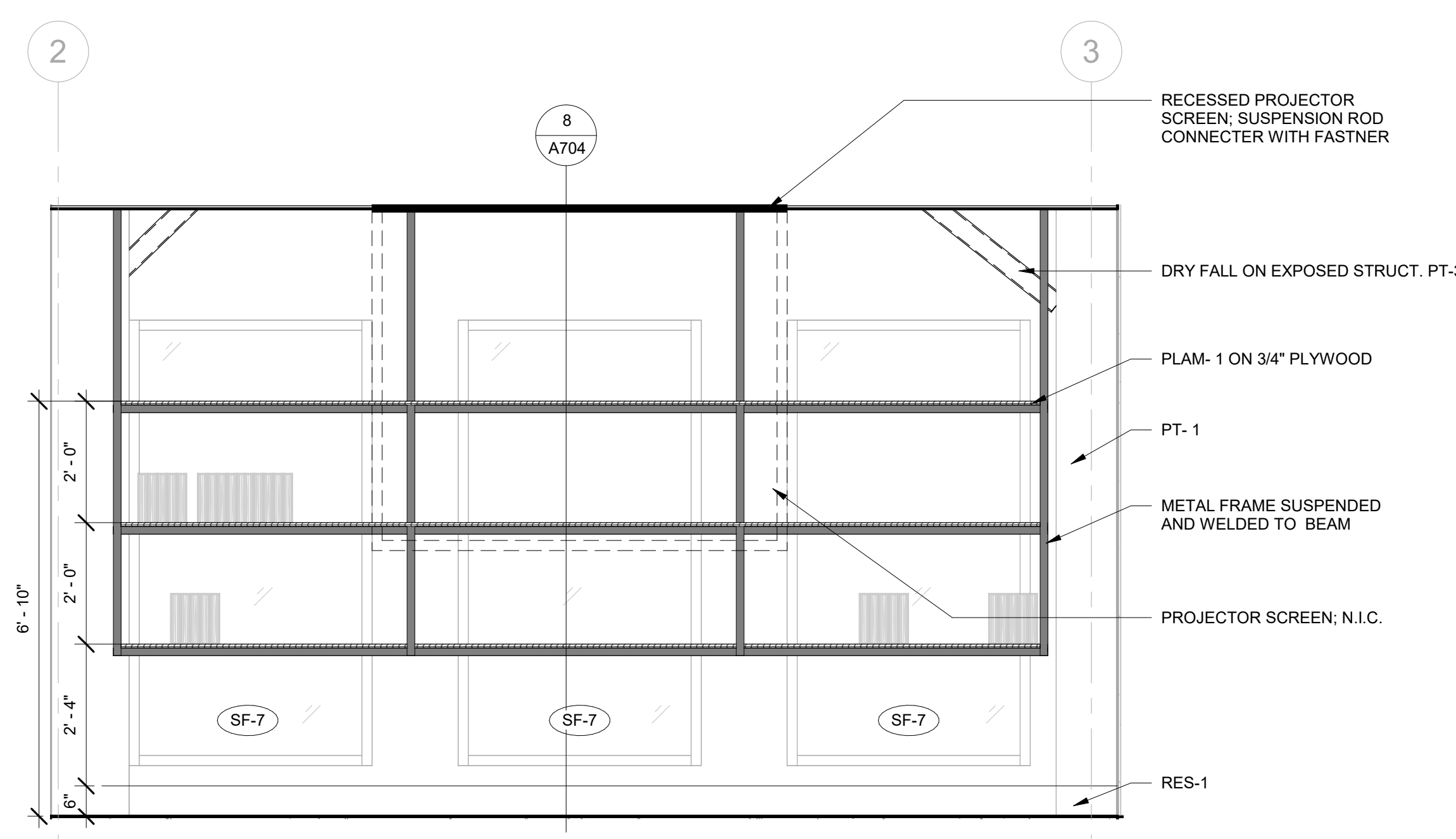
3 PLAN - WORKSHOP  
A704 1/2" = 1'-0"



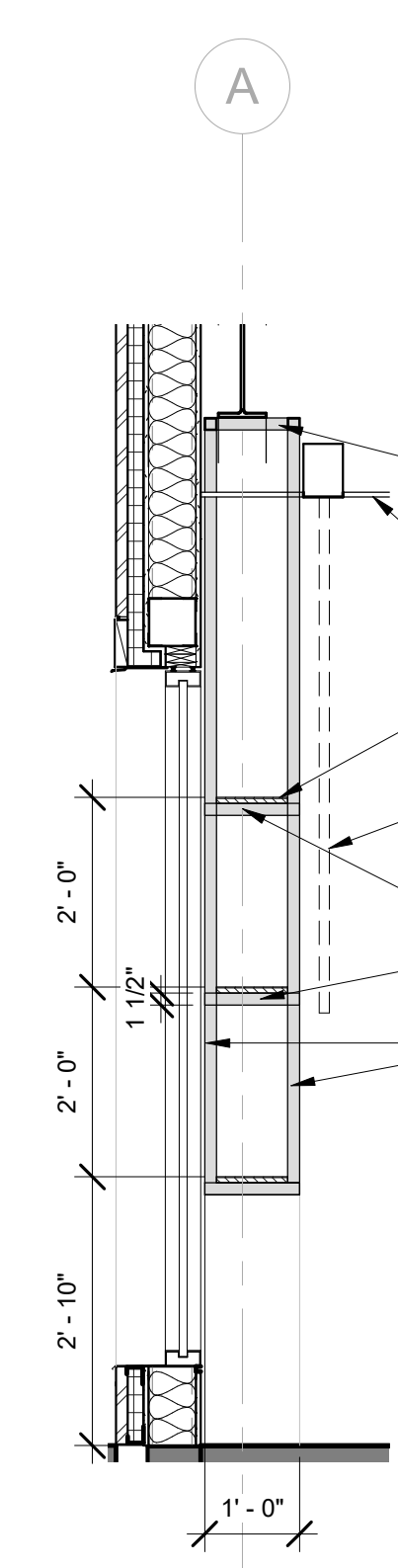
5 ELEVATION (BASE BID)  
A704 1/4" = 1'-0"



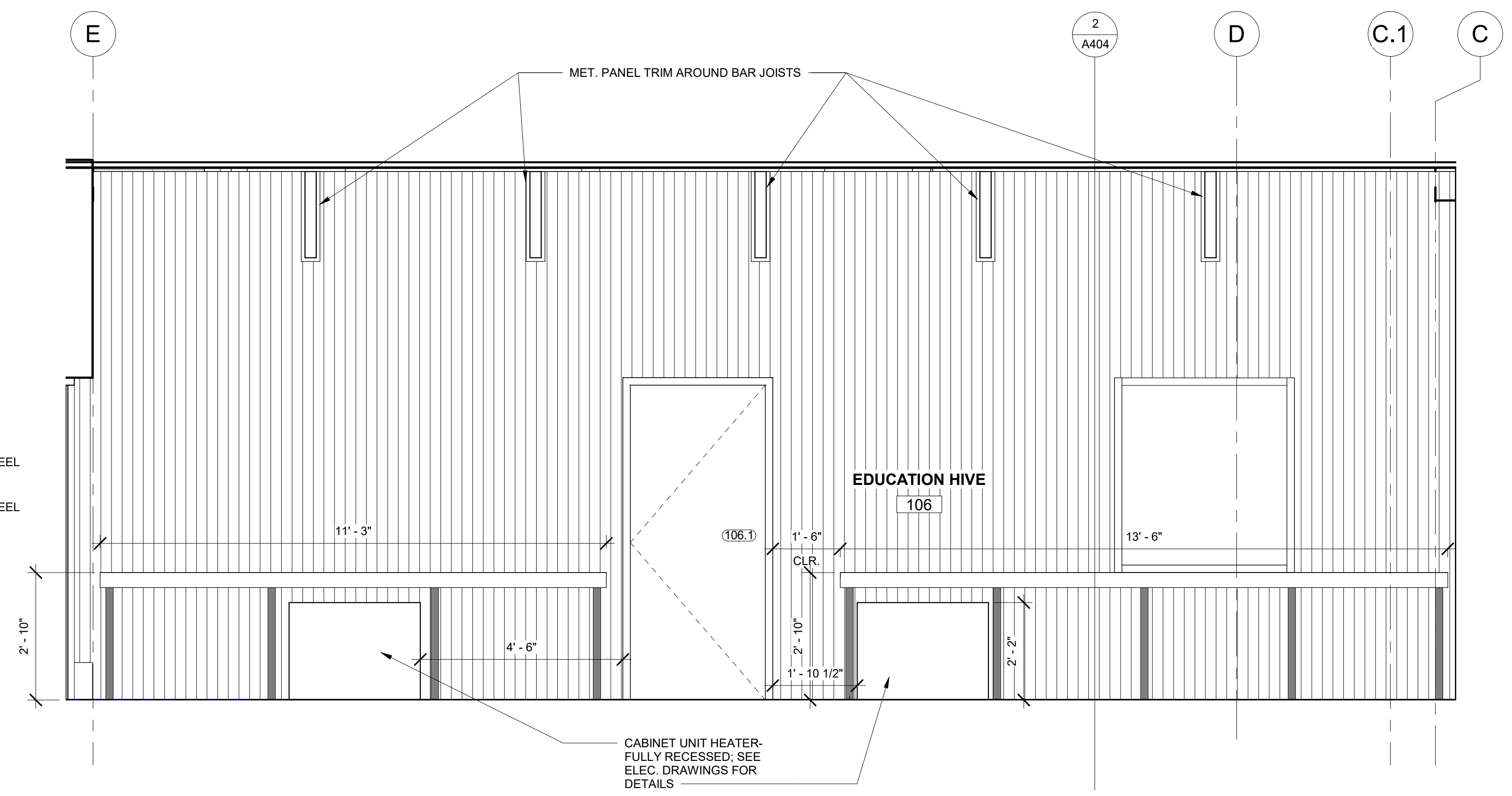
6 ELEVATION (ALTERNATE NO. 3)  
A704 1/4" = 1'-0"



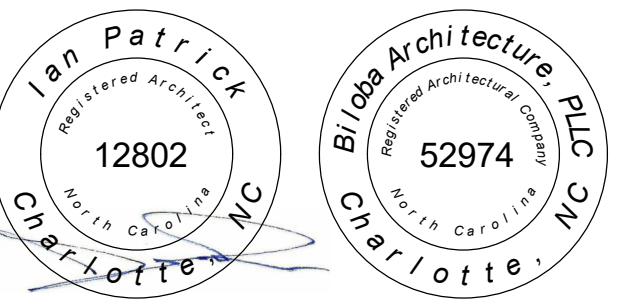
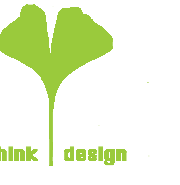
7 ELEVATION  
A704 1/2" = 1'-0"



8 SECTION  
A704 1/2" = 1'-0"

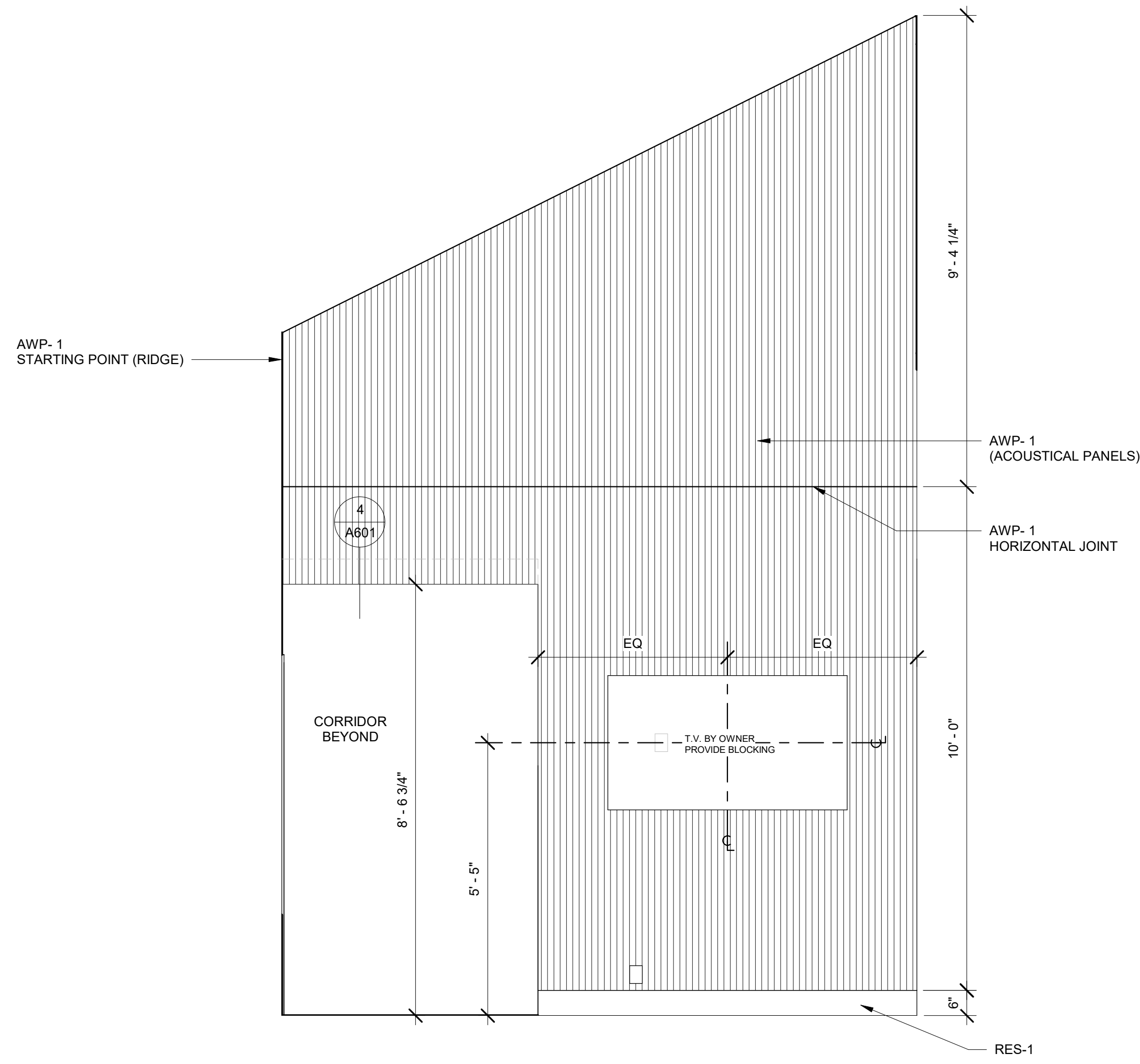


9 ELEVATION  
A704 1/2" = 1'-0"

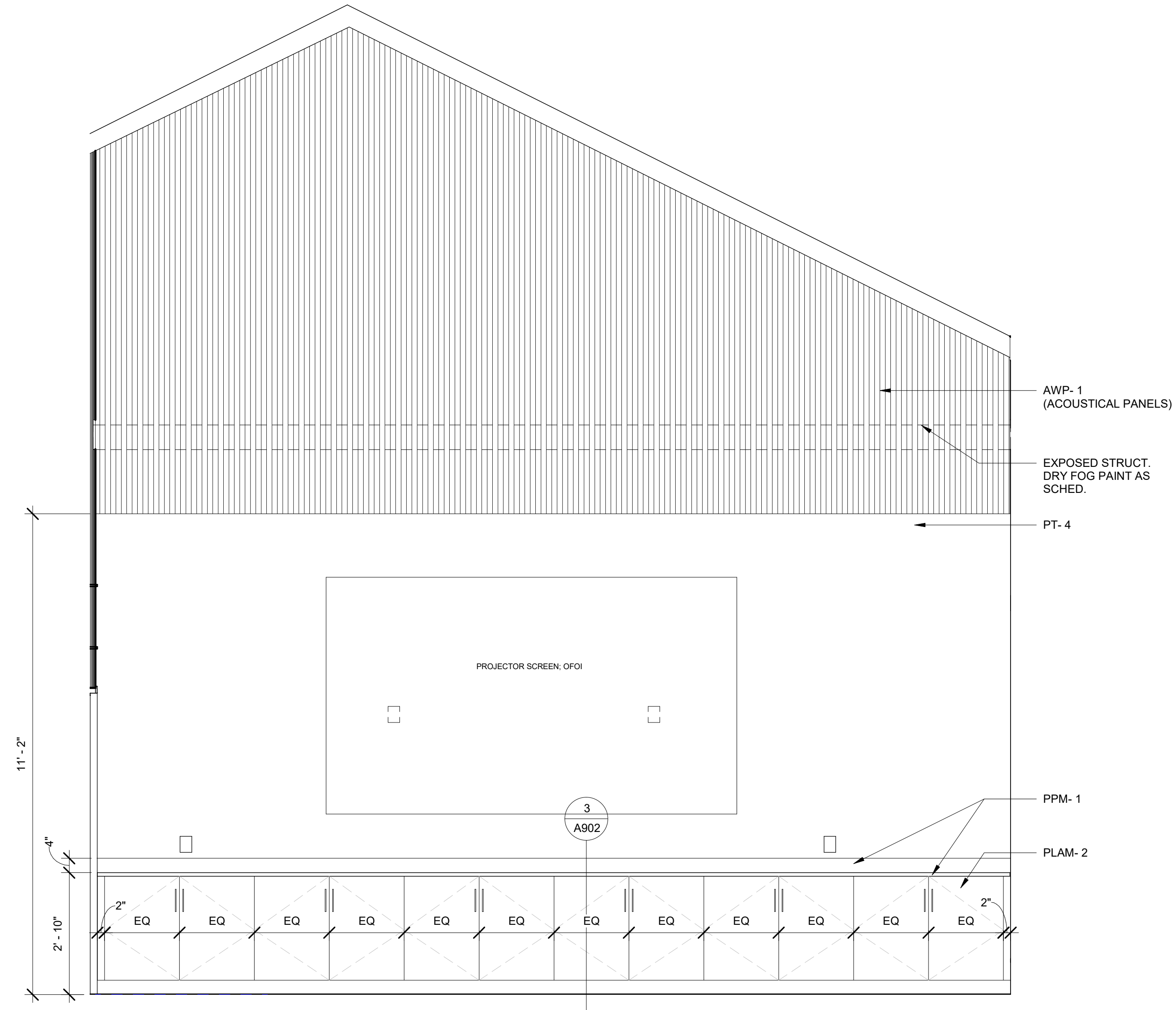


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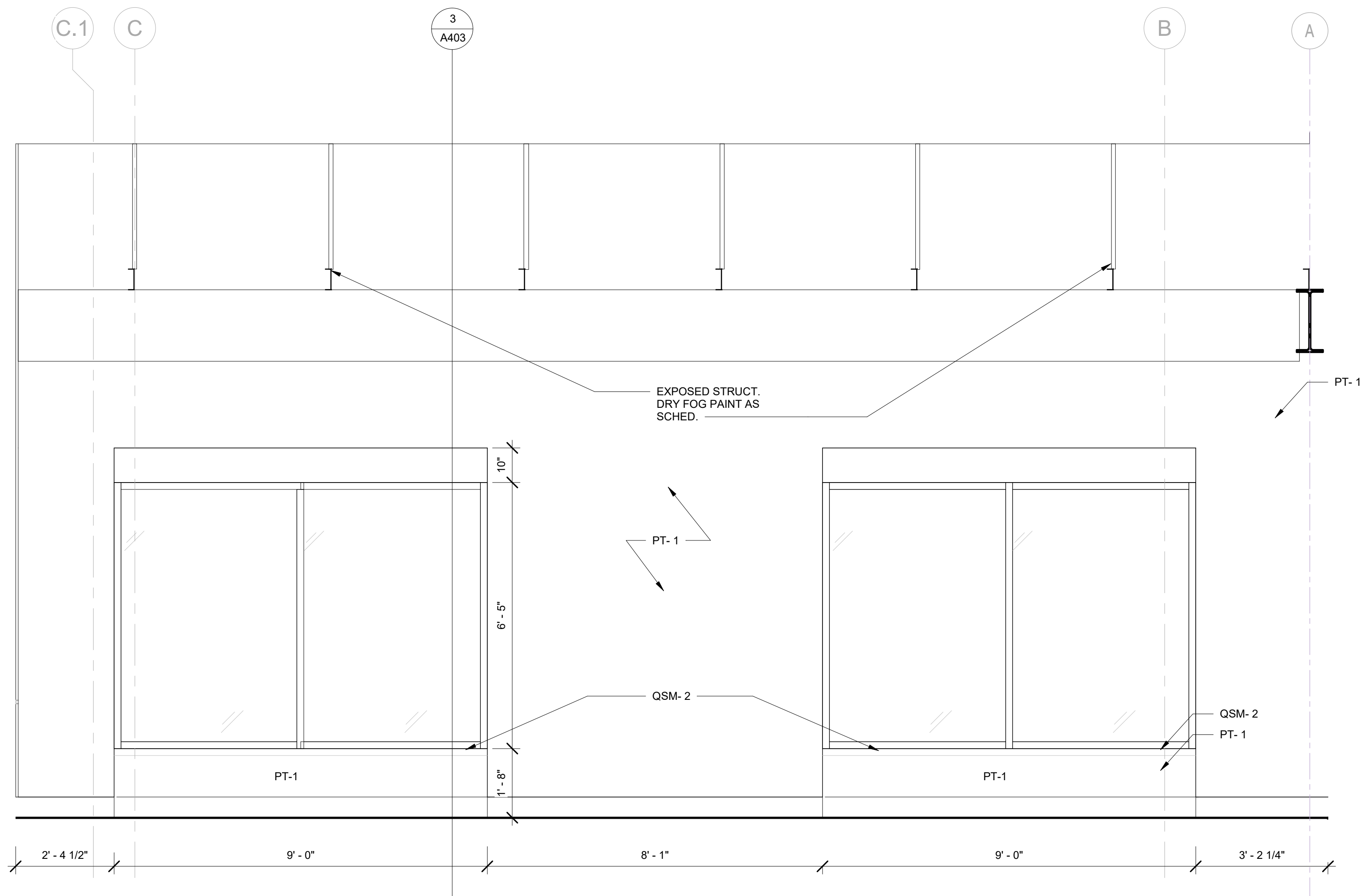
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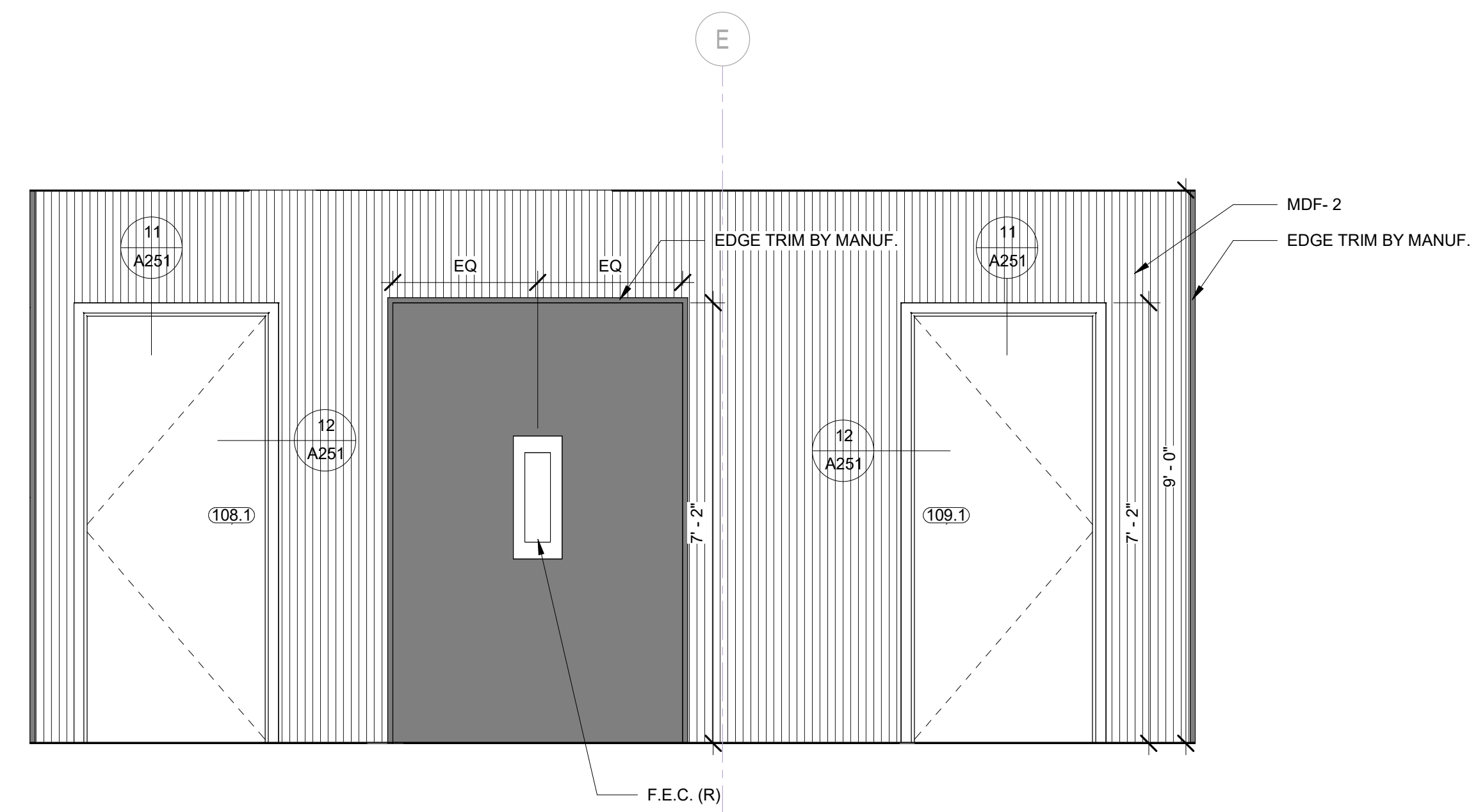
2 ELEVATION  
A705 1/2" = 1'-0"



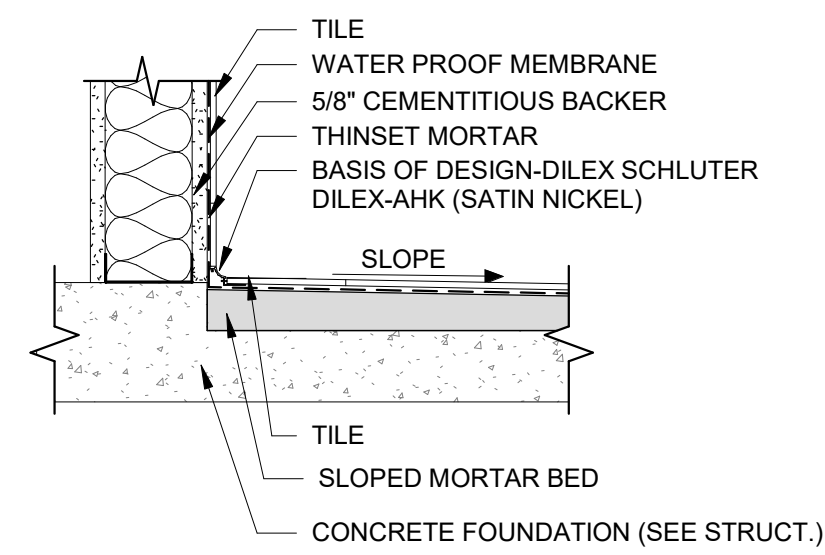
1 ELEVATION  
A705 1/2" = 1'-0"



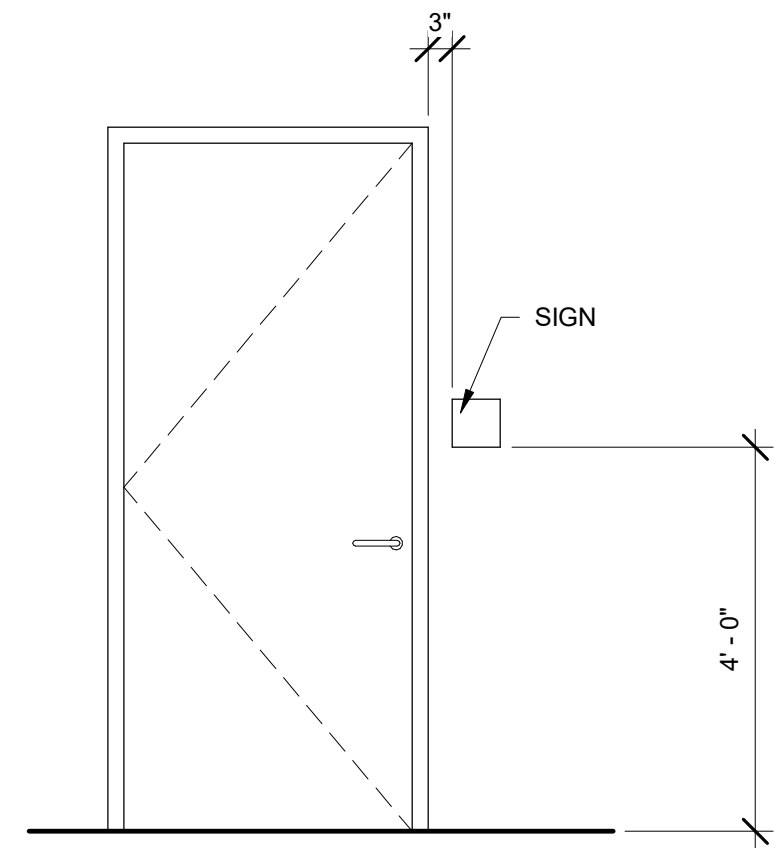
3 ELEVATION  
A705 1/2" = 1'-0"



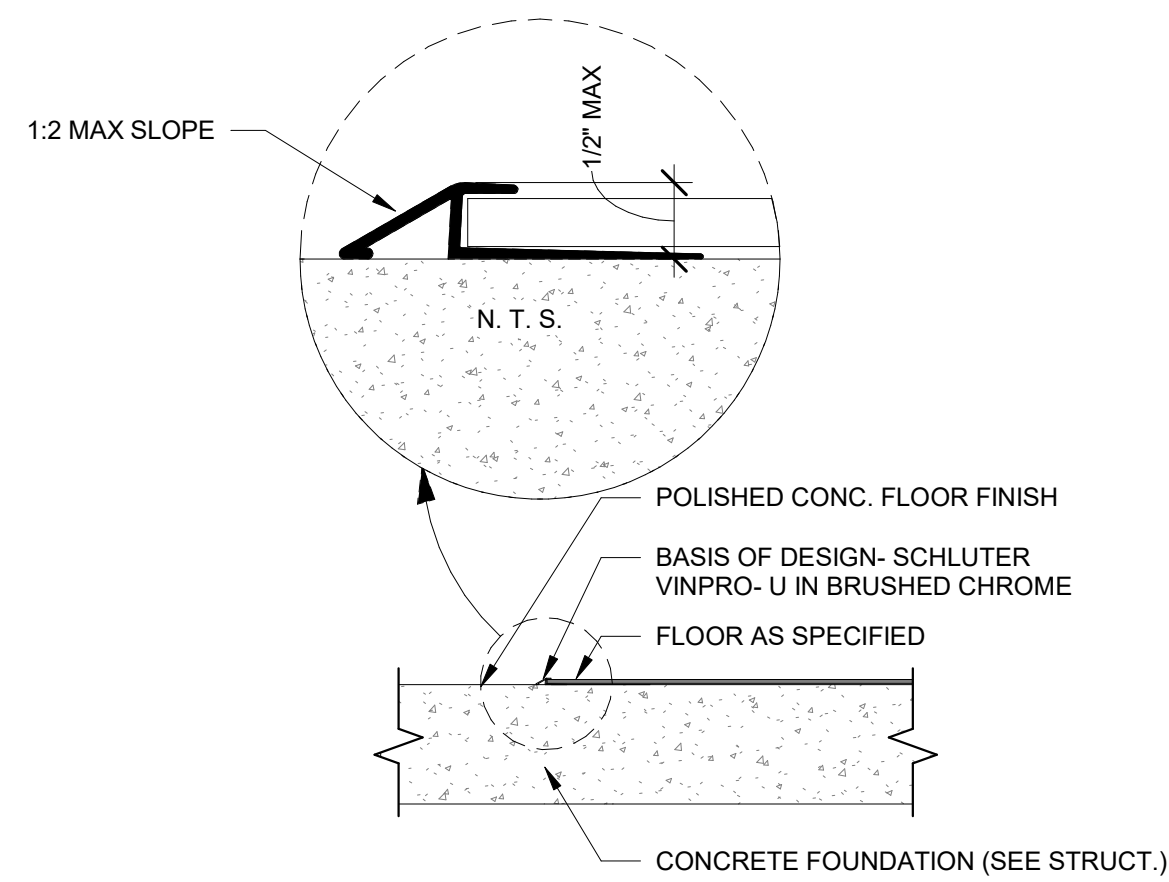
4 ELEVATION  
A705 1/2" = 1'-0"



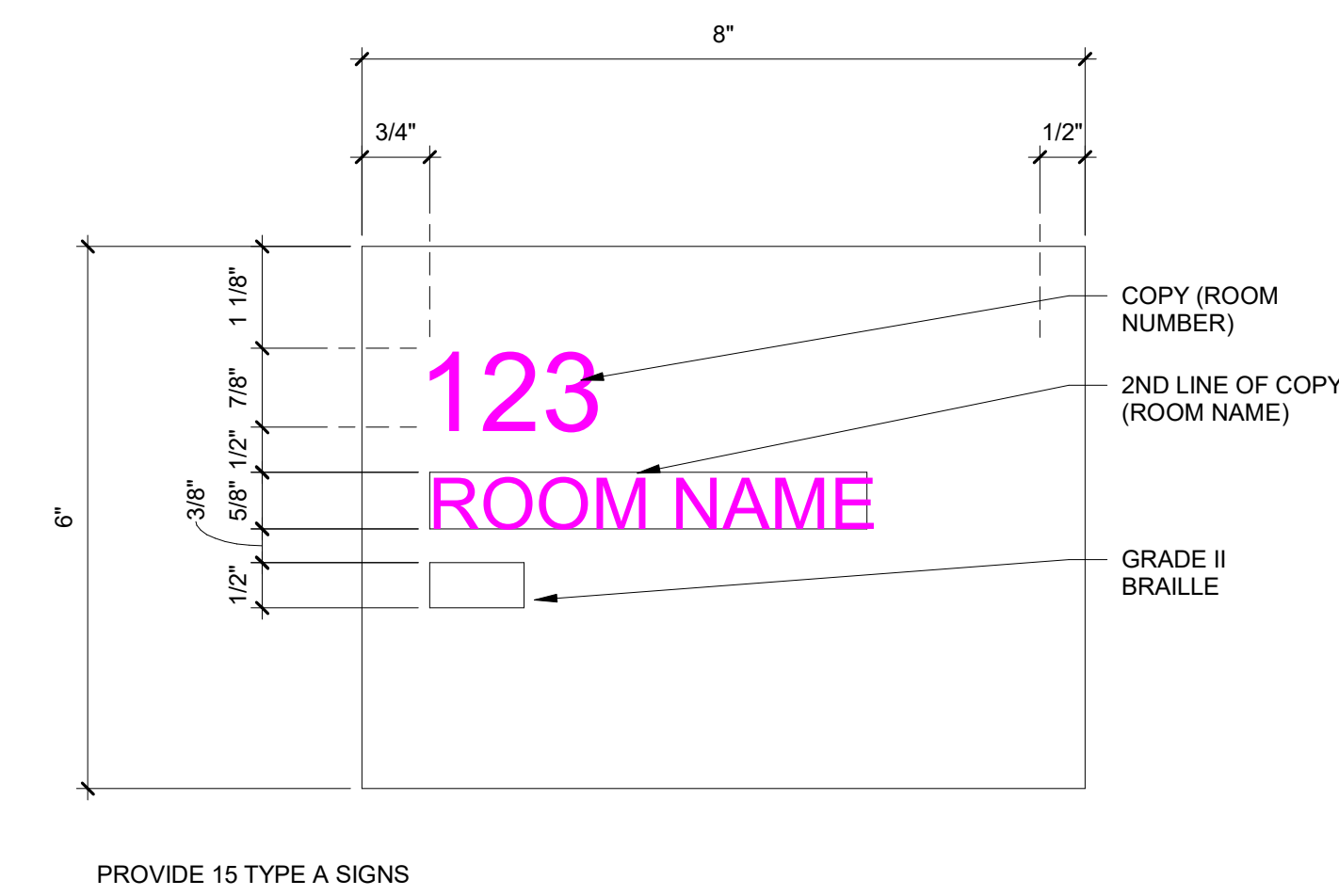
1 FLOOR TRANSITION DETAIL- PTB (WET AREA)  
1 1/2" = 1'-0"



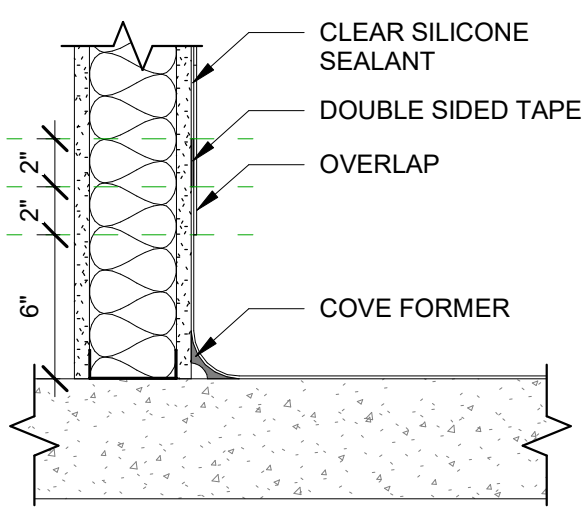
5 ROOM SIGN MOUNTING LOCATION  
1/2" = 1'-0"



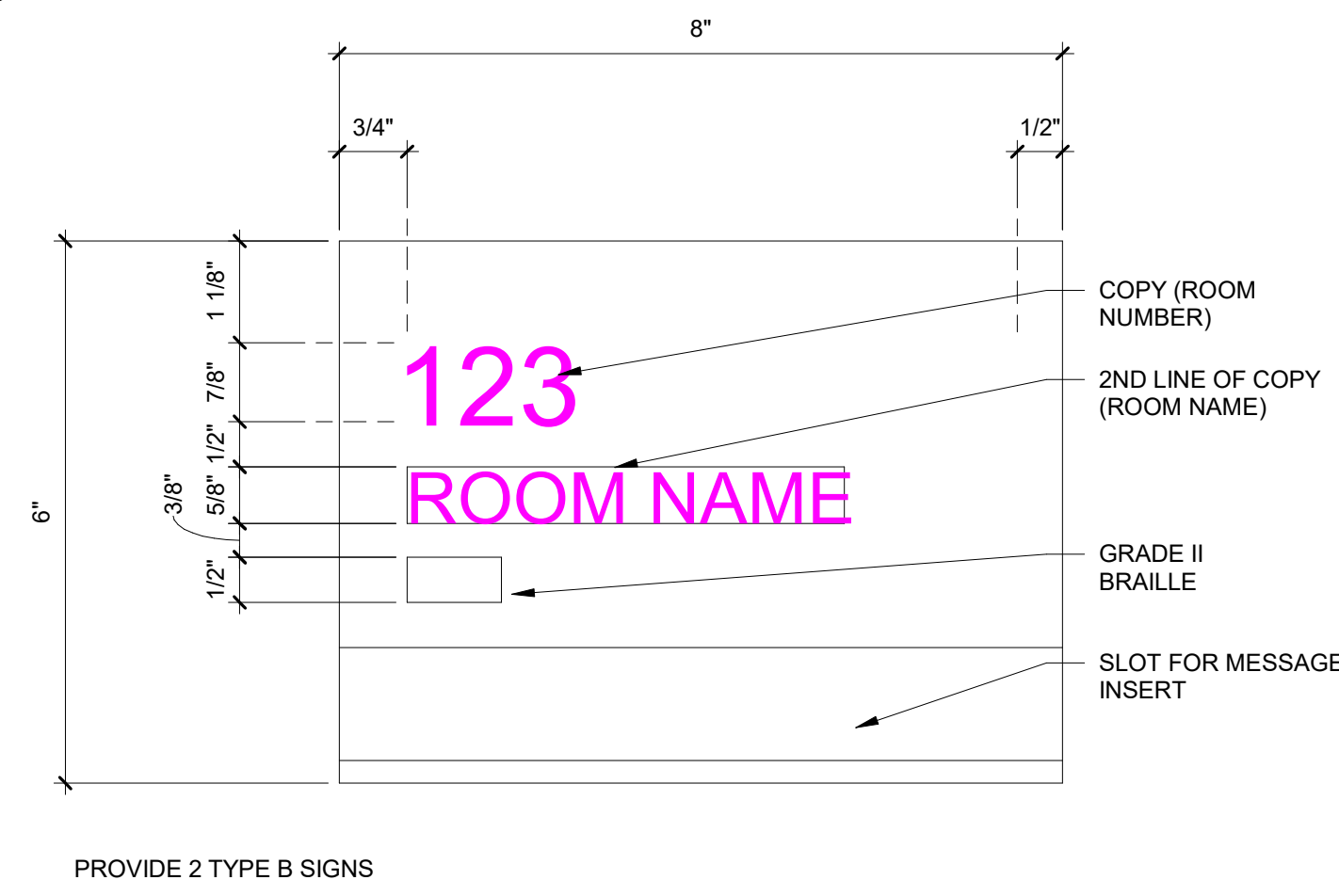
3 FLOOR TRANSITION DETAIL  
1 1/2" = 1'-0"



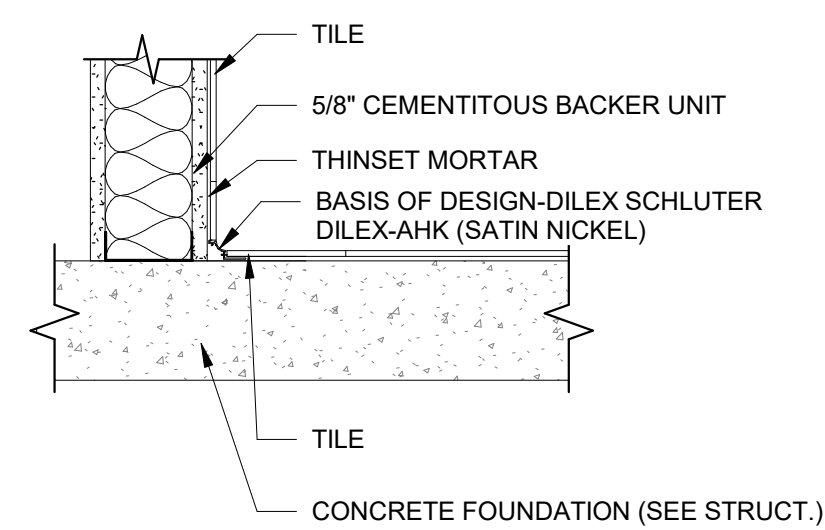
6 ROOM IDENTIFICATION SIGNAGE  
6" = 1'-0"



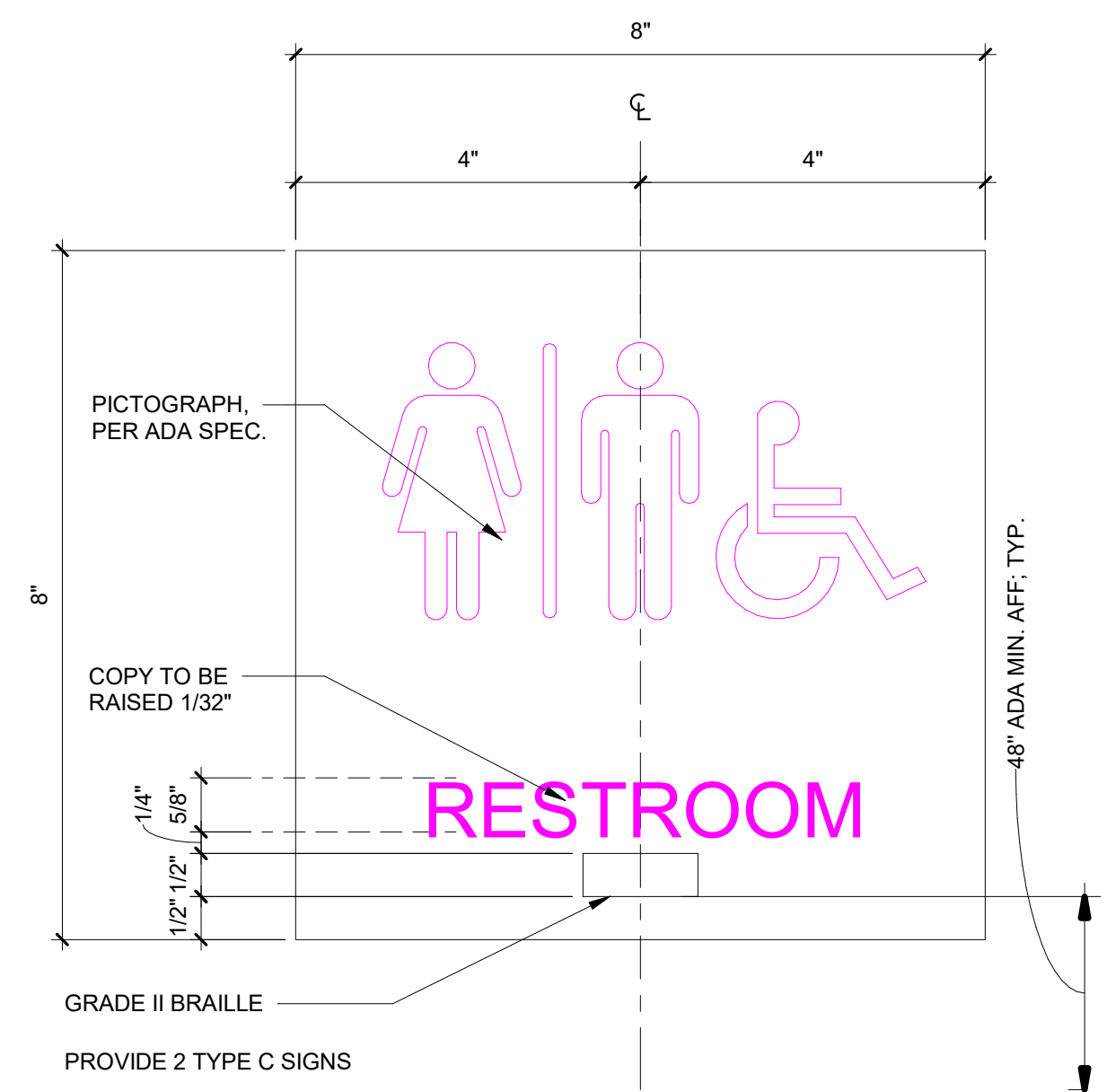
4 FLOOR TO WALL PVCRB  
1 1/2" = 1'-0"



7 ROOM IDENTIFICATION SIGNAGE  
6" = 1'-0"

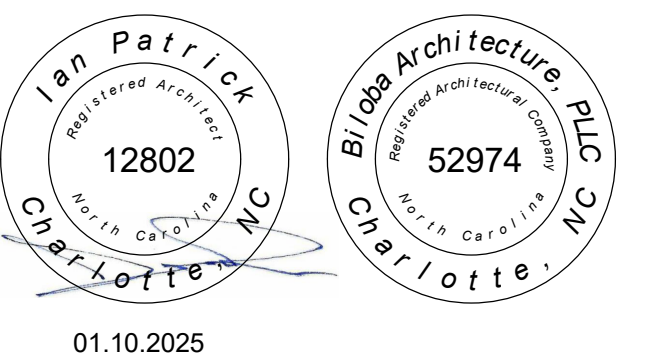
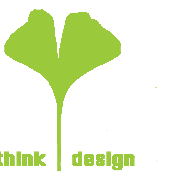


2 FLOOR TRANSITION DETAIL- PTB  
1 1/2" = 1'-0"



8 ROOM IDENTIFICATION SIGNAGE  
6" = 1'-0"

Room Signage Schedule			
Name	Number	Sign Type	Copy
LOBBY/GALLERY	101		
MEETING	102	A	102 MEETING ROOM
OPEN OFFICE	103	B	103 OFFICE
OFFICE	103A	B	103A OFFICE
OFFICE STORAGE	103B	A	103B OFFICE STORAGE
LAB	104	A	04 LAB
OBSERVATION HIVES	104A	A	104A OBSERVATION HIVES
INCUBATOR	104B	A	104B INCUBATOR
CORRIDOR	105		
STORAGE	105A		
KITCHENETTE	105B		
EDUCATION HIVE	106	A	106 EDUCATION HIVE
WORKSHOP	107	A	107 WORKSHOP
WALK-IN FREEZER	107A	A	107A WALK IN FREEZER
EXTRACTION	107B	A	107B EXTRACTION
STORAGE	107C	A	107C STORAGE
MEN'S	108	C	MEN'S RESTROOMS
WOMEN'S	109	C	WOMEN'S RESTROOMS
CUSTODIAL	110	A	110 CUSTODIAL
DATA	111	A	111 DATA
EQUIPMENT STORAGE	112	A	112 EQUIPMENT STORAGE
ELECT.	113	A	113 ELECTRICAL
EMERG. ELECT.	113A	A	113A EMERGENCY ELECTRICAL



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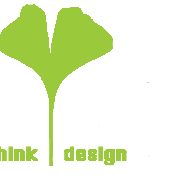
Checked IWP

Date 01/10/2025

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PROJECT SEALANT SCHEDULE			
SEALANT TYPE	DESCRIPTION	LOCATIONS	COLOR
SILICONE, S, NS, 50, NT	Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.	Intersection of exterior walls and door and window frames. All other exterior joint locations.	As selected by Architect from manufacturer's full range
SILICONE, MILDEW RESISTANT, ACID CURING, S, NS, 25, NT	Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT	Intersection of plumbing fixtures and walls and countertops. Other joints not listed but indicated on Drawings. Top of vinyl roll flooring cove base.	Clear.
ACRYLIC LATEX	Acrylic latex or siliconized acrylic latex, ASTM C334, Type OP, Grade NF	Intersection of interior walls and door and window frames.	White or Grey
URETHANE, S, NS, 25, T, NT	Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Uses T and NT	Wall and floor tile expansion joints	-
BUTYL	Butyl-rubber based	Door thresholds. Intersection of dissimilar metals	Black

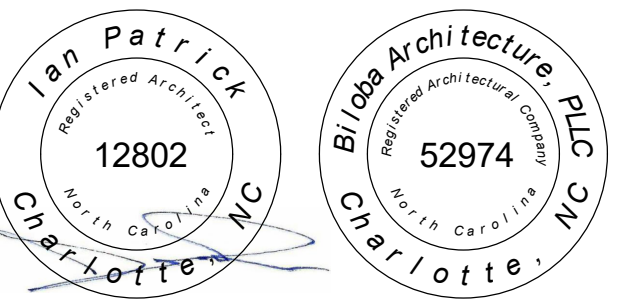
ALL EXTERIOR GAPS, SEAMS OR PENETRATIONS SHALL BE SEALED WITH SILICONE SEALANT TO PREVENT INSECT INTRUSION.



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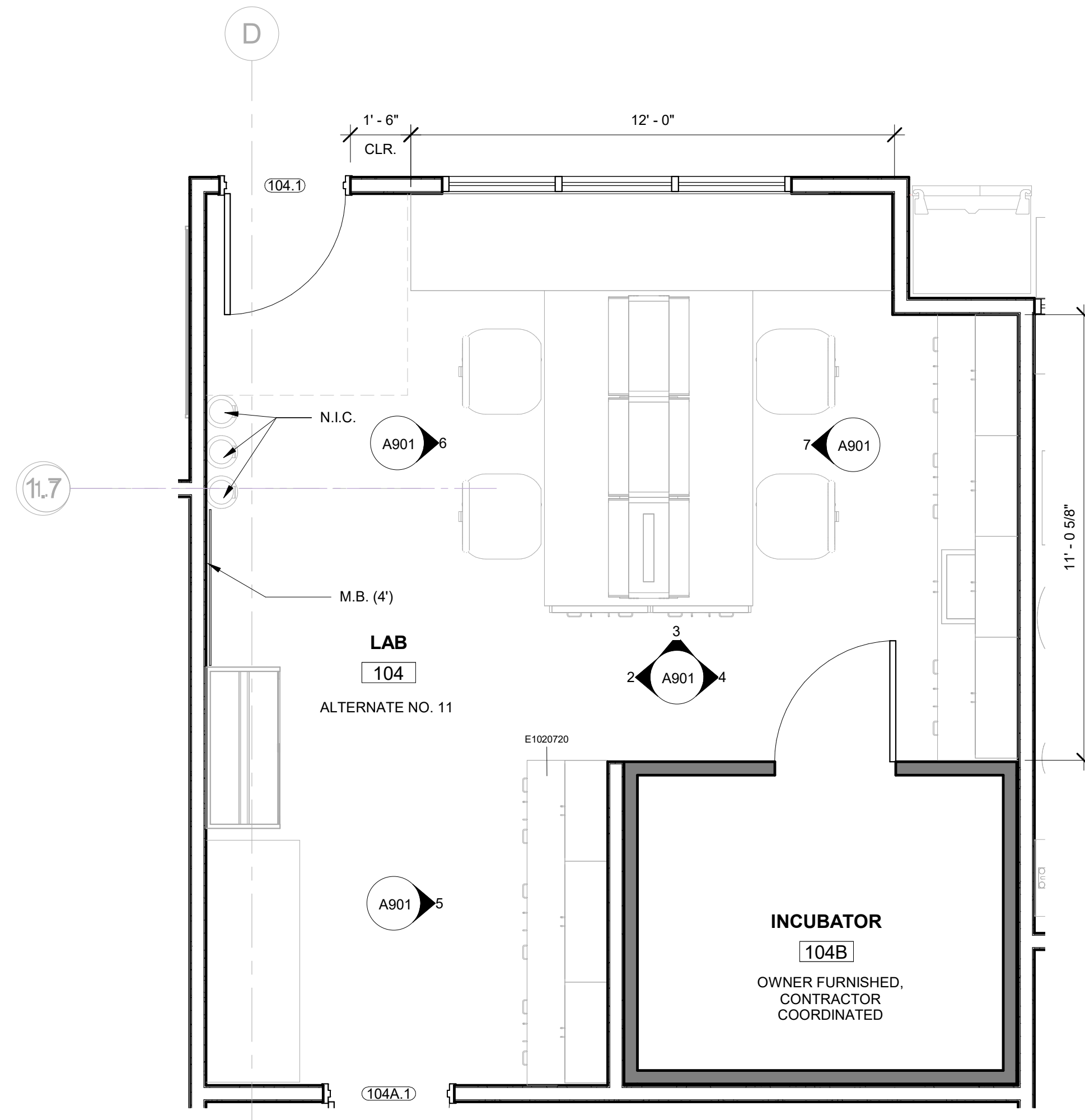
01.10.2025

Drawn IWP

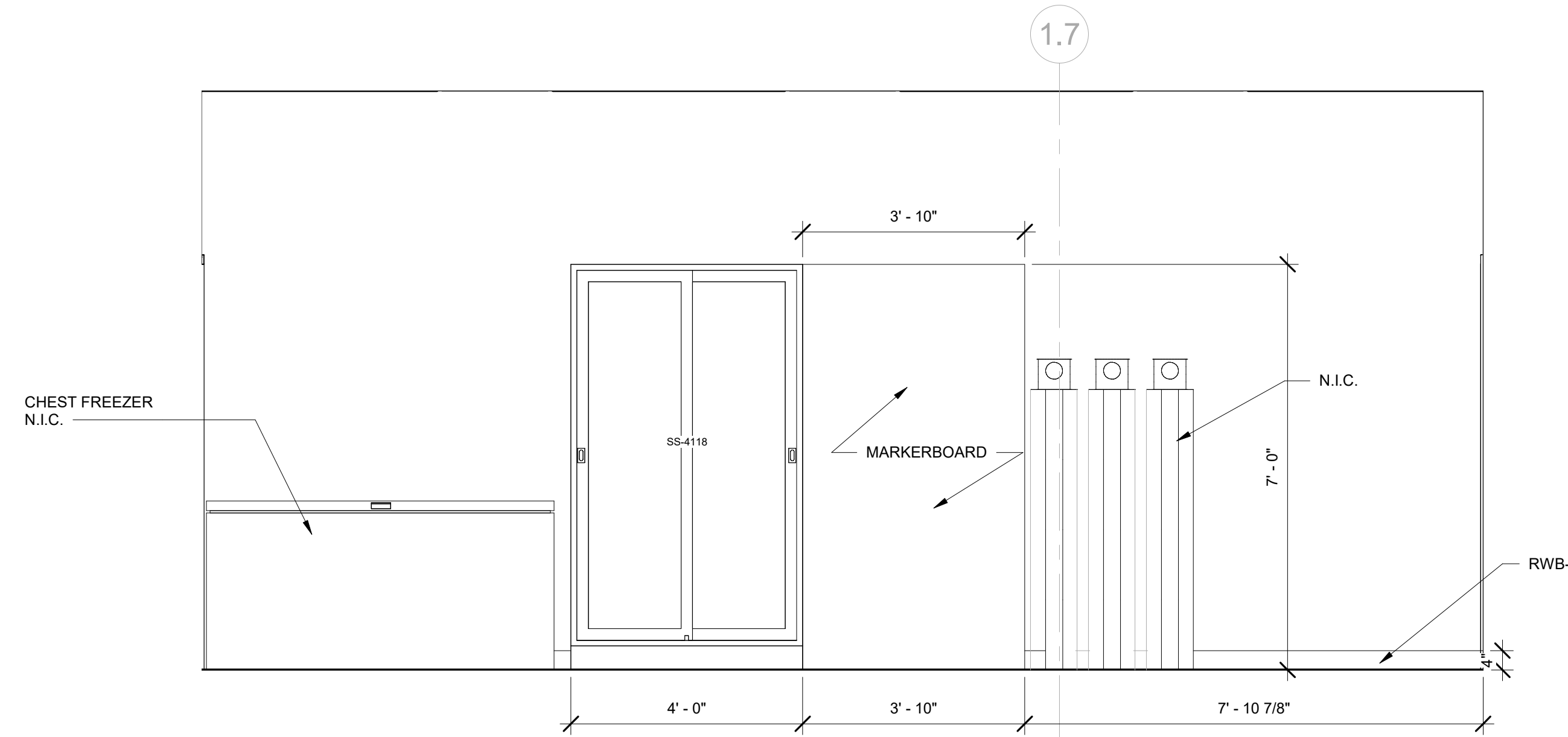
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Date 01/10/2025

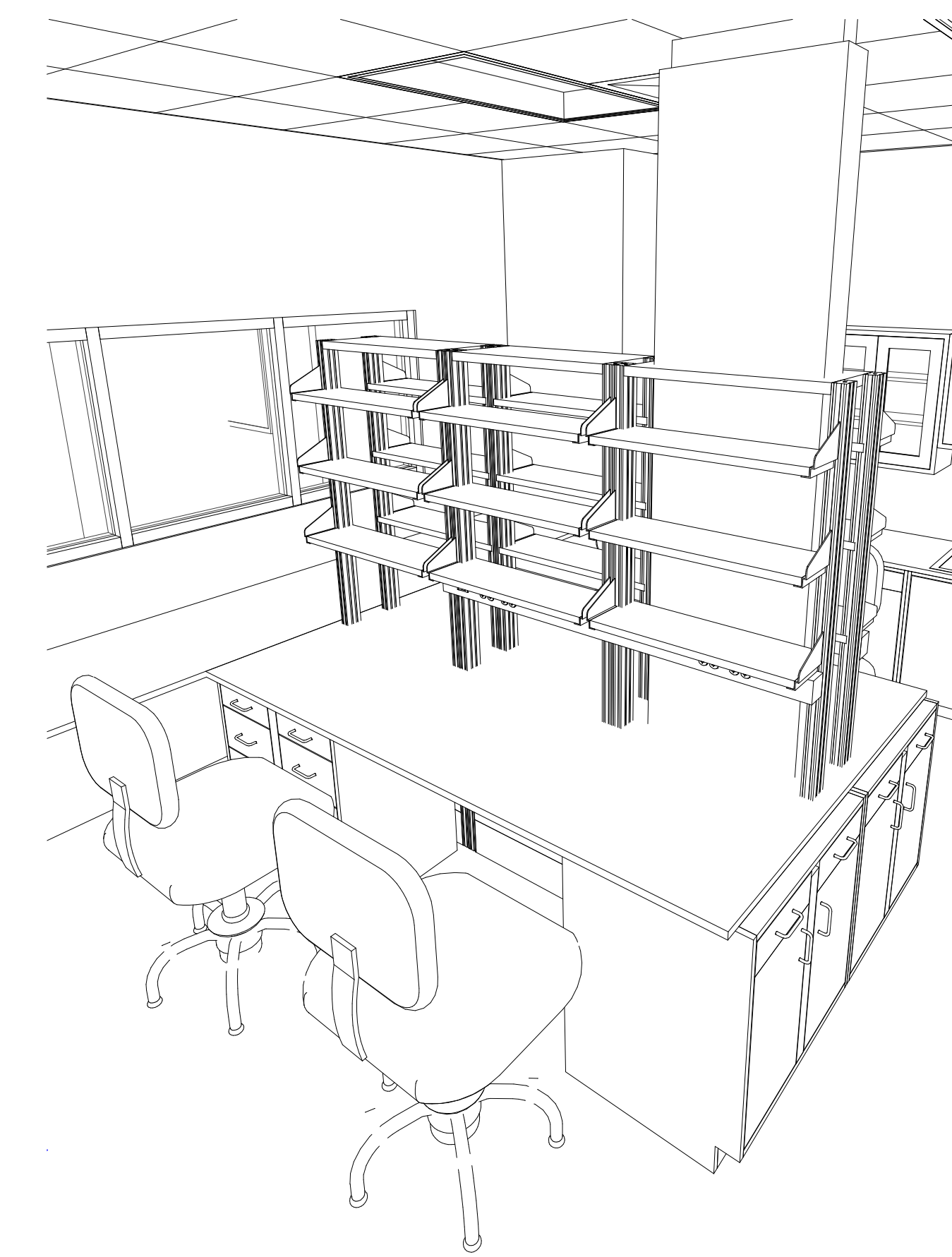
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1 ENLARGED FLOOR PLAN - LAB  
3/8" = 1'-0"  
ALTERNATE NO. 11



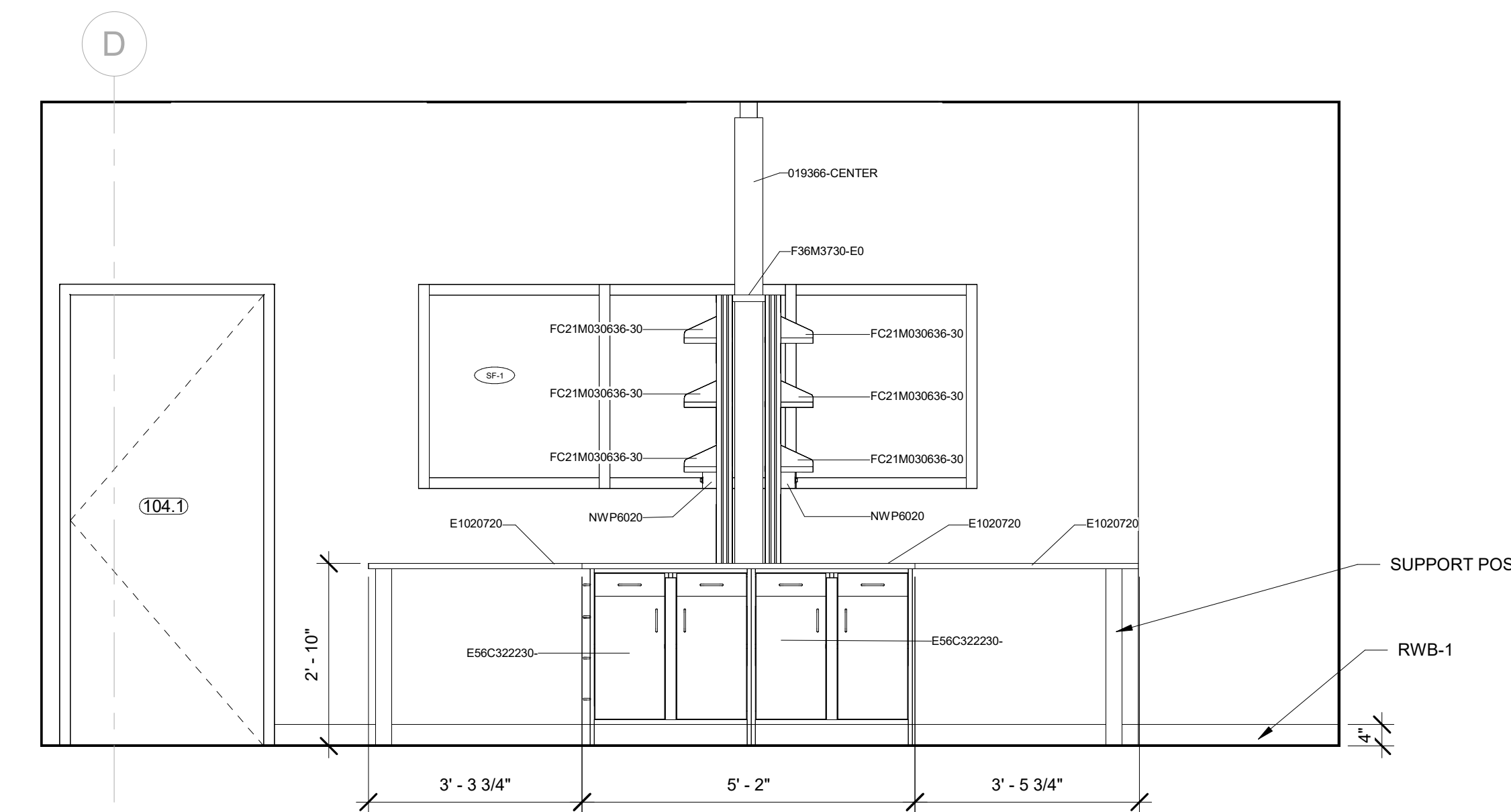
2 CABINET ELEVATION  
1/2" = 1'-0"



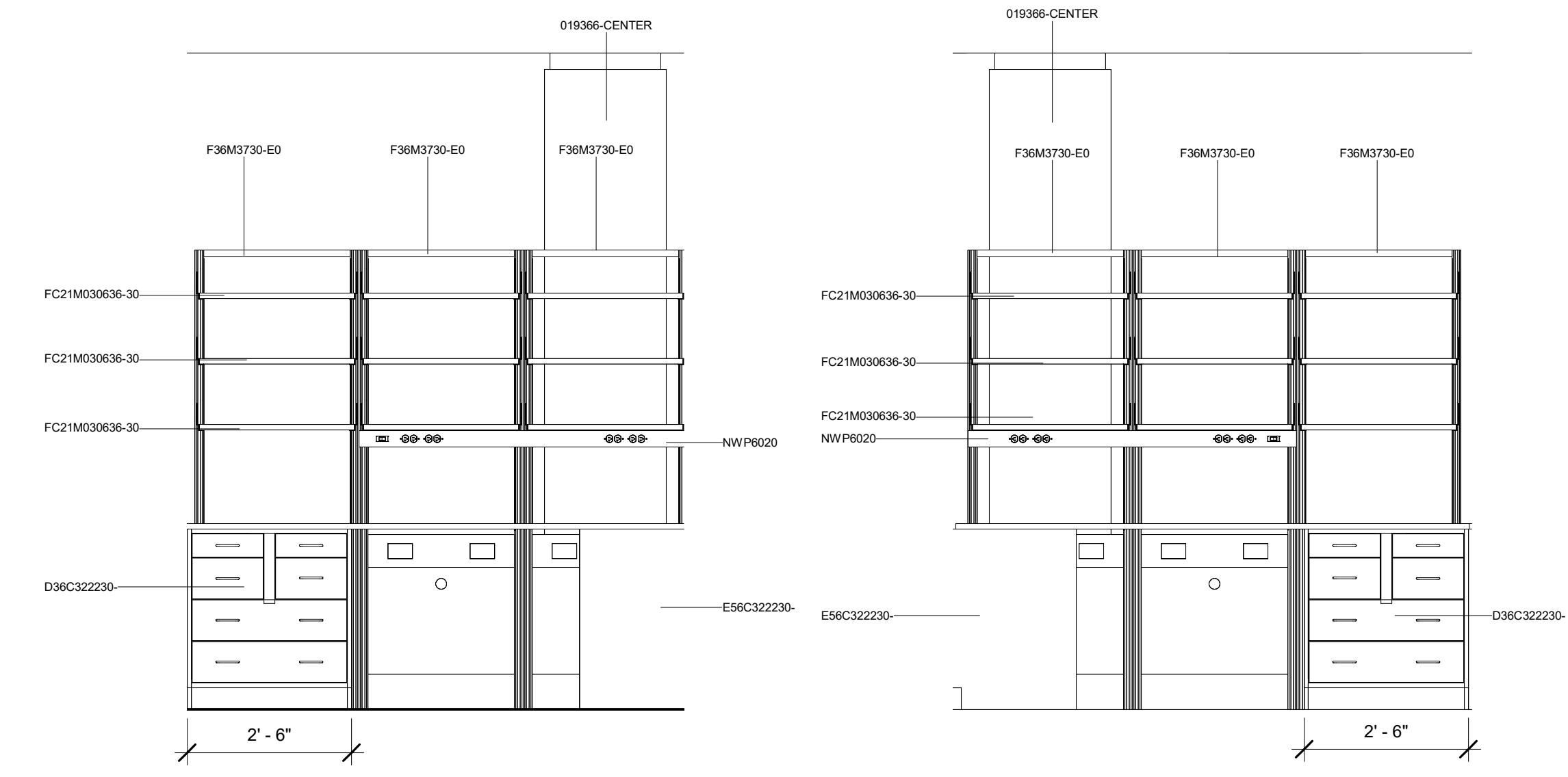
8 3D WORKBENCH  
A901

CASEWORK SCHEDULE:

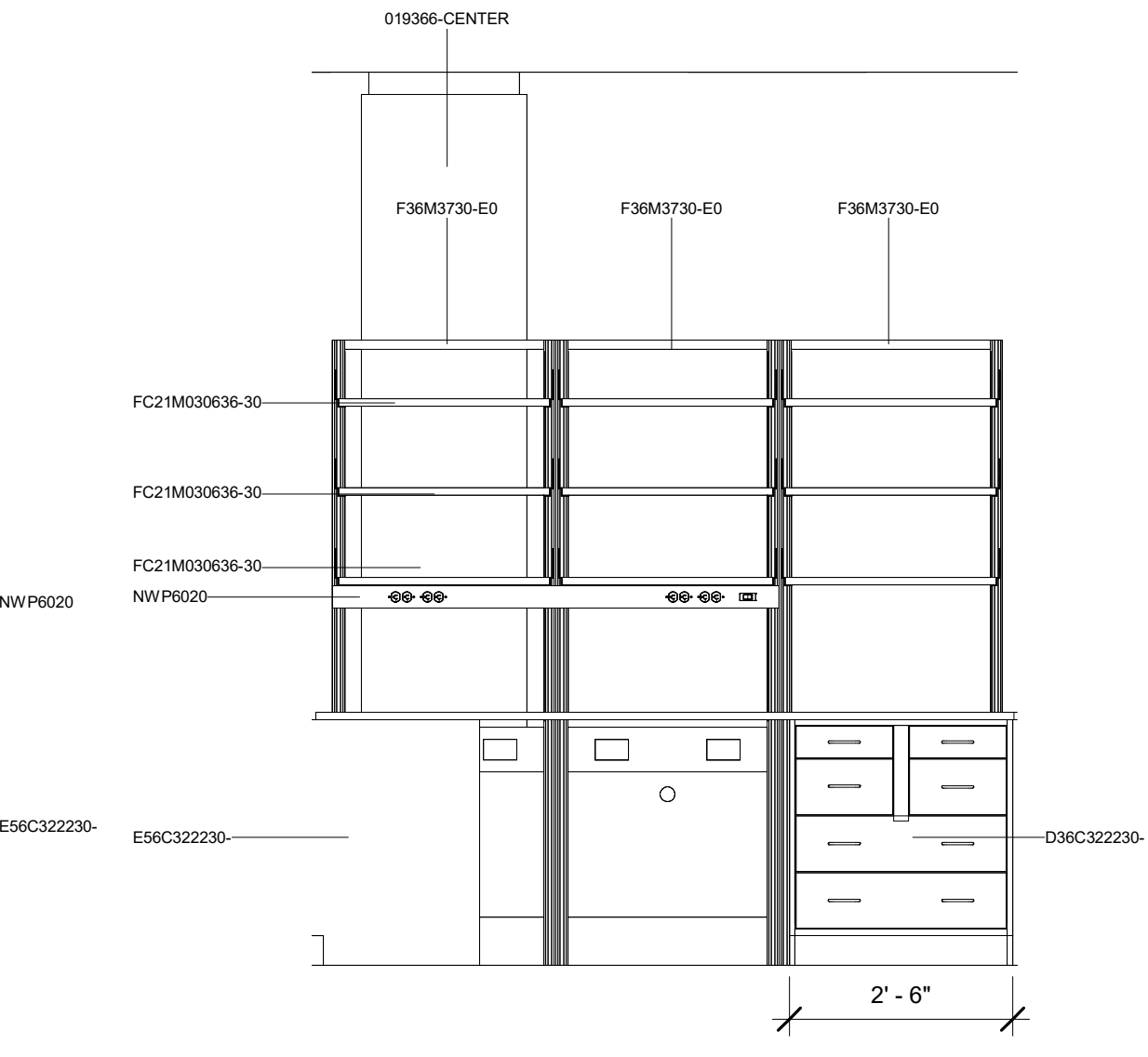
ASSEMBLY	MODEL NUMBER	ROOM	MANUF.
FULL HEIGHT CABINET	D39C322230	104	KEWAUNEE SCIENTIFIC CORP.
BASE CABINET 2 DRAWERS, SWING DOUBLE	E56C322230	104	KEWAUNEE SCIENTIFIC CORP.
BASE CABINET 6 DRAWERS	D39C322230	104	KEWAUNEE SCIENTIFIC CORP.
BASE CABINET 2 DRAWERS, SWING DOUBLE	E56C322236	104	KEWAUNEE SCIENTIFIC CORP.
BASE CABINET SINK ADA, SWING DOUBLE	G03C322230	104	KEWAUNEE SCIENTIFIC CORP.
WALL CABINET, GLASS DOOR, SWING DOUBLE	W20M301336	104	KEWAUNEE SCIENTIFIC CORP.
WALL CABINET, GLASS DOOR, SWING DOUBLE	W20M301330	104	KEWAUNEE SCIENTIFIC CORP.
WALL CABINET, GLASS DOOR, SWING DOUBLE	W20M241330	104	KEWAUNEE SCIENTIFIC CORP.
WORK TOP	E1020720	104	KEWAUNEE SCIENTIFIC CORP.
POWER RECEPTACLE	NWP6020	104	KEWAUNEE SCIENTIFIC CORP.
ADJUSTABLE SHELF	FC21M030636-30	104	KEWAUNEE SCIENTIFIC CORP.
ISLAND MODULE	F38M3730-ED	104	KEWAUNEE SCIENTIFIC CORP.
CENTER BENCH CHASE	O19366-CENTER	104	KEWAUNEE SCIENTIFIC CORP.
DECK MOUNTED HOT & COLD WATER	W-0340-00	104	KEWAUNEE SCIENTIFIC CORP.
DECK MOUNTED HOT EYEWASH	G5022	104	KEWAUNEE SCIENTIFIC CORP.



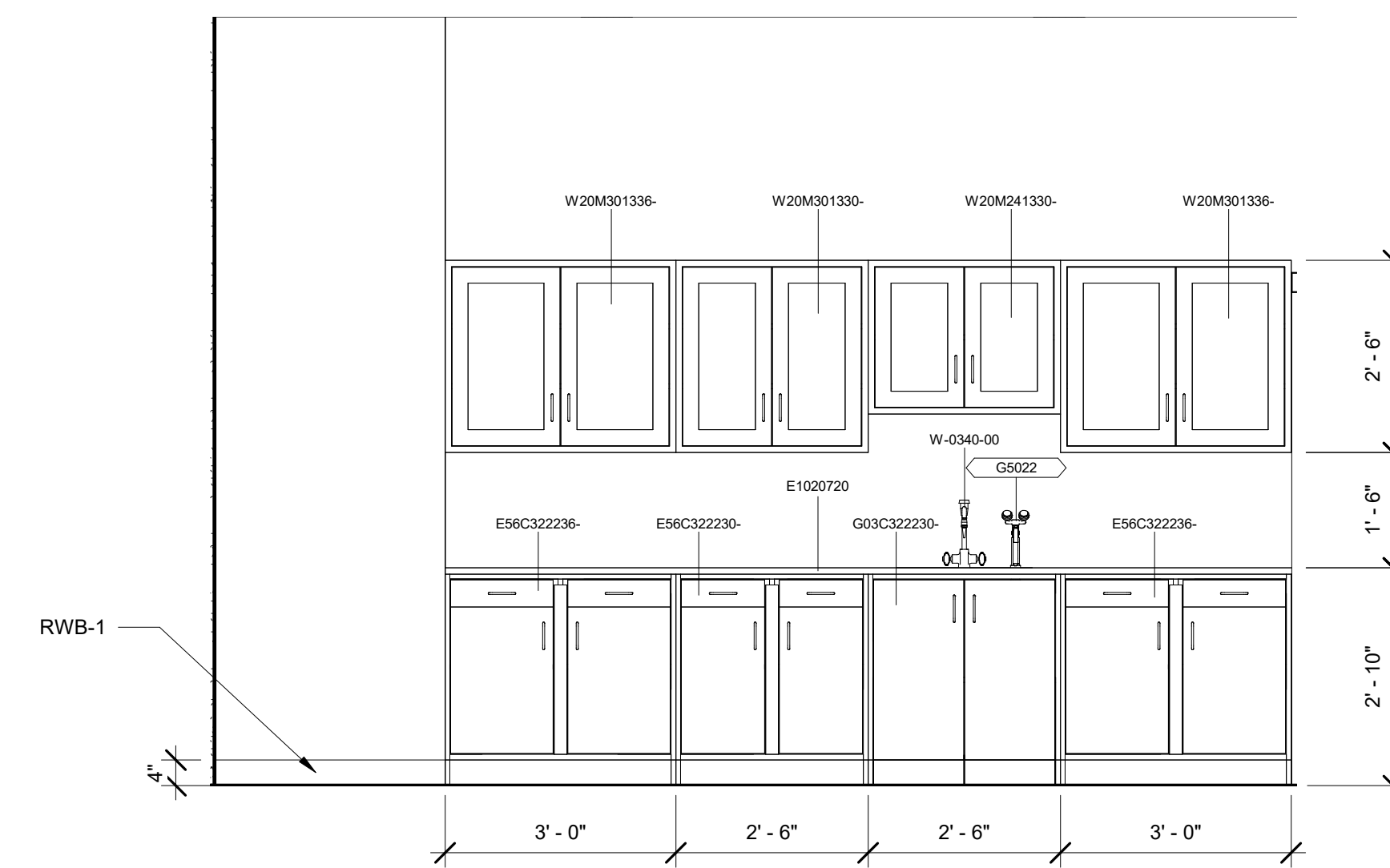
3 CABINET ELEVATION  
1/2" = 1'-0"



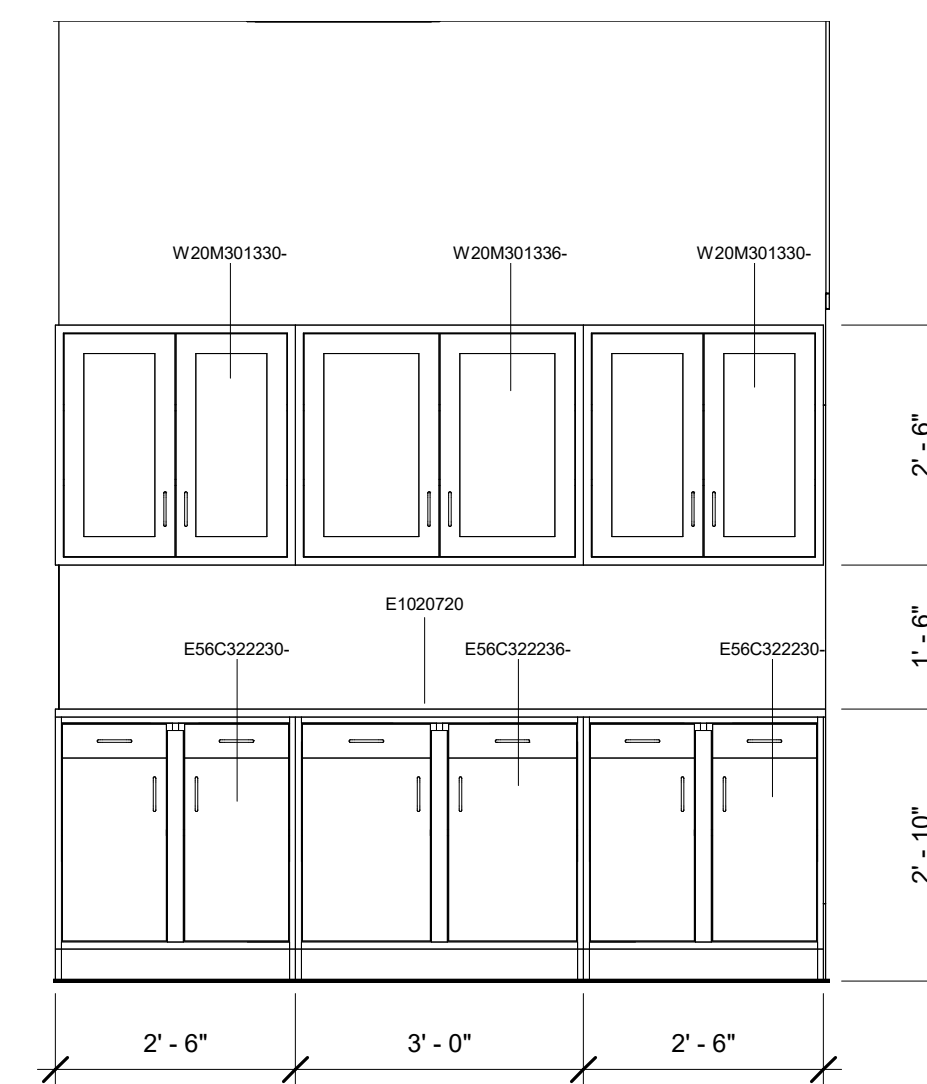
6 WORKBENCH ELEVATION  
1/2" = 1'-0"



7 WORKBENCH ELEVATION  
1/2" = 1'-0"



4 CABINET ELEVATION  
1/2" = 1'-0"



5 CABINET ELEVATION  
1/2" = 1'-0"

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Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

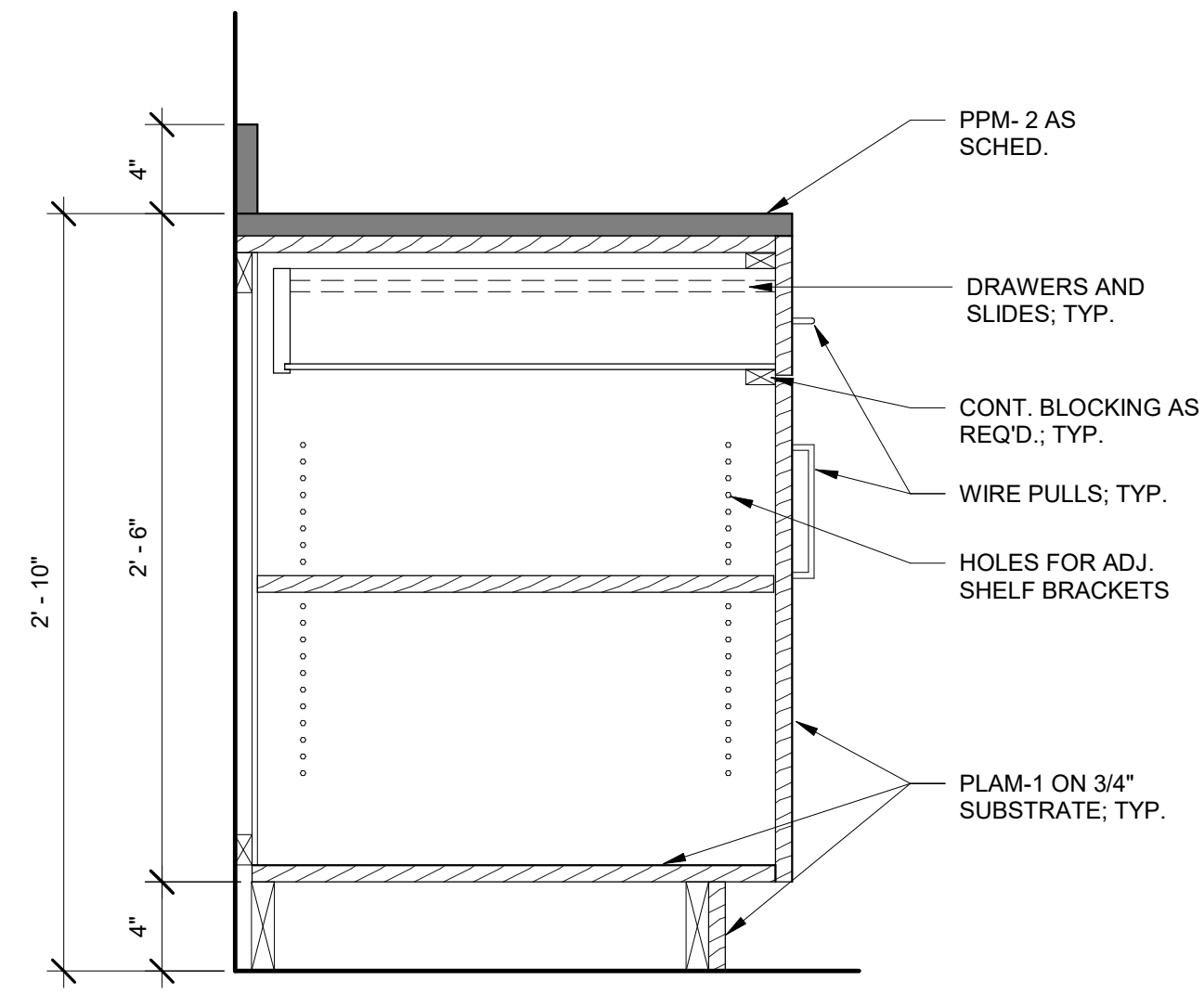
Project Number 132

Title  
**Cabinet Plans and Elevations (Alternate No. 11)**

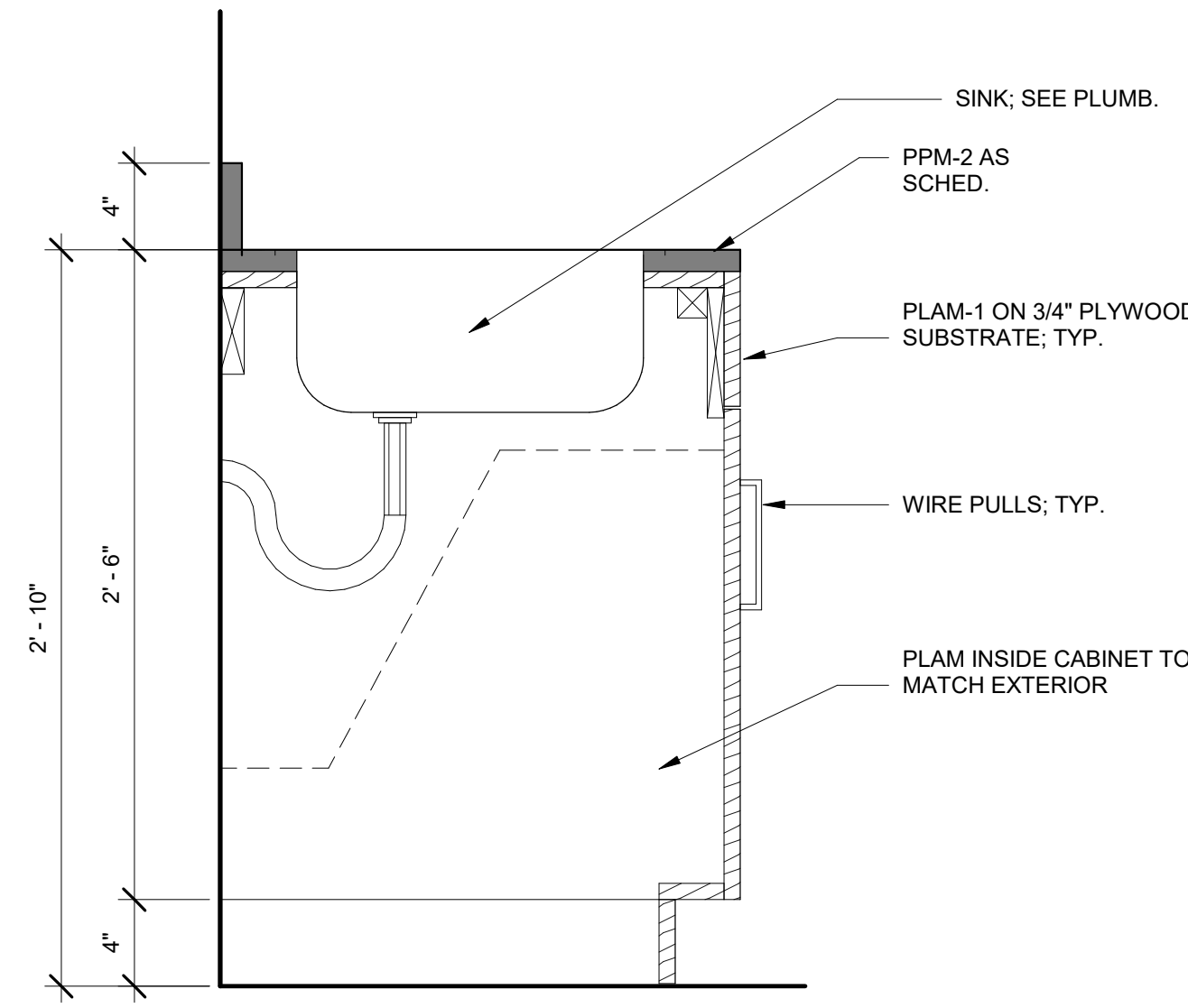
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**A901**

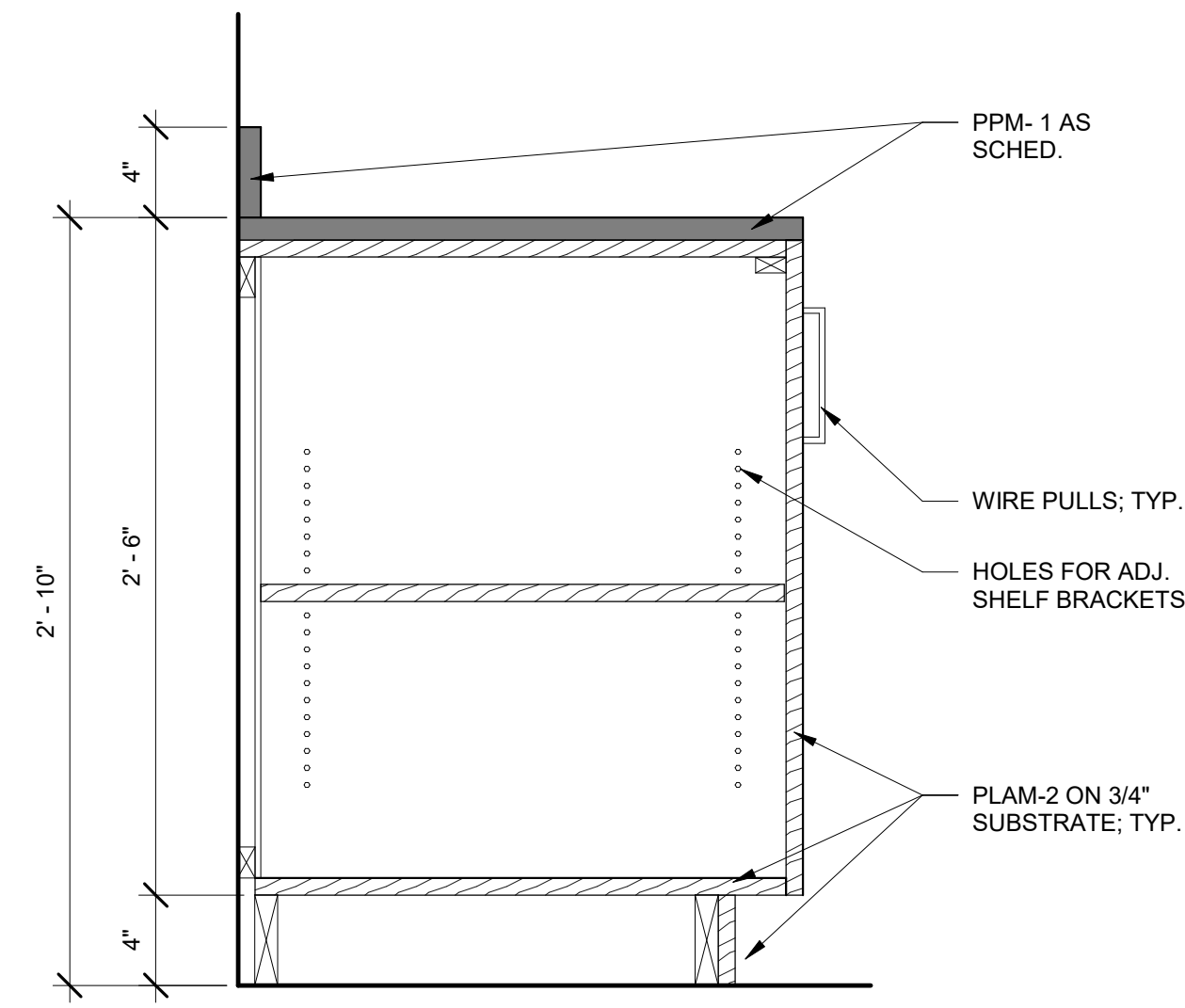
Plate



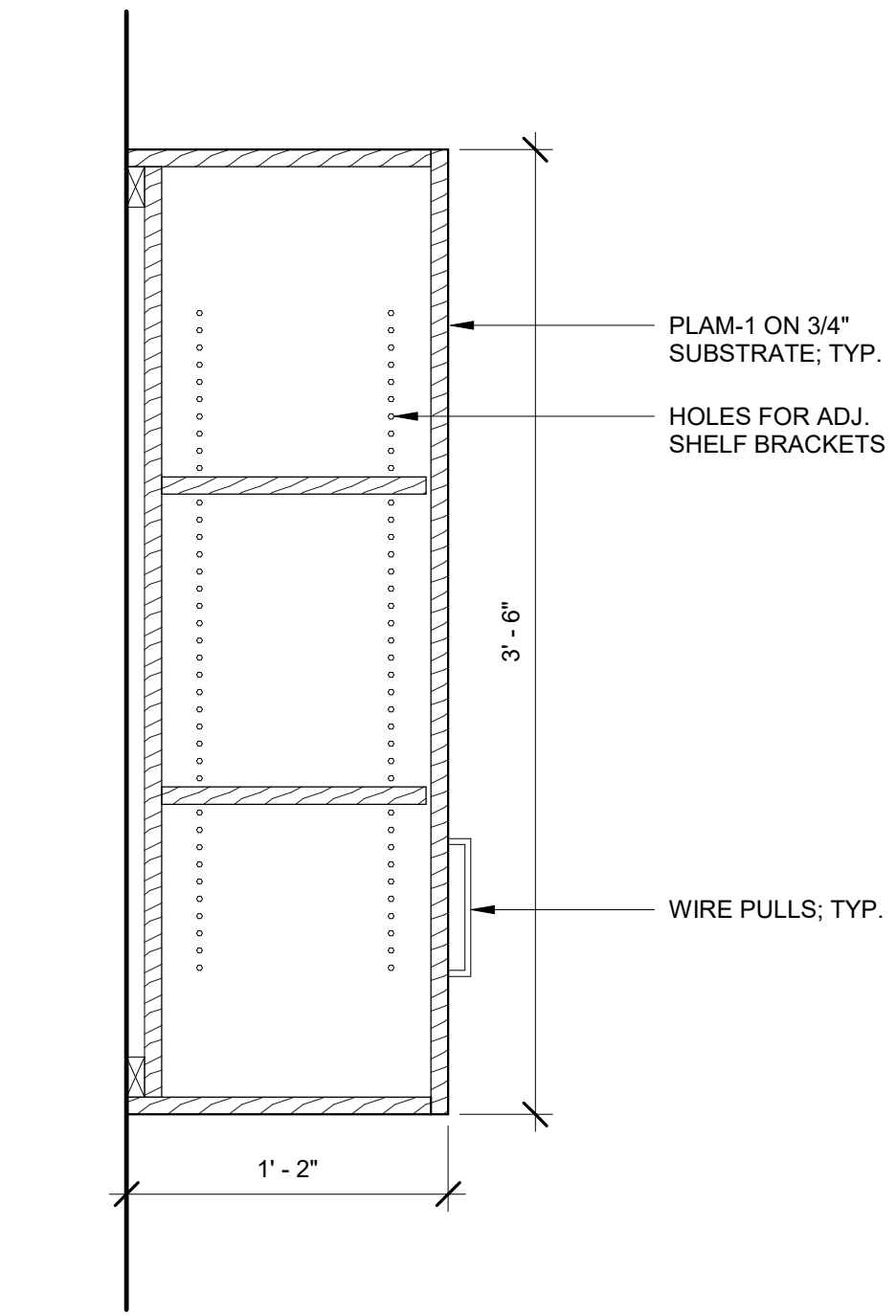
1 BASE CABINET - KITCHENETTE  
A902 1 1/2" = 1'-0"



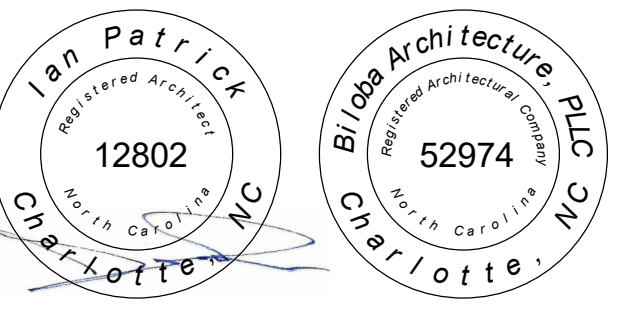
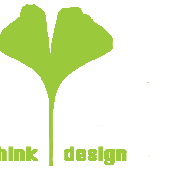
2 BASE CABINET - KITCHENETTE  
A902 1 1/2" = 1'-0"



3 BASE CABINET - MEETING ROOM  
A902 1 1/2" = 1'-0"



4 UPPER CABINET - WORKSHOP  
A902 1 1/2" = 1'-0"



01.10.2025

Drawn	IWP
Checked	ELL
Date	01/10/2025
Revisions	

### PLUMBING GENERAL NOTES

- ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH 2018 NC PLUMBING CODE CURRENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION.
- PLUMBING VENT PIPING SHOWN IS ONLY FOR DIAGRAMMATIC PURPOSES. COORDINATE VENT THROUGH ROOF LOCATION WITH HVAC AIR INTAKES.
- ALL VALVES ABOVE CEILINGS AND IN CONCEALED SPACES SHALL BE LABELED AT CEILING TILE WITH METAL CEILING TACKS INDICATING VALVE # AND TYPE OF WATER. (i.e. BLUE-COLD WATER, LETTERING GW XLV1-001).
- PROVIDE WATER HAMMER ARRESTORS IN ALL HW AND CW SUPPLY PIPING AS SHOWN ON WATER RISERS. INSTALL IN ACCORDANCE WITH FDI-WH01 STANDARDS. AIR CHAMBERS ARE NOT ACCEPTABLE SUBSTITUTIONS.
- PROVIDE THERMAL INSULATION FOR HOT WATER, HOT WATER RETURN AND COLD WATER PIPING IN ACCORDANCE WITH THE 2018 ENERGY CODE FOR BUILDING CONSTRUCTION AND PER SPECIFICATIONS.
- PROVIDE CLEANOUTS AT THE BASE OF EACH SANITARY STACK IN ACCORDANCE WITH THE 2018 NC PLUMBING CODE CURRENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION. CLEANOUTS SHALL BE SIZED TO MATCH THE PIPING BEING SERVED. FLOOR CLEANOUTS SHALL BE SPACED AT 75'-0" MAX. ALSO PROVIDE CLEANOUTS IN HORIZONTAL CHANGE OF DIRECTIONS 45°.
- THE MANUFACTURERS OF ALL EQUIPMENT SHOWN ARE THE BASIS OF DESIGN. SEE SPECIFICATIONS FOR OTHER ACCEPTABLE MANUFACTURERS.
- PROTECT ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES USING UL APPROVED THROUGH PENETRATION ASSEMBLIES. REFER TO LIFE SAFETY PLANS FOR RATED ASSEMBLY LOCATIONS. REFER TO THE ARCHITECTURAL SHEET FOR WALL DETAILS AND UL ASSEMBLY NUMBERS.
- COORDINATE UNDERGROUND PIPING INVERT ELEVATIONS WITH STRUCTURAL FOOTING ELEVATIONS AND CIVIL INVERT CONNECTIONS PRIOR TO ANY UNDERGROUND PIPING INSTALLATIONS. IF FOOTINGS ARE IN CONFLICT AND WHERE A PIPING ROLL DOWN IS NOT POSSIBLE, COORDINATE WITH GENERAL CONTRACTOR FOR DROPS IN FOOTINGS AS REQUIRED.
- VALVES AND FITTINGS SHALL BE THE SAME SIZE AS THE PIPING WHERE THEY ARE LOCATED UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL ROUGH-IN ALL WASTES AND WATER SUPPLIES FOR FIXTURES AND PERFORM FINAL CONNECTIONS AS NEEDED.
- ALL FLOOR DRAINS SHALL BE PROVIDED WITH TRAP PRIMER CONNECTIONS. UNLESS NOTED OTHERWISE.
- ALL FLOOR/ROOF DRAINS SHALL BE PROTECTED FOR THE DURATION OF THE PROJECT. IF ANY DRAINS ARE FOUND TO CONTAIN DEBRIS THE CONTRACTOR SHALL CLEAN AND SCOPE THE DRAIN SYSTEM AT NO ADDITIONAL CHARGE TO THE OWNER.
- THE CONTRACTOR SHALL ROUGH-IN ALL WASTES AND WATER SUPPLIES FOR FIXTURES AND PERFORM FINAL CONNECTIONS AS NEEDED.
- ALL FLUSH VALVE WATER CLOSETS SHALL BE ROUGHED IN SO THAT THE FLUSH VALVE HANDLE IS TO THE WIDE SIDE OF THE ROOM/STALL.
- THIS FACILITY SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES.
- WHERE WATER PRESSURE WITHIN THE BUILDING EXCEEDS 80 PSI STATIC, THE CONTRACTOR SHALL INSTALL AN APPROVED WATER PRESSURE REDUCING VALVE CONFORMING TO ASSE 1003 WITH STRAINER. CONTRACTOR SHALL SET PRESSURE AT 60 PSI.
- REGARDLESS OF HOW PIPING IS PRESENTED ON THE DRAWINGS, PROVIDE ECCENTRIC (FLAT ON TOP) REDUCERS IN HOT AND COLD DOMESTIC WATER PIPING.
- ALL DEVICES, EQUIPMENT, VALVES, ETC. THAT REQUIRE ACCESS SHALL NOT BE LOCATED ABOVE WOOD OR GYPSUM CEILINGS. COORDINATE WITH THE ARCHITECTURAL REFLECTED CEILING PLAN FOR ACCESSIBLE CEILING LOCATIONS OR ACCESS PANELS. PROVIDE ACCESS DOORS IN INACCESSIBLE CEILINGS TO ACCESS MEP DEVICES ABOVE CEILINGS NOT OTHERWISE ACCESSIBLE.

### PLUMBING SYMBOLS

EQUIPMENT DESIGNATIONS	
SYMBOL	DESCRIPTION
FD-X	FLOOR DRAIN DESIGNATION
HW/FP-X	HOT WATER RECIRCULATING PUMP DESIGNATION
P-X	PLUMBING FIXTURE DESIGNATION
SI-X	SOLIDS INTERCEPTOR DESIGNATION
TD-X	TRENCH DRAIN DESIGNATION
TWH-X	TANKLESS WATER HEATER
WH-X	WATER HEATER DESIGNATION

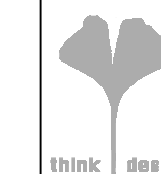
RISER DIAGRAM COMPONENTS AND SPECIALTIES	
SYMBOL	DESCRIPTION
	BACKFLOW PREVENTER
	SHOCK ARRESTER
	VENT THROUGH ROOF
	TRAP ARM
	URINAL / WATER CLOSET (WALL MOUNTED)
	URINAL / WATER CLOSET (FLOOR MOUNTED)
	FLOOR / ROOF DRAIN
	CLEAN OUT (WALL / PIPE)
	CLEAN OUT (FLOOR)

COMPONENTS AND SPECIALTIES	
SYMBOL	DESCRIPTION
	BACKFLOW PREVENTER (DUAL CHECK TYPE)
	BACKFLOW PREVENTER (REDUCED PRESSURE TYPE)
	CLEAN OUT (WALL / PIPE)
	CLEAN OUT (FLOOR)
	COLD WATER INTERIOR HOSE BIB
	EXTERIOR WALL HYDRANT (FREEZE PROOF)
	HOSE END DRAIN VALVE
	FLOOR DRAIN
	FLOOR DRAIN WITH TRAP PRIMING LINE
	FLOOR SINK WITH TRAP PRIMING LINE
	SHOCK ARRESTER
	TEMPERING VALVE

PIPING SYMBOLS	
SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER (POTABLE)
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RECIRCULATION
	SANITARY
	VENT

### PLUMBING ABBREVIATIONS

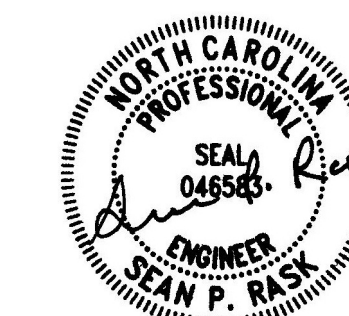
A	COMPRESSED AIR
BCWR	BEARING COOLING WATER RETURN
BCWS	BEARING COOLING WATER SUPPLY
BO	BLOW OFF
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CA	CONTROL AIR
CBD	CONTINUOUS BLOWDOWN
CC	CAMPUS CONDENSATE
CC	CHEMICAL FEED
CFM	CUBIC FEET PER MINUTE
CHEL	CHELANT
CHR	CHILLED WATER RETURN
CHS	CHILLED WATER SUPPLY
CO	CLEANOUT
CW	COLD WATER, DOMESTIC CITY WATER
DHR	DISTRIBUTION HEATING WATER RETURN
DHS	DISTRIBUTION HEATING WATER SUPPLY
DA	DIAMETER
DW	DISTILLED WATER
EA	EXHAUST AIR
ED	EQUIPMENT DRAIN
EJ	EXPANSION JOINT
#2FOR	NUMBER 2 FUEL OIL RETURN
#2FOS	NUMBER 2 FUEL OIL SUPPLY
#6FOR	NUMBER 6 FUEL OIL RETURN
#6FOS	NUMBER 6 FUEL OIL SUPPLY
F	FIRE LINE
F&T	FLOAT AND THERMOSTATIC
FD	FORCED DRAFT
FDV	FIRE DEPARTMENT VALVE
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FOF	FUEL OIL FILL
FOO	FUEL OIL OVERFLOW
FOSUCT	FUEL OIL SUCTION
FOT	FUEL OIL TRANSFER
FOVENT	FUEL OIL VENT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FW	FEED WATER
FWR	FEED WATER RECIRCULATION
FWS	FEED WATER SUPPLY
'F	DEGREES FAHRENHEIT
G	NATURAL GAS
GAL	GALLON, GALLONS
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HPR	HIGH PRESSURE STEAM RETURN
HPS	HIGH PRESSURE STEAM SUPPLY
HR	HEATING WATER RETURN
HRR	HEAT RECOVERY RETURN
HRS	HEAT RECOVERY SUPPLY
HS	HEATING WATER SUPPLY
HTHW	HIGH TEMPERATURE HEATING WATER SUPPLY
HTWR	HIGH TEMPERATURE HEATING WATER RETURN
HW	HOT WATER
HWR	HOT WATER RECIRCULATION
IA	INSTRUMENT AIR
KW	KILOWATTS
LP	LIQUID PROPANE
LPG	LIQUID PETROLEUM GAS
LPR	LOW PRESSURE STEAM RETURN
LPS	LOW PRESSURE STEAM SUPPLY
MAV	MANUAL AIR VENT
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCC	MOTOR CONTROL CENTER
MOD	MOTOR OPERATED DAMPER
MPR	MEDIUM PRESSURE STEAM RETURN
MPS	MEDIUM PRESSURE STEAM SUPPLY
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
No	NUMBER
NPSH	NET POSITIVE SUCTION HEAD
OD	OVERFLOW DRAIN
PA	PLANT AIR
PC	PUMPED CONDENSATE
PCR	PUMP CONDENSATE RECIRCULATION
PPH	POUNDS PER HOUR
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR, RELIEF AIR
RDR	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RV	RELIEF VENT
RX	REMOVE EXISTING
SA	SUPPLY AIR
SAN	SANITARY
SS	STAINLESS STEEL
SSUL	SODIUM SULFITE
STDR	STORM DRAIN
SW	SOFT WATER
TW	TREATED WATER
TYP	TYPICAL
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THROUGH ROOF



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Checked	SPR
Date	1/10/2025
Revisions	

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### NCSU Apiculture Facility

Raleigh, NC

SCO ID No.: 22-24494  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132

### PLUMBING NOTES, SYMBOLS AND ABBREVIATIONS

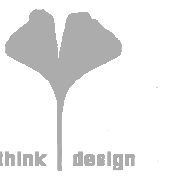
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# P001

Plate

PLUMBING LOAD SUMMARY			
SERVICE	FIXTURE UNITS	FLOW	REQUIRED PIPE SIZE
SANITARY	39	N/A	4" AT 1/8" PER FOOT SLOPE
DOMESTIC COLD WATER	57.5	53 GPM	2"
DOMESTIC HOT WATER	14.25	17.13 GPM	1"
TOTAL DOMESTIC WATER	54.5	61.80 GPM	N/A

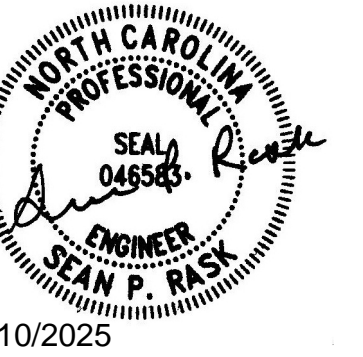
PLUMBING LOAD SUMMARY (ADD ALT NO.5)			
SERVICE	FIXTURE UNITS	FLOW	REQUIRED PIPE SIZE
SANITARY	48	N/A	4" AT 1/8" PER FOOT SLOPE
DOMESTIC COLD WATER	65	56 GPM	2"
DOMESTIC HOT WATER	15.75	17.88 GPM	1"
TOTAL DOMESTIC WATER	55.04	55.04 GPM	N/A



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PLUMBING -  
UNDERSLAB WASTE  
AND VENT

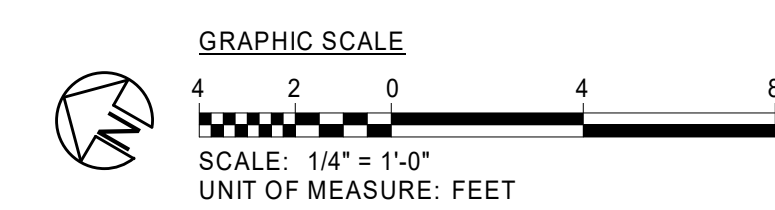
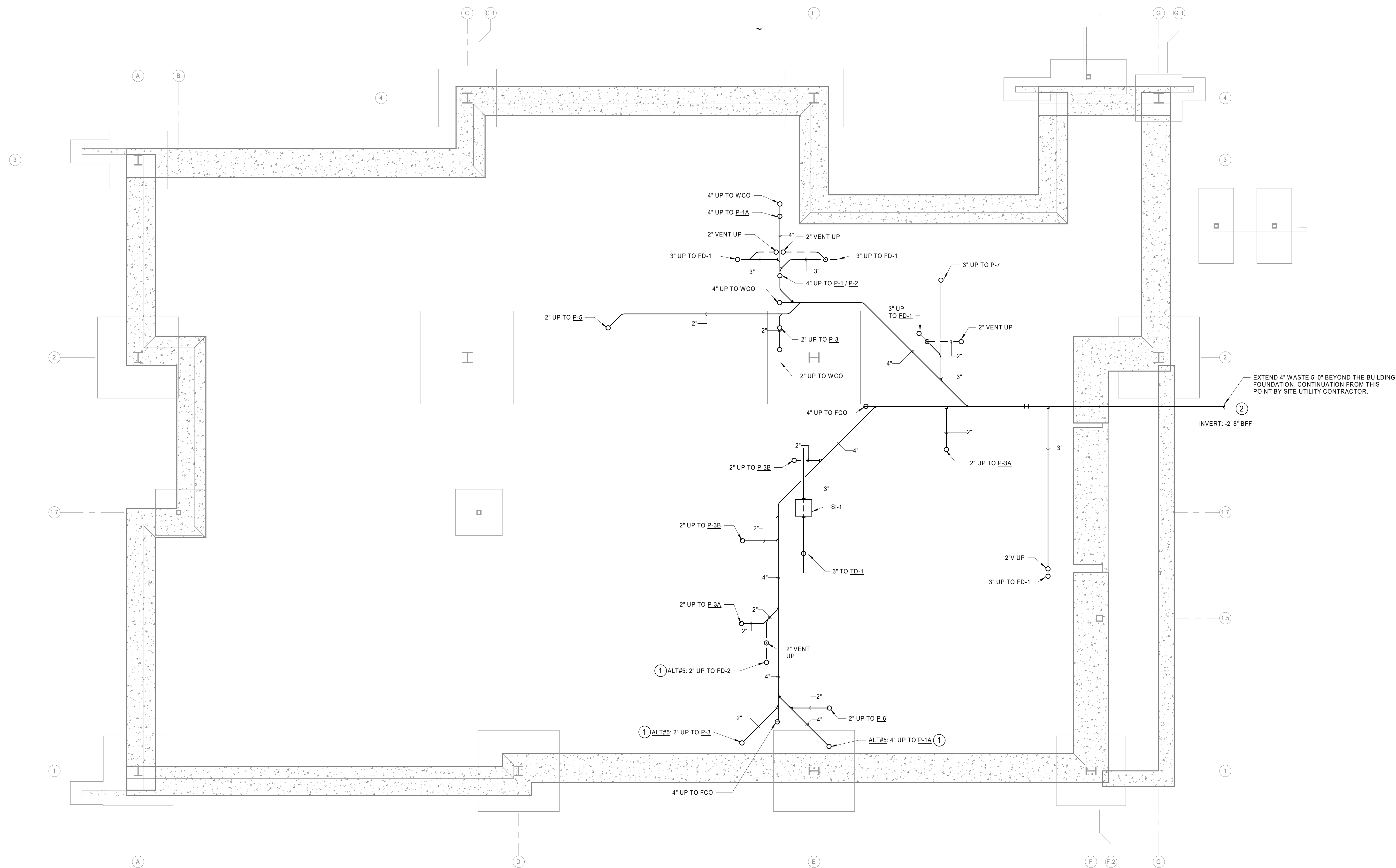
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P100

Plate

DRAWING NOTES

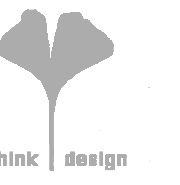
- ① PIPING IS ASSOCIATED WITH ADD ALTERNATE NO.5. IF ADD ALTERNATE NO.5 IS NOT ACCEPTED, INSTALL PIPING AS SHOWN, ROUGH IN FOR THE ASSOCIATED FIXTURE SHOWN ON P101 AND CAP.
- ② EXTEND 4" WASTE TO 5 FEET OUTSIDE OF BUILDING, PROVIDE YARD CLEANOUT, AND CAP FOR CONTINUATION BY SITE CIVIL CONTRACTOR.



**DRAWING NOTES**

- ① OFFSET WASTE PIPING IN THE WALL CAVITY TO AVOID THE STRUCTURAL FOOTER BELOW.
- ② PROVIDE FLOOR DRAIN WITH TRAP PRIMER CONNECTION. CONNECT TRAP PRIMER TO THE NEAREST FLUSH VALVE.
- ③ PROVIDE FLOOR ACCESS DOOR FOR S<sub>L-1</sub>.
- ④ 2" VENT DOWN TO FLOOR DRAIN.
- ⑤ ALL PLUMBING FIXTURES IN STORAGE 107C ARE ASSOCIATED WITH ADD ALTERNATE NO 5 (TOILET 107C). FOR THE BASE BID, ALL WASTE AND VENT PIPING SHALL BE INSTALLED AS SHOWN. IF ADD ALTERNATE NO.5 IS NOT ACCEPTED, ROUGH IN PIPING FOR FIXTURES AND CAP.
- ⑥ PROVIDE WALK-IN FREEZER WITH BUILT UP FLOOR AND MANUFACTURER'S INTEGRATED FLOOR DRAIN. SPILL TO FS-1 WITH AIR GAP. PROVIDE TRAP OUTSIDE OF FREEZER, BEFORE SPILLING TO FLOOR SINK.

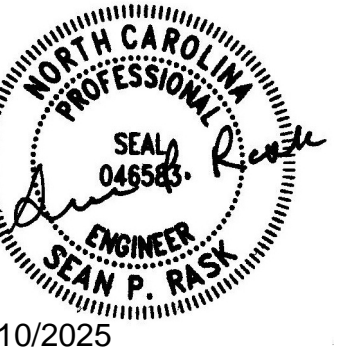
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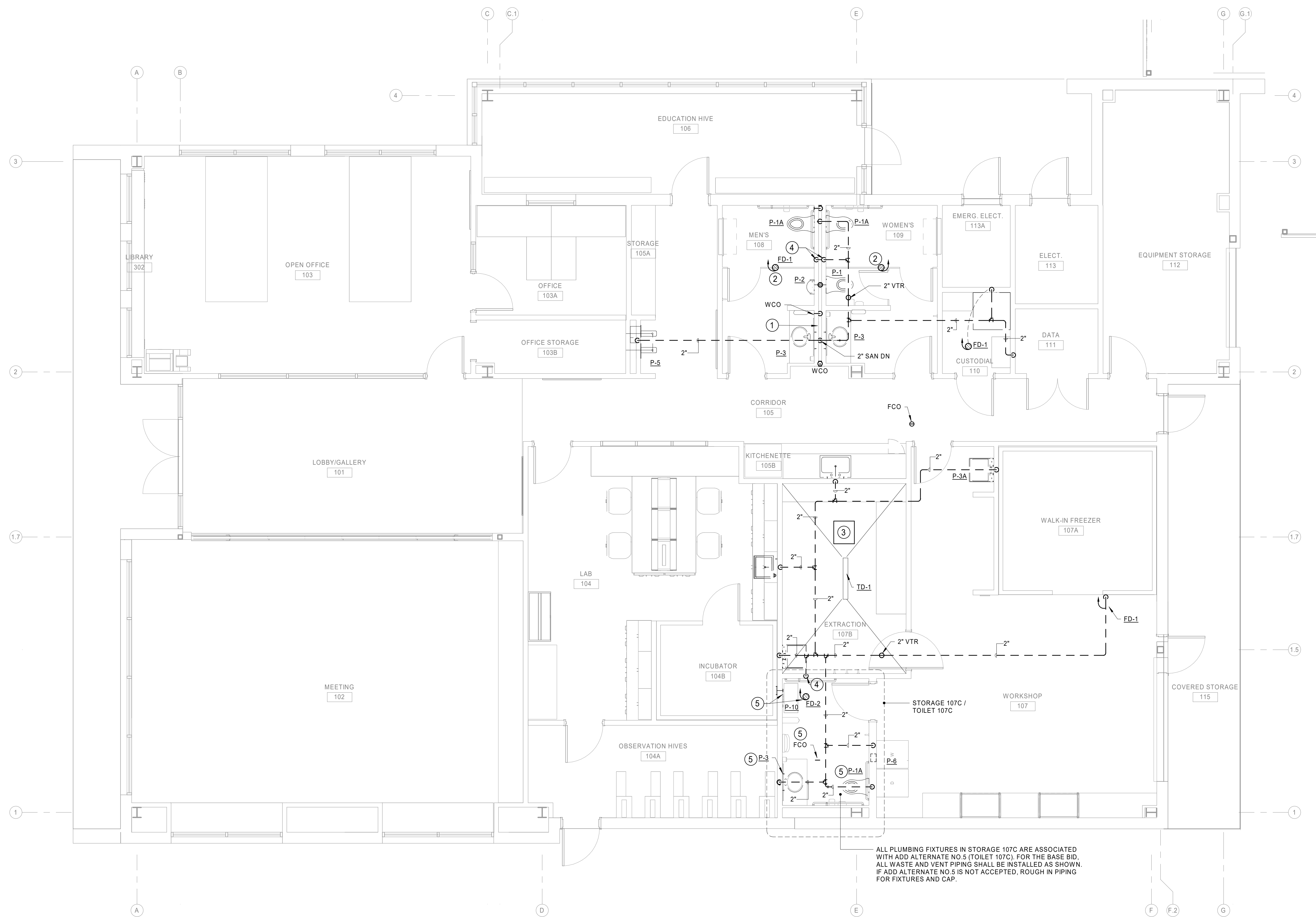
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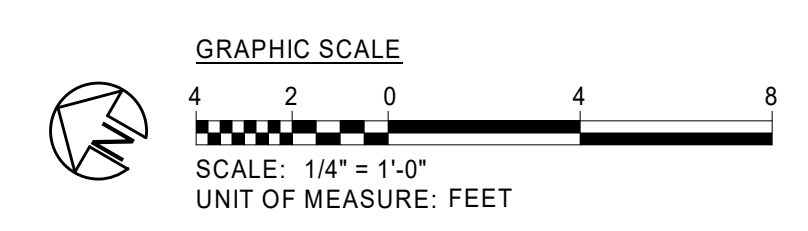
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ALL PLUMBING FIXTURES IN STORAGE 107C ARE ASSOCIATED WITH ADD ALTERNATE NO 5 (TOILET 107C). FOR THE BASE BID, ALL WASTE AND VENT PIPING SHALL BE INSTALLED AS SHOWN. IF ADD ALTERNATE NO.5 IS NOT ACCEPTED, ROUGH IN PIPING FOR FIXTURES AND CAP.

**1 LEVEL 1 OVERALL WASTE AND VENT PLAN**  
SCALE: 1/4" = 1'-0"



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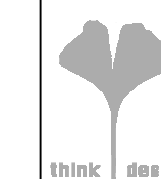
**PLUMBING - WASTE AND VENT**

Sheet

**P101**

Plate





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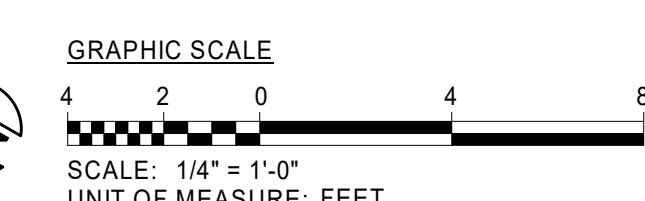
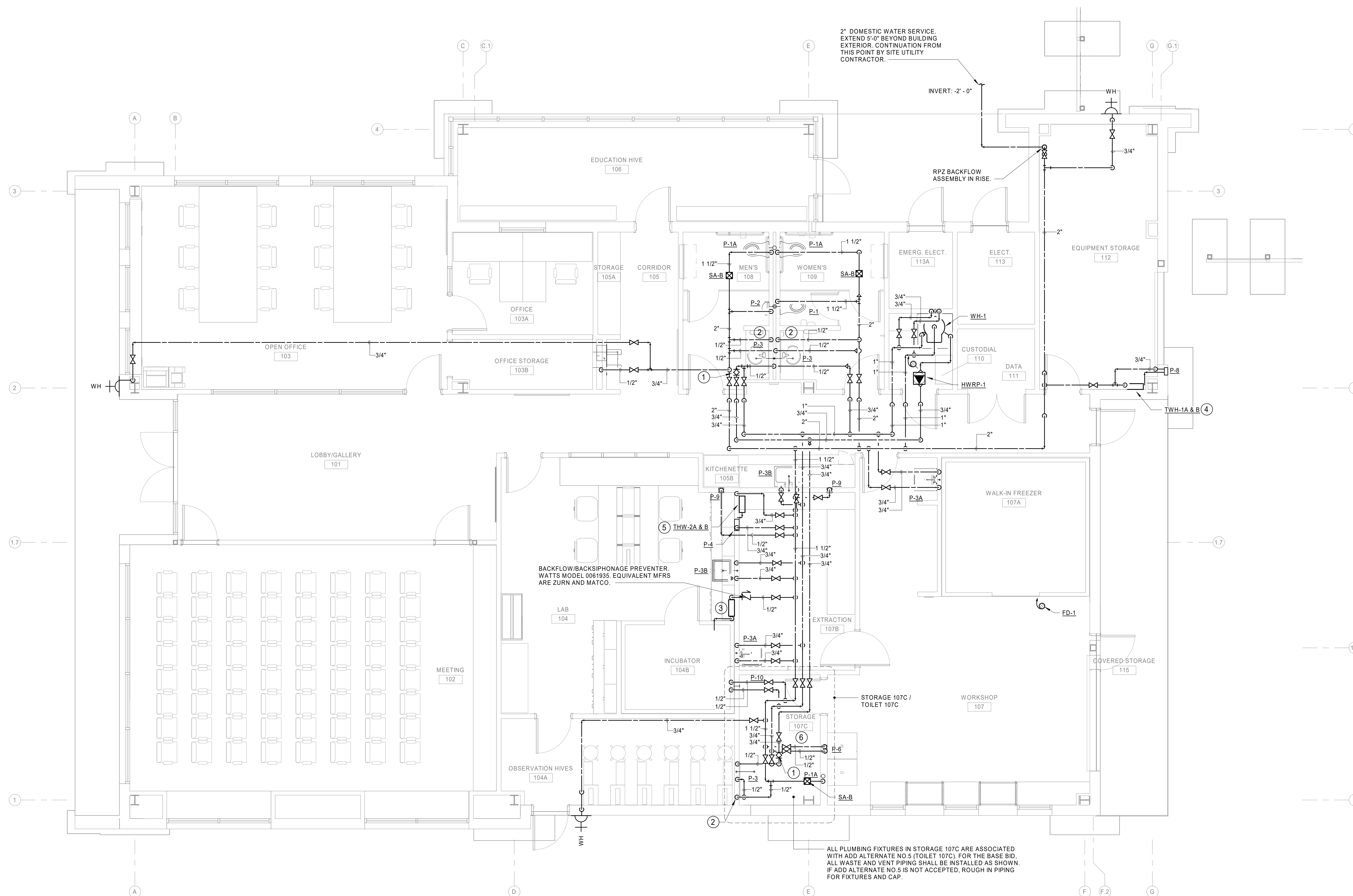
1/10/2025

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Revisions	

### DRAWING NOTES

- 1 PROVIDE HOT WATER RECIRCULATION BALANCING VALVE. SET TO 0.5 GPM.
- 2 PROVIDE 1/2" COLD WATER CONNECTION FOR INTERIOR HOSE BIB IN RESTROOM. INCLUDE LOOSE KEY AND INSTALL 1'-0" AFF.
- 3 PROVIDE WATTS MODEL GTS340C RO/DI FILTRATION SYSTEM OR APPROVED EQUIVALENT. PROVIDE 1/2" COLD WATER CONNECTION FOR RO/DI SYSTEM. ROUTE 1/2" RO/DI PIPING TO INCUBATOR AND TERMINATE WITH MALE/FEMALE PUSH CONNECT. COORDINATE WITH INCUBATOR MANUFACTURER.
- 4 INSTALL POINT OF USE, TANKLESS WATER HEATER (TWH-1) 2'-0" AFF. ROUTE 3/4" CW TO SUPPLY TWH-1. ROUTE 3/4" HW TO SUPPLY EXTERIOR WALL HYDRANT (P-8).
- 5 INSTALL POINT OF USE, TANKLESS WATER HEATER (TWH-2) BELOW COUNTERTOP. ROUTE 3/4" CW TO SUPPLY TWH-2. ROUTE 3/4" HW TO SUPPLY INTERIOR HOSE BIB (P-4).
- 6 ALL PLUMBING FIXTURES IN STORAGE 107C ARE ASSOCIATED WITH ADD ALTERNATE NO. 5 (TOILET 107C). FOR THE BASE BID, ALL WASTE AND VENT PIPING SHALL BE INSTALLED AS SHOWN. IF ADD ALTERNATE NO. 5 IS NOT ACCEPTED, ROUGH IN PIPING FOR FIXTURES AND CAP.



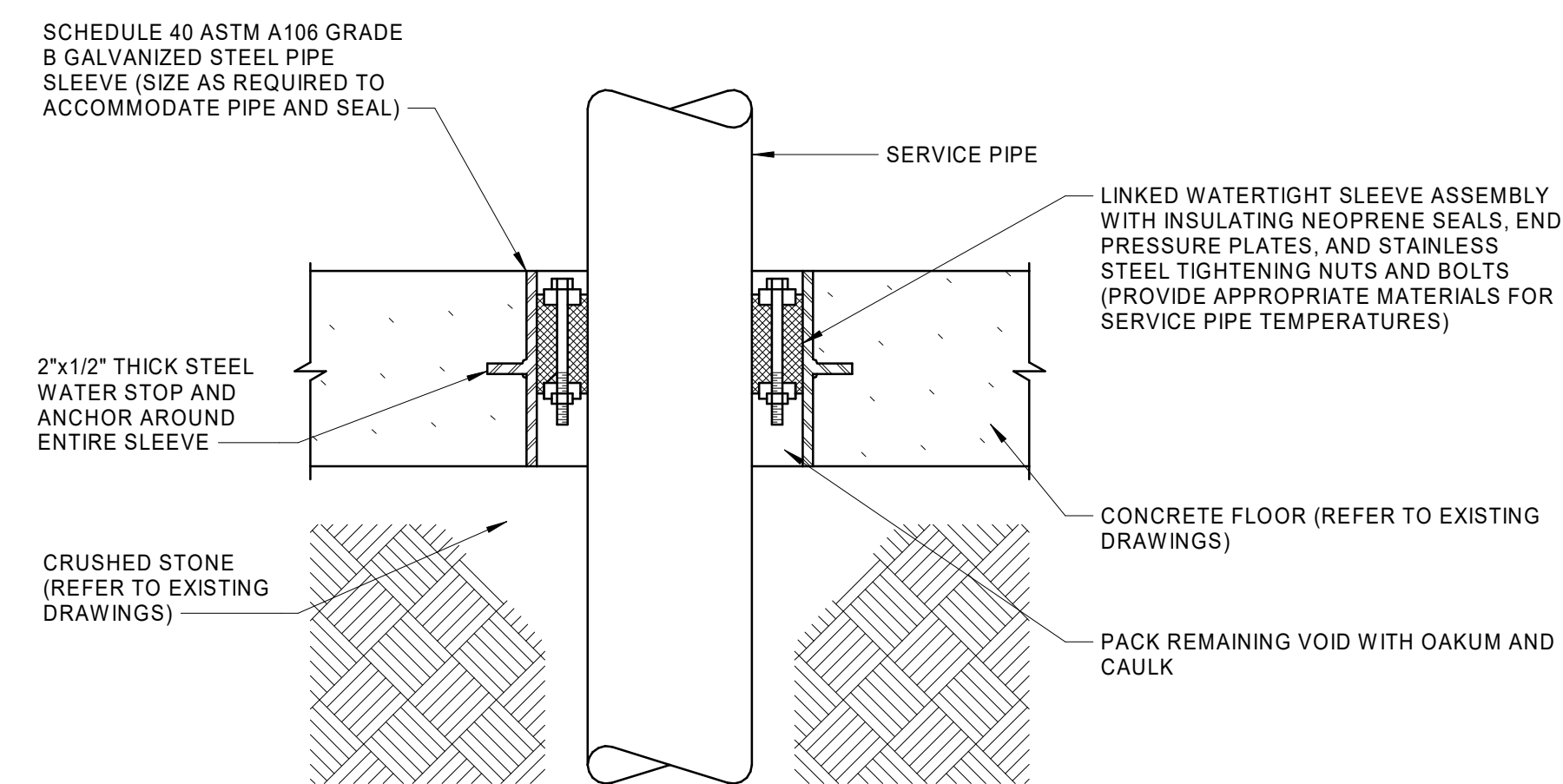
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Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title  
**PLUMBING - DOMESTIC WATER**

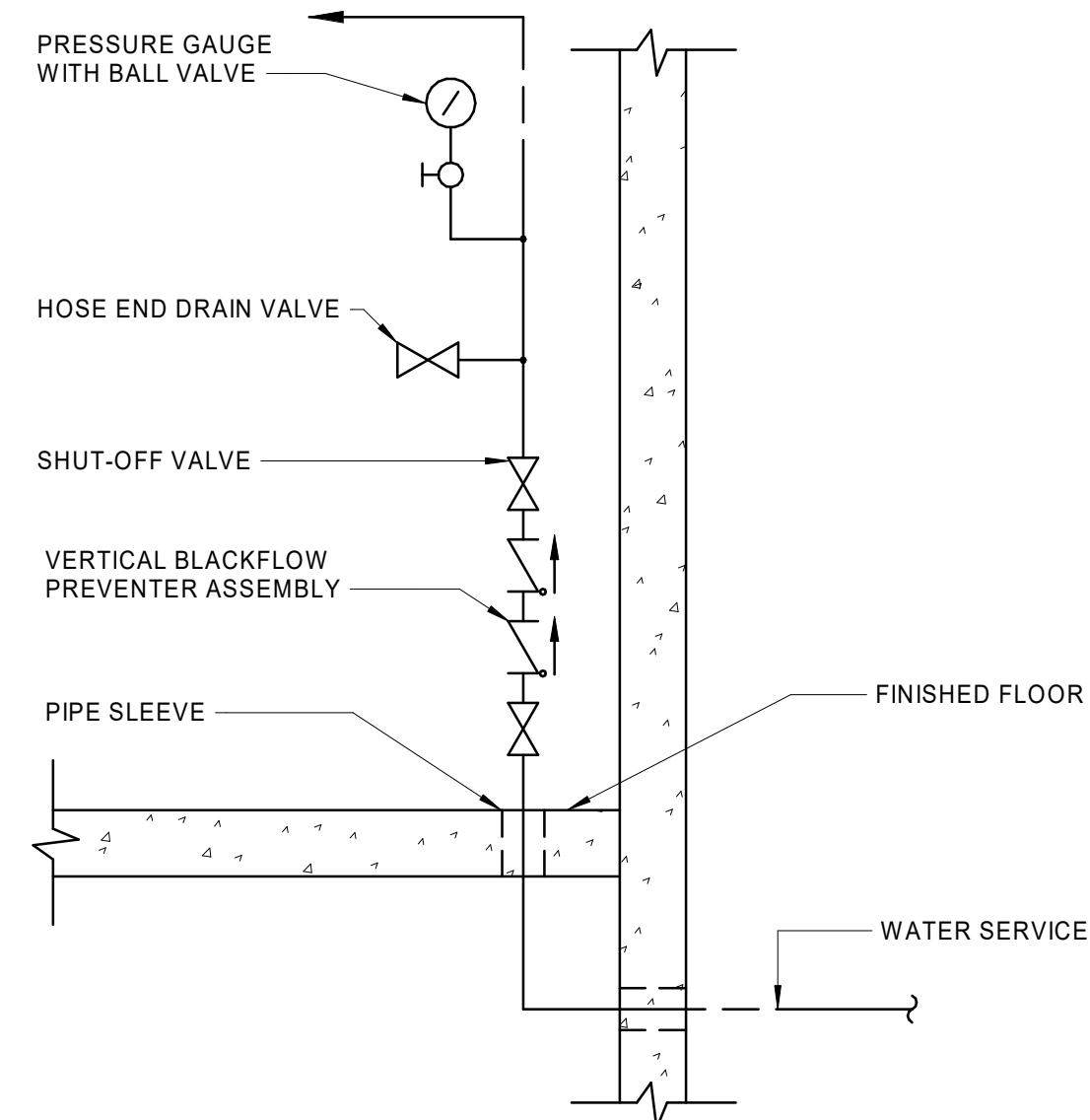
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1/10/2025 9:11 AM



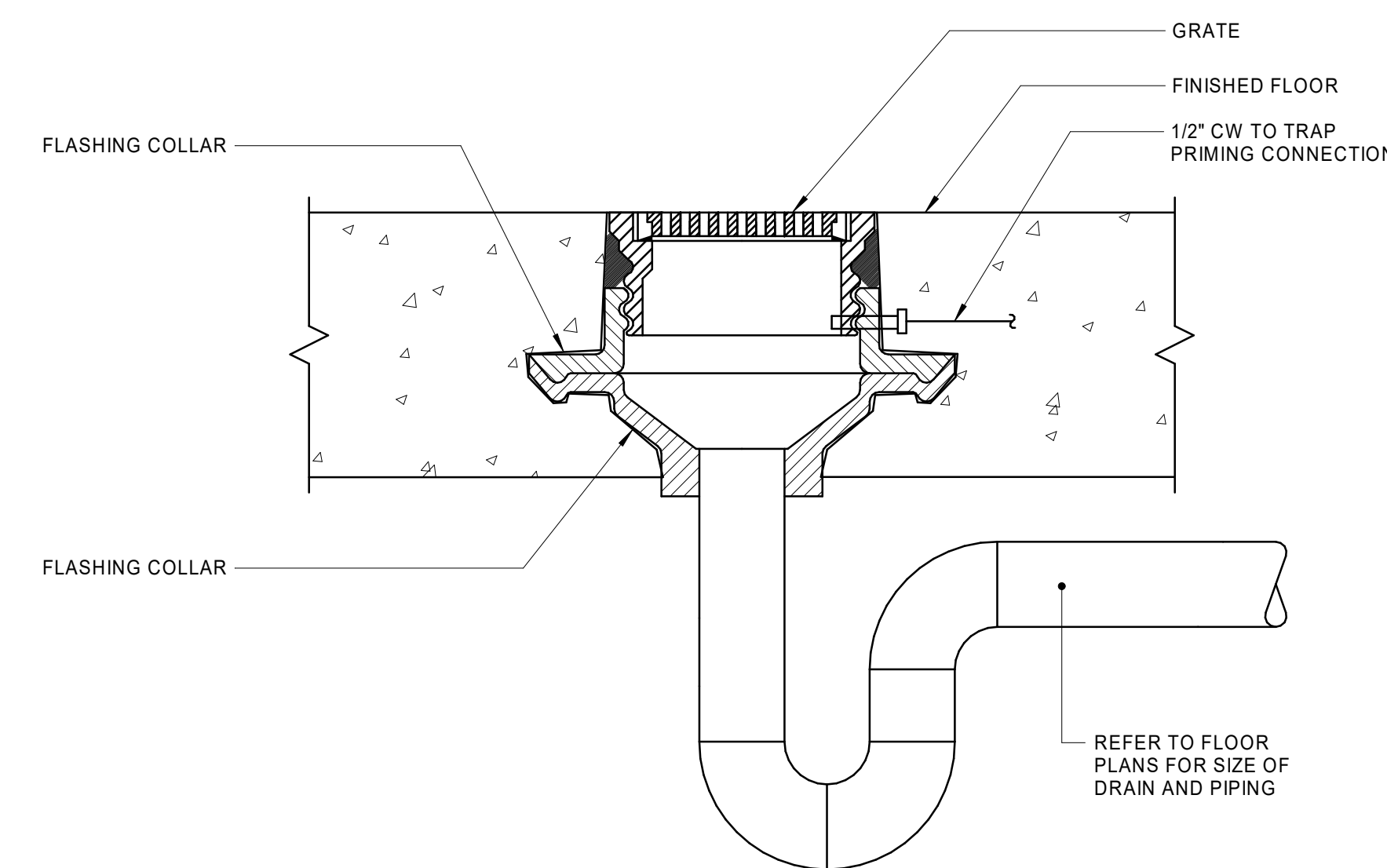
DETAIL - PIPE THROUGH GRADE FLOOR

SCALE: NONE 3



DETAIL - INCOMING WATER SERVICE

SCALE: NONE 2



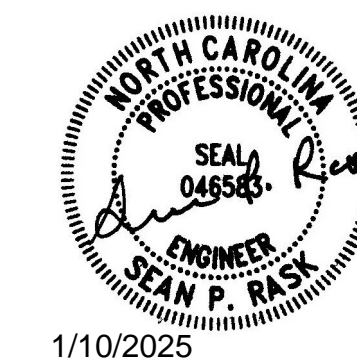
DETAIL - FLOOR DRAIN WITH TRAP PRIMER

SCALE: NONE 1

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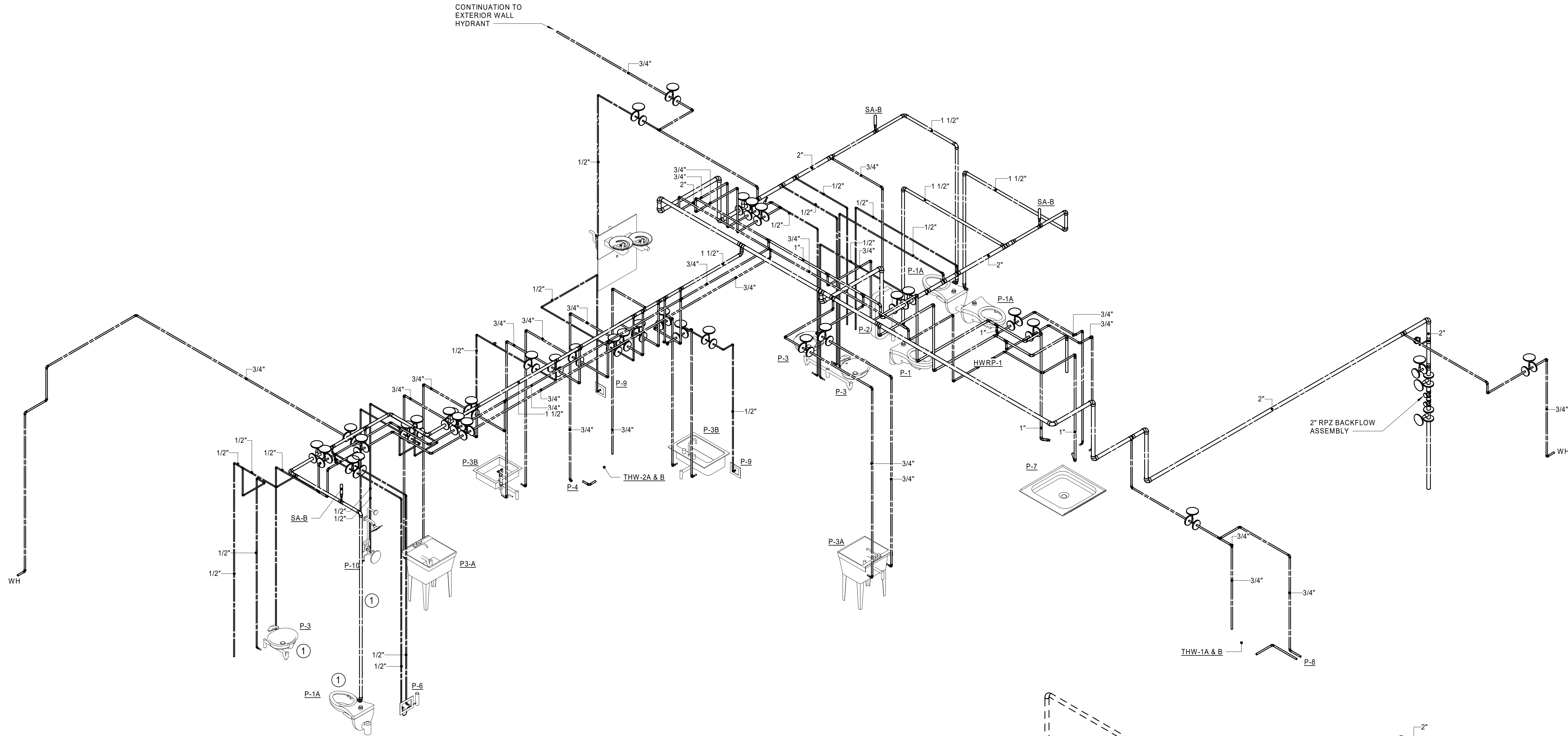
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Revisions	

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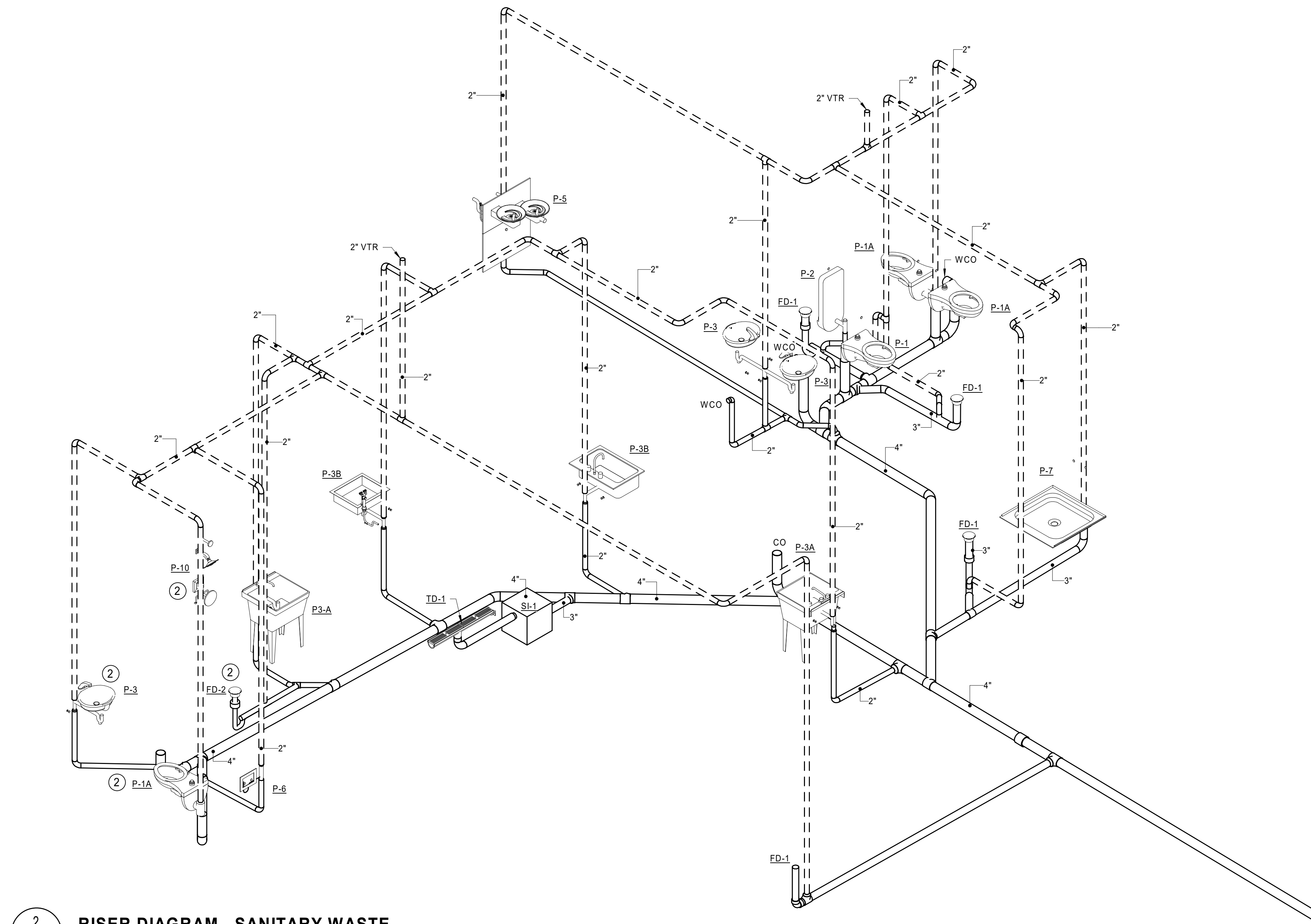
**NCSU Apiculture Facility**  
 Raleigh, NC  
 SCO ID No.: 22-24494  
 Code: 42124 Item: 315  
 NCSU: 202220007

Project Number 132  
 Title  
**PLUMBING DETAILS**

Sheet  
**P501**  
 Plate



**1 RISER DIAGRAM - DOMESTIC WATER**  
SCALE: N.T.S.

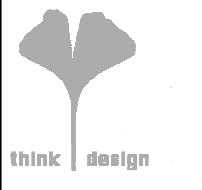


**2 RISER DIAGRAM - SANITARY WASTE**  
SCALE: N.T.S.

**DRAWING NOTES**

- ① PLUMBING FIXTURE IS ASSOCIATED WITH ADD ALTERNATE NO.5. IF ADD ALTERNATE NO.5 IS NOT ACCEPTED, ROUGH IN DOMESTIC WATER PIPING FOR THE FIXTURE AS SHOWN AND CAP.
- ② PLUMBING FIXTURE IS ASSOCIATED WITH ADD ALTERNATE NO.5. IF ADD ALTERNATE NO.5 IS NOT ACCEPTED, ROUGH IN WASTE AND VENT PIPING FOR THE FIXTURE AS SHOWN AND CAP.

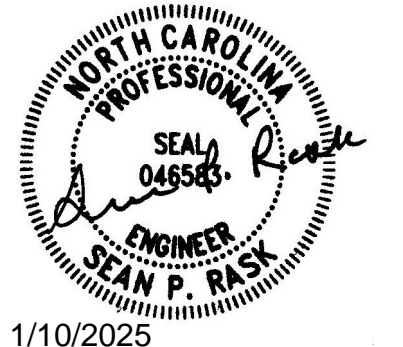
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Project Number 132

**PLUMBING RISER DIAGRAMS**

Sheet

**P601**

Plate

SHOCK ARRESTOR SCHEDULE	
DESIGNATION	FIXTURE UNITS SERVED
SA-A	1-11
SA-B	12-32
SA-C	33-68

DRAIN SCHEDULE		
DESIGNATION	DRAIN SIZE / TYPE	BASIS OF DESIGN
FD-1	3" FLOOR DRAIN WITH 5" ROUND GRATE	ZURN -Z415B
FD-2	2" SHOWER DRAIN WITH 5"x5" SQUARE GRATE	ZURN -Z415S
TD-1	4" X 40" TRENCH DRAIN WITH 3" OUTLET	ZURN - Z884

- NOTES:
- FD-2 IS ASSOCIATED WITH ADD ALTERNATE NO 5 AND SHOULD ONLY BE INSTALLED IF THE ALTERNATE IS ACCEPTED.
  - PROVIDE FS-1 WITH A HALF GRATE AND WHITE A.R.C. DOME STRAINER
  - SEE 221319.13 SPEC FOR ALTERNATES. APPROVED MANUFACTURERS INCLUDE JAY R. SMITH AND JOSAM.

PLUMBING FIXTURE SCHEDULE											
DESIGNATION	FIXTURE	FLOW RATE	ROUGH-IN CONNECTION SIZE				FIXTURE UNITS			REMARKS	NOTES
			CW	HW	SAN	VENT	CW	HW	SAN		
P-1	WATER CLOSET	1.6 GPF	1 1/2"	-	4"	2"	10	-	4	WALL MOUNTED WITH MANUAL FLUSH VALVE	1
P-1A	WATER CLOSET	1.6 GPF	1 1/2"	-	4"	2"	10	-	4	WALL MOUNTED WITH MANUAL FLUSH VALVE, ADA	2
P-2	URINAL	0.125 GPF	3/4"	-	2"	1 1/2"	5	-	2	WALL MOUNTED WITH MANUAL FLUSH VALVE, ADA	3
P-3	LAVATORY	0.5 GPM	3/4"	3/4"	2"	1 1/2"	1.5	1.5	1	SURFACE MOUNTED SINK WITH MANUAL FAUCET, ADA	4
P-3A	SINGLE COMPARTMENT SINK	1.5 GPM	3/4"	3/4"	2"	1 1/2"	1.5	1.5	2	FREE STANDING, STAINLESS STEEL UTILITY SINK, MANUAL FAUCET.	5
P-3B	LARGE SINK COMARTMENT SINK	1.5 GPM	3/4"	3/4"	2"	1 1/2"	1.5	1.5	2	SURFACE MOUNTED SINK WITH MANUAL FAUCET, ADA	6
P-4	HOT/COLD INTERIOR HOSE BIB	8.0 GPM	3/4"	3/4"	-	-	1.5	-	-	IN-WALL HW/CW HOSE BIB WITH LOOSE KEY	7
P-5	WATER COOLER	8.0 GPH	1/2"	-	2"	1 1/2"	0.25	-	0.5	DUAL HEIGHT, WALL MOUNTED, WITH BOTTLE FILLER, ADA	8
P-6	WASHER OUTLET BOX	36 GPH	1/2"	1/2"	2"	1 1/2"	1.5	1.5	2	IN WALL, STAINLESS STEEL OUTLET BOX	9
P-7	MOP SINK	1.5 GPM	3/4"	3/4"	2"	1 1/2"	2.25	2.25	2	24"x36"x12" TERRAZO WITH STAINLESS STEEL CURB CAP	10
P-8	HOT/COLD EXTERIOR WALL HYDRANT	8.0 GPM	3/4"	3/4"	-	-	1.5	-	-	IN-WALL HW/CW FREEZE PROOF WALL HYDRANT WITH LOOSE KEY	11
P-9	REFRIGERATOR / ICE MAKER OUTLET BOX	0.25 GPM	1/2"	-	-	-	0.25	-	-	IN-WALL STAINLESS STEEL OUTLET BOX	12
P-10	SHOWER	1.5 GPM	1/2"	1/2	2	1 1/2	1.0	1.0	2	THREE-FUNCTION COMMERCIAL SHOWER SYSTEM, ADA	13, 14

- NOTES:
- BASIS OF DESIGN: SLOAN - ST-2459 FLUSH VALVE; SLOAN - ROYAL 111-1.6 SEE 224216.13 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: SLOAN - ST-2459 FLUSH VALVE; ROYAL 111-1.6 SEE 224213.13 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: SLOAN - SU-1009 FLUSH VALVE; SLOAN - ROYAL 186-0.125-DBP SEE 224213.16 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: KOHLER - K-2196-1 FAUCET; T&S BRASS - B-2701 SEE 224216.13 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: ELKAY - 14-1C16X20-0X FAUCET; T&S BRASS - B-11604-CR-VF10 SEE 224216.16 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: ELKAY - LR3122PD FAUCET; T&S BRASS - B-1141-XSCR4V15 SEE 224216.16 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: ACORN - 8156 SEE 221119 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: ELKAY - LZSTLWSSP EQUIVALENTS ARE OASIS AND HALSEY TAYLOR.
  - BASIS OF DESIGN: GUY GRAY - 82171 SEE 221119 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: FMT - TS83003 FAUCET; T&S BRASS - B-0665-8STR SEE 224216.16 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: WOODFORD - B22CP-12 SEE 221119 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: GUY GRAY - 88164 SEE 221119 SPEC FOR ALTERNATES.
  - BASIS OF DESIGN: STATIONARY SHOWERHEAD, HAND-HELD SHOWER WITH NON-POSITIVE PAUSE, 60" METAL HOSE, 30" SLIDE BAR, DROP ELL, SLIDE BAR NOT DESIGNED TO BE A GRAB BAR.
  - FIXTURE ASSOCIATED WITH ADD ALTERNATE NO.5

ELECTRIC DOMESTIC WATER HEATER SCHEDULE									
DESIGNATION	SERVICE	EWI °F	LWT °F	HEATING INPUT kW	NO. HEATING ELEMENTS	GALLONS PER 100°F RISE	FULL LOAD AMPS	ELECTRICAL V / Ø / HZ	BASIS OF DESIGN
WH-1	SERVES DOMESTIC WATER PLUMBING FIXTURES	40	140	10	2	41	27.75	208/3/60	AO SMITH DRE-50-10

- NOTES:
- PROVIDE ASME EXPANSION TANK WITH MANUAL AIR/WATER BLEED.
  - SEE SPEC 223300 FOR APPROVED ALTERNATES. APPROVED MANUFACTURERS INCLUDE LOCHINVAR AND RHEEM.

ELECTRIC DOMESTIC WATER HEATER SCHEDULE (POINT OF USE)									
DESIGNATION	SERVICE	EWI °F	LWT °F	HEATING INPUT kW	TEMPERATURE RISE @ 4.0 GPM (°F)	DIMENSIONS (L x W x D)	ELECTRICAL		BASIS OF DESIGN
							V / Ø / HZ	AMPS	
TWH-1A & B	EQUIPMENT STORAGE EXTERIOR - 112 (P-6)	40	90	28	50	17" x 18" x 6"	208/1/60	2 @ 67.5	AO SMITH CALA-280X
TWH-2A & B	EXTRACTION - 107B (P-4)	40	90	28	50	17" x 18" x 6"	208/1/60	2 @ 67.5	AO SMITH CALA-280X

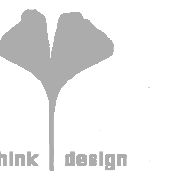
- NOTES:
- TANKLESS WATER HEATERS HAVE TWO ELECTRICAL CONNECTION POINTS. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
  - SEE SPEC 223300 FOR APPROVED ALTERNATES. APPROVED MANUFACTURERS INCLUDE LOCHINVAR AND RHEEM.

SOLIDS INTERCEPTOR SCHEDULE					
DESIGNATION	SERVICE	INLET IN.	OUTLET IN.	GPM	BASIS OF DESIGN
SI-1	SERVES TRENCH DRAIN TD-1	2	2	30	ZURN 21181-2IP

- NOTES:
- APPROVED MANUFACTURERS INCLUDE JAY R. SMITH, JOSAM, WATTS, AND MIFAB.

RECIRCULATING PUMP DUTY	
DESIGNATION:	HWRF-1
SERVICE	DOMESTIC 110°F HW
FLOW RATE (GPM):	1.0
DISCHARGE HEAD:	5
MOTOR HP:	1/40
MOTOR RPM:	2800
ELECTRICAL (V / Ø / HZ):	120/1/60
PUMP TYPE:	INLINE
BOD:	BELL & GOSSETT, NBF-12
REMARKS:	PROVIDE ALL BRONZE BODY.

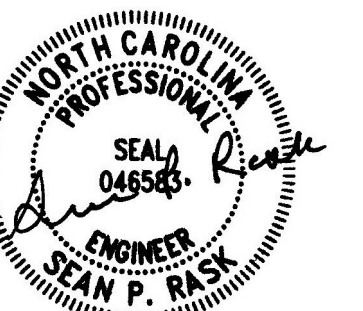
- NOTES:
- SEE SPEC 221123.21 FOR APPROVED ALTERNATES. APPROVED MANUFACTURERS INCLUDE TACO AND GRUNDFOS.



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Project Number 132

**PLUMBING SCHEDULES**

Sheet

**P701**

Plate

MECHANICAL SYMBOLS

Table with columns for EQUIPMENT DESIGNATIONS, PIPING SYMBOLS, and DUCTWORK SYMBOLS, listing symbols and their descriptions.

MECHANICAL ABBREVIATIONS

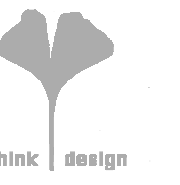
Table listing mechanical abbreviations with columns for symbol, number, pound, dollar, percent, and various unit abbreviations.

2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Table detailing mechanical systems and equipment specifications, including thermal zone, interior design conditions, heating/cooling loads, and equipment efficiencies.



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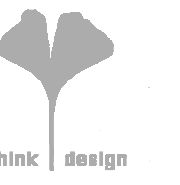
Project Number 132

MECHANICAL NOTES, SYMBOLS AND ABBREVIATIONS

Sheet

M001

Plate



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**DRAWING NOTES**

- ① TRANSFER AIR IS THROUGH A TRANSFER DUCT LOCATED ABOVE THE CEILING OF CUSTODIAL 110. REFERENCE SHEET M101.

**AIR BALANCE LEGEND**

- SA - SUPPLY AIR, CFM
- RA - RETURN AIR, CFM
- EA - EXHAUST AIR, CFM
- TA - TRANSFER AIR, CFM
- ↔ - INDICATES TRANSFER AIR DIRECTION



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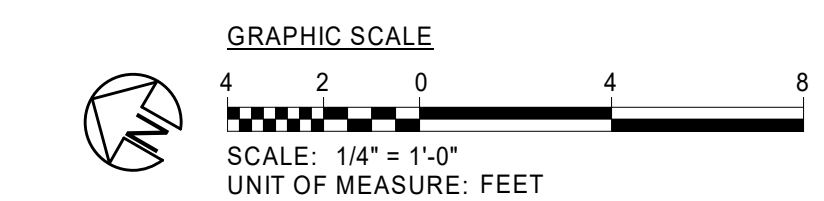
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Project Number 132  
Title  
**MECHANICAL AIR BALANCE SUMMARY**

Sheet  
**M100**  
Plate

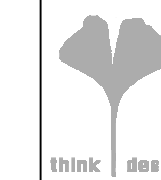


### GENERAL NOTES

1. ALL EXPOSED DUCTWORK AND ASSOCIATED AIR DEVICES IN FINISHED SPACES SHALL BE DOUBLE WALL SPIRAL DUCT WITH PAINT GRIP FINISH.

### DRAWING NOTES

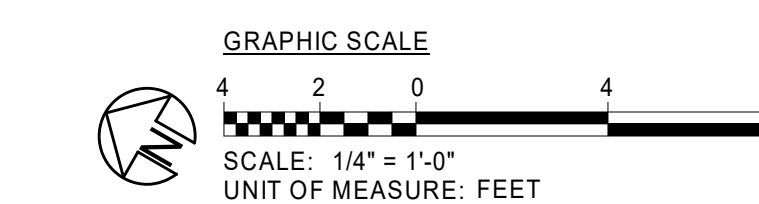
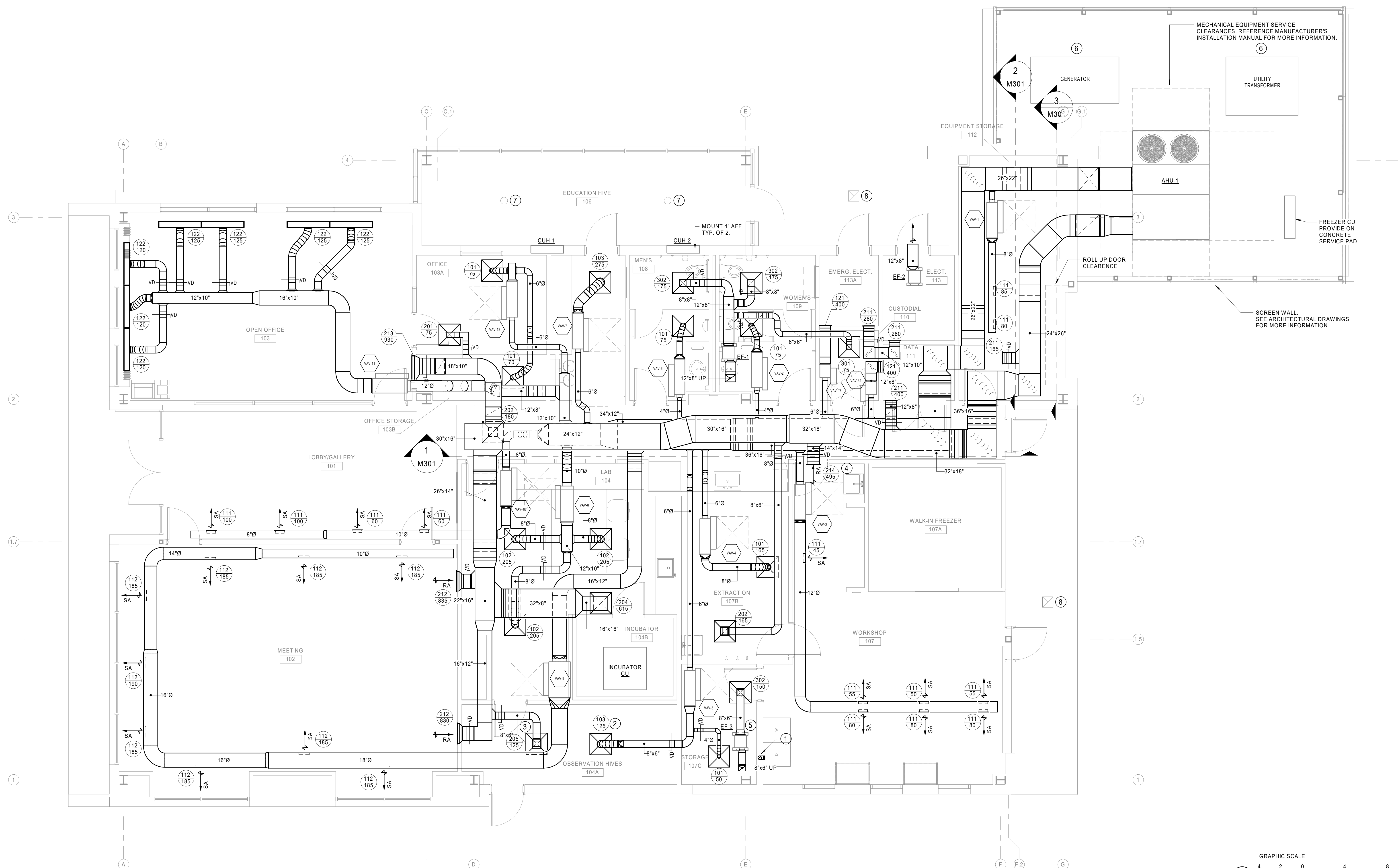
1. 4" DRYER VENT UP. PROVIDE A CLEANOUT IN THE VERTICAL RISE. TERMINATE WITH GOOSENECK AT ROOF LEVEL.
2. PROVIDE SUPPLY DIFFUSER WITH PERFORATED FACE. SEE SCHEDULE FOR ADDITIONAL INFORMATION.
3. PROVIDE RETURN GRILLE WITH PERFORATED FACE AND INTEGRAL MERV-8 FILTER. SEE SCHEDULE FOR ADDITIONAL INFORMATION.
4. **BASE BID:** PROVIDE RETURN GRILLE WITH MERV-8 FILTER AT THE FACE. SEE SCHEDULE FOR ADDITIONAL INFORMATION. **BALANCE GRILLE TO THE CFM VALUE SHOWN. REFERENCE AIR BALANCE SUMMARY ON SHEET M100 FOR ADDITIONAL INFORMATION.** **ADD ALTERNATE NO. 5:** PBALANCE GRILLE TO 345 CFM. REFERENCE AIR BALANCE SUMMARY ON SHEET M100 FOR ADDITIONAL INFORMATION.
5. **ADD ALTERNATE NO. 5:** PROVIDE EF-3 AND ALL ASSOCIATED DUCTWORK.
6. ELECTRICAL EQUIPMENT LOCATION SHOWN FOR COORDINATION. SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION.
7. PROVIDE NEW 48" WHITE HIGH PERFORMANCE BARN & FARM CEILING FAN BY BARN LIGHT ELECTRIC COMPANY OR APPROVED EQUIVALENT.
8. PROVIDE NEW 16"x16" GRAVITY VENTILATOR GREENHECK GRSR 16 OR APPROVED EQUIVALENT. APPROVED MANUFACTURERS INCLUDE PENN BARRY AND LOREN COOK.



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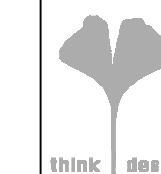


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 NCSU: 202220007

Project Number 132  
 Title **MECHANICAL DUCTWORK PLAN**  
 Sheet **M101**  
 Plate

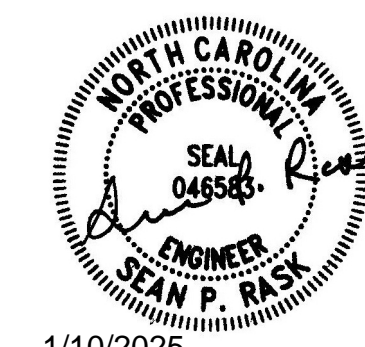
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## DRAWING NOTES

- 1 PROVIDE UNIT MOUNTED THERMOSTAT FOR UNIT HEATER.
- 2 ELECTRICAL EQUIPMENT LOCATION SHOWN FOR COORDINATION. SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION.



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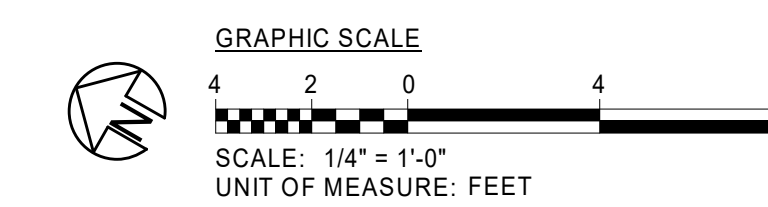
Project Number 132

### MECHANICAL EQUIPMENT PLAN

Sheet

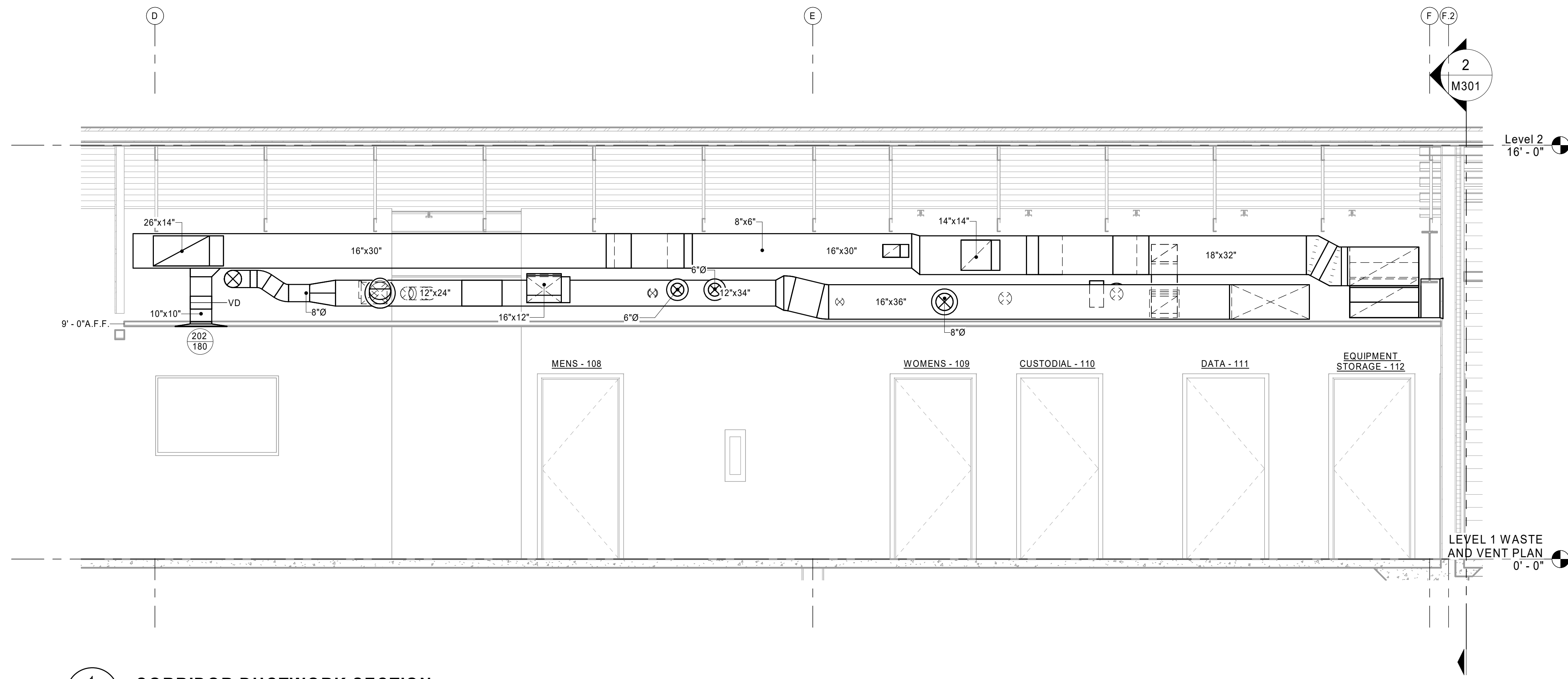
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Plate

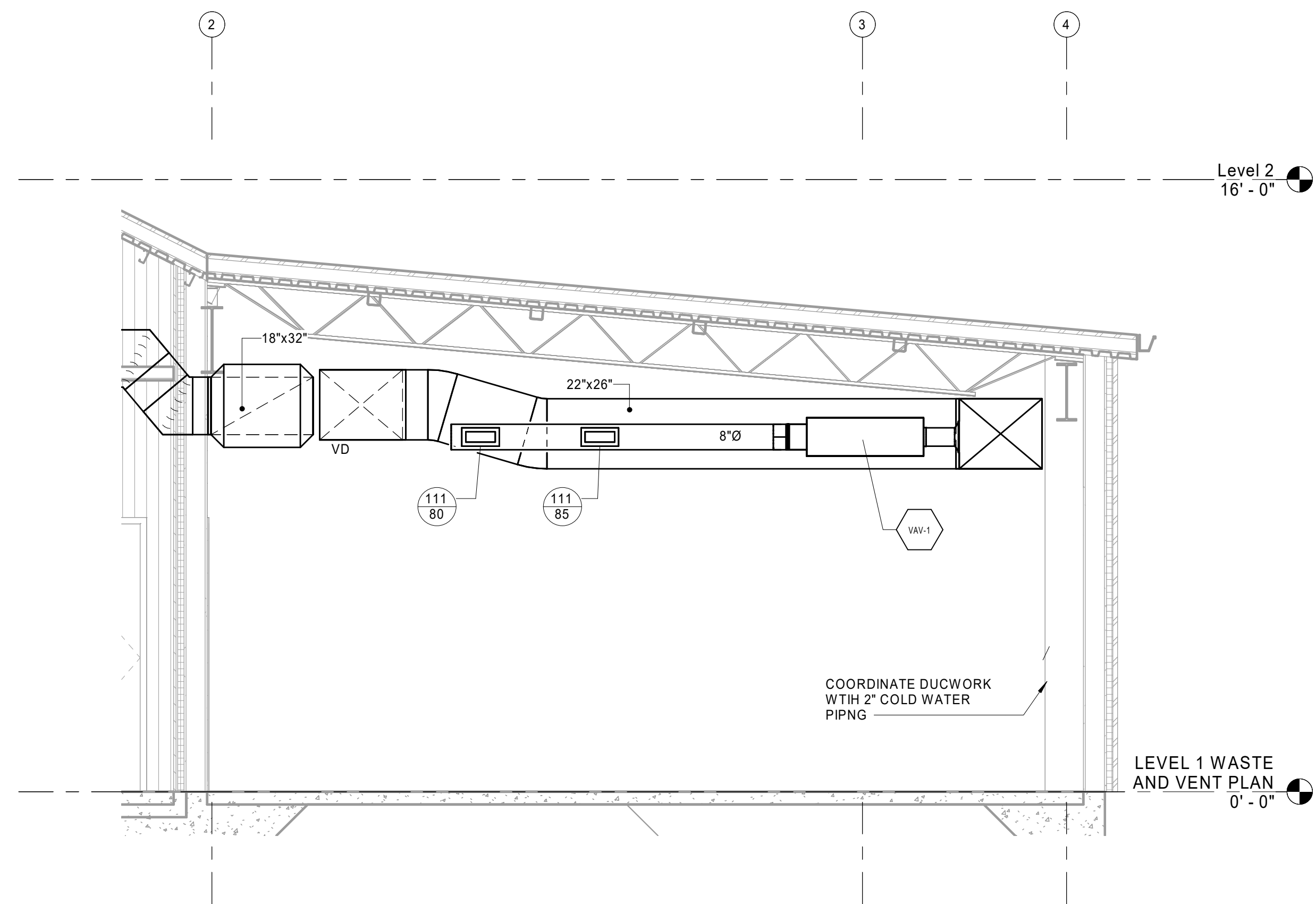




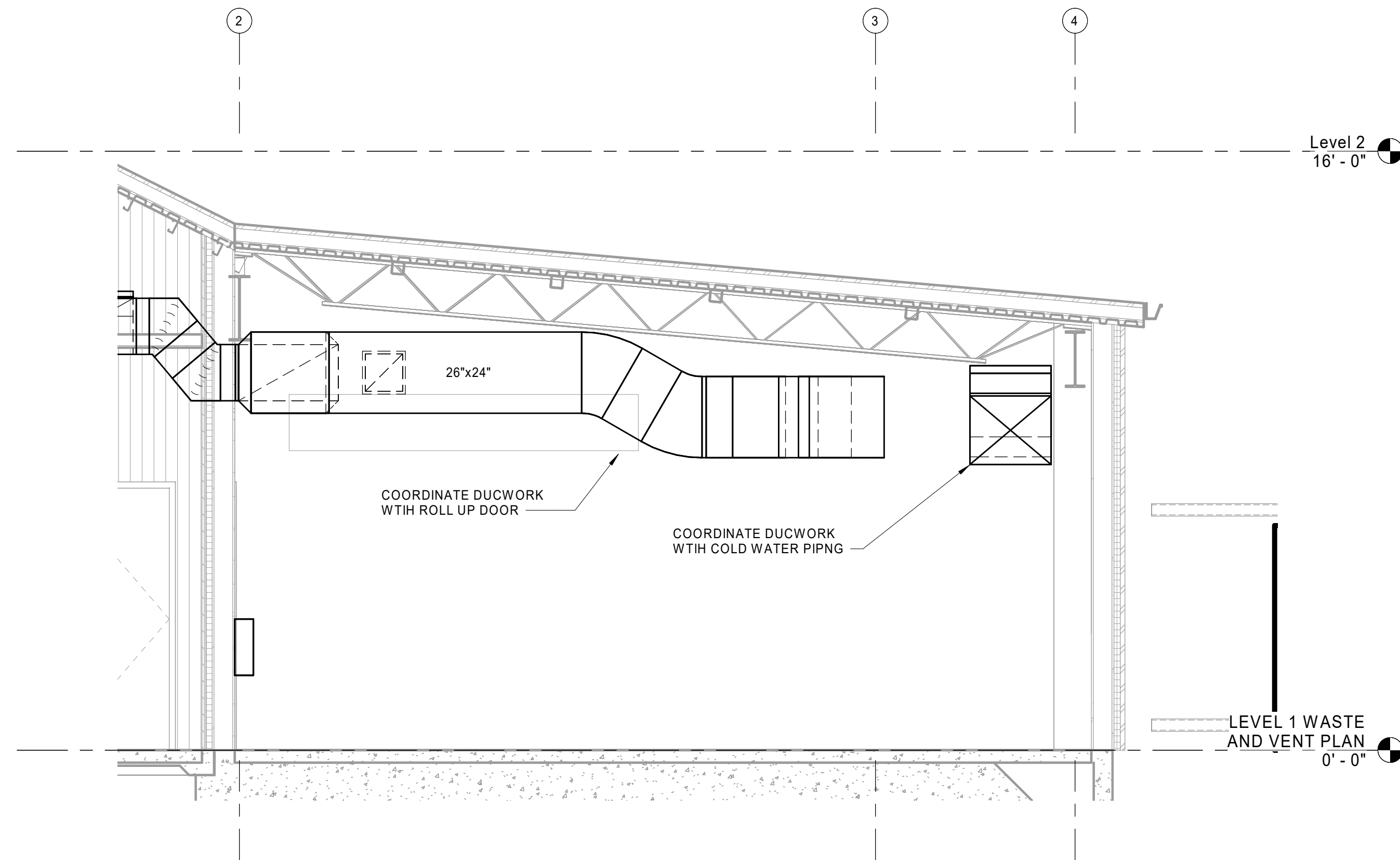
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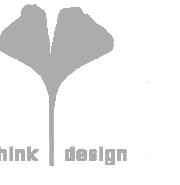
**1 CORRIDOR DUCTWORK SECTION**  
SCALE: 3/8" = 1'-0"



**2 EQUIPMENT STORAGE SUPPLY DUCTWORK**  
SCALE: 3/8" = 1'-0"



**3 EQUIPMENT STORAGE RETURN DUCTWORK**  
SCALE: 3/8" = 1'-0"



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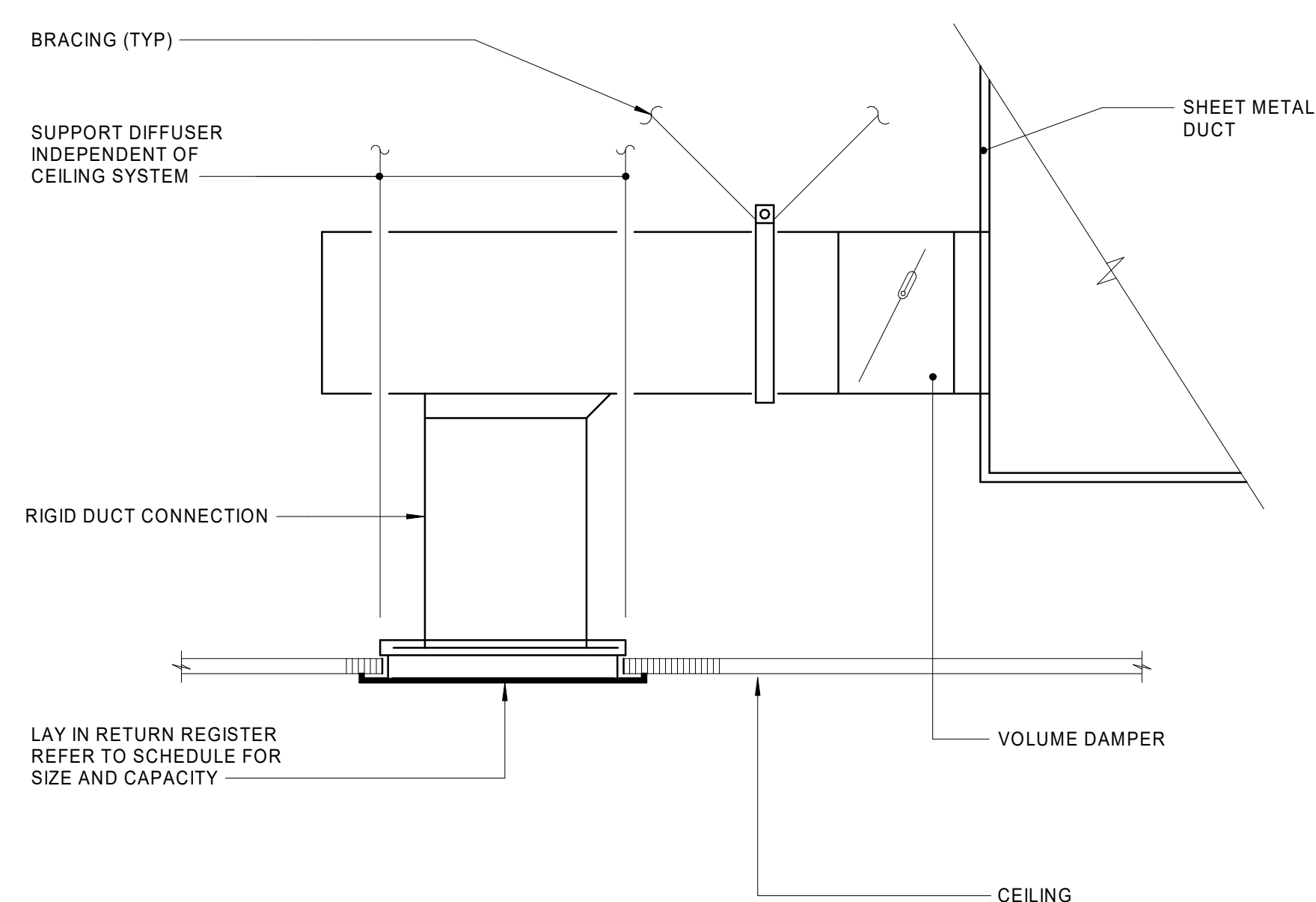
**MECHANICAL SECTION VIEWS**

Sheet

**M301**

Plate

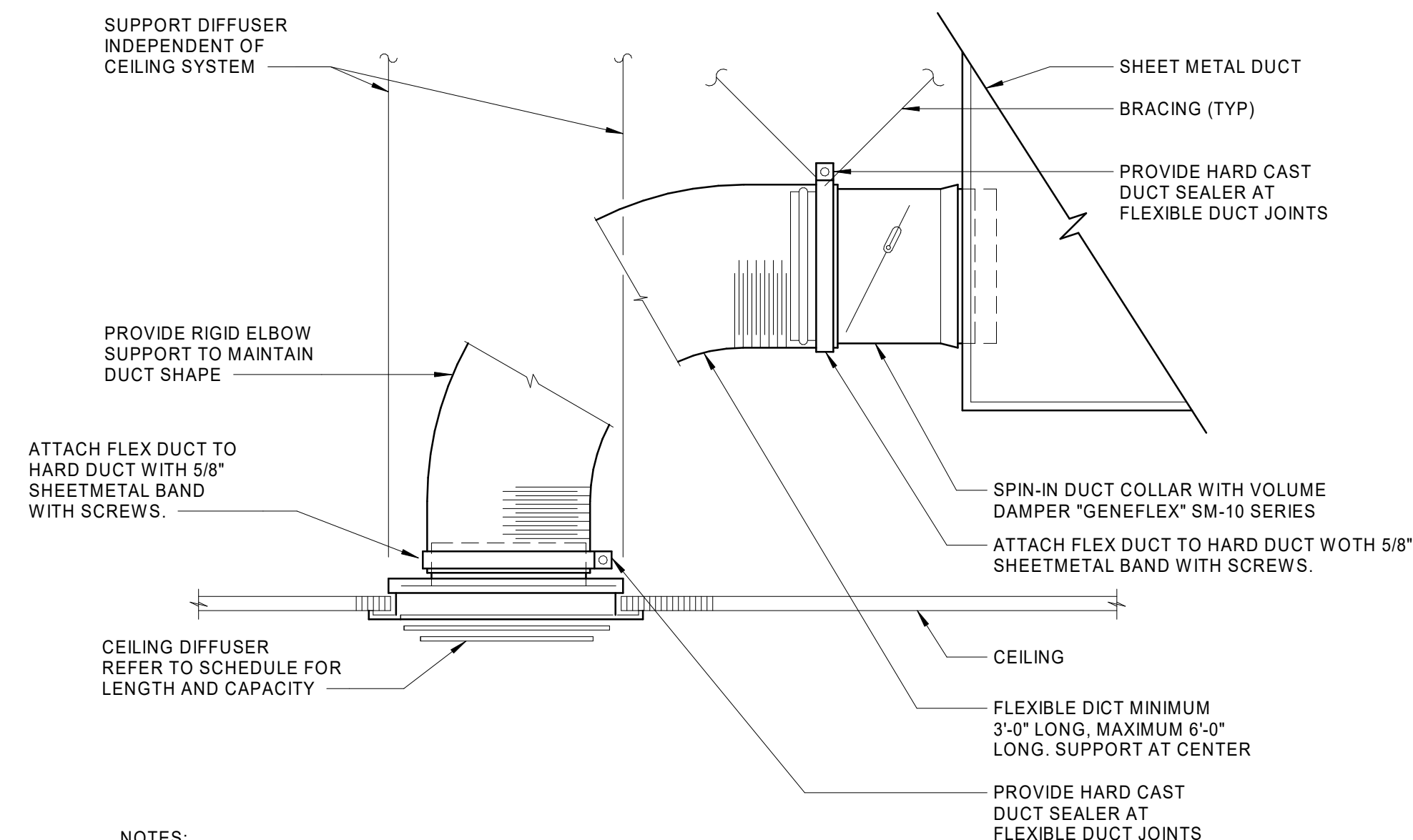
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- NOTES:
1. DUCT INSULATION SHALL BE PROVIDED AS SPECIFIED.
  2. PROVIDE BRACING FOR ALL DUCTWORK AND HANGERS PER THE 2018 NORTH CAROLINA BUILDING CODE AND 2018 NORTH CAROLINA MECHANICAL CODE.
  3. CONTRACTOR SHALL VERIFY MAXIMUM LOADING ON DUCTWORK SUPPORT ASSEMBLIES.

DETAIL - RETURN/EXHAUST AIR REGISTER BRANCH DUCT

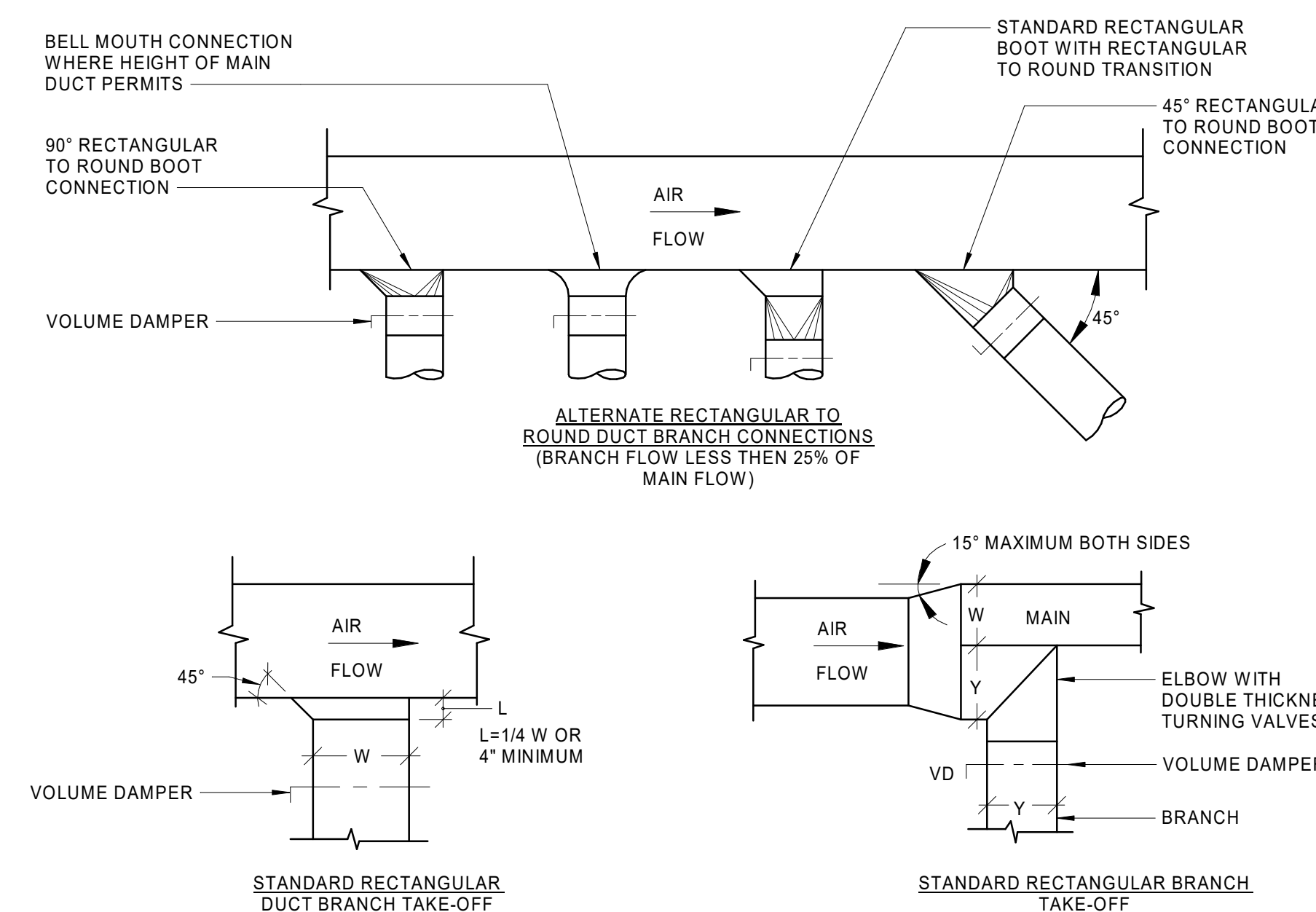
SCALE: NONE 3



- NOTES:
1. DUCT INSULATION SHALL BE PROVIDED AS SPECIFIED.
  2. PROVIDE ADDITIONAL ROUND, RIGID SHEET METAL DUCTWORK AS REQUIRED TO LIMIT FLEXIBLE DUCT LENGTH TO 6'-0" MAXIMUM.
  3. MAXIMUM SAG 1/2" PER FOOT.
  4. PROVIDE BRACING FOR ALL DUCTWORK AND HANGERS PER THE 2018 NORTH CAROLINA BUILDING CODE AND 2018 NORTH CAROLINA MECHANICAL CODE.
  5. CONTRACTOR SHALL VERIFY MAXIMUM LOADING ON DUCTWORK SUPPORT ASSEMBLIES.

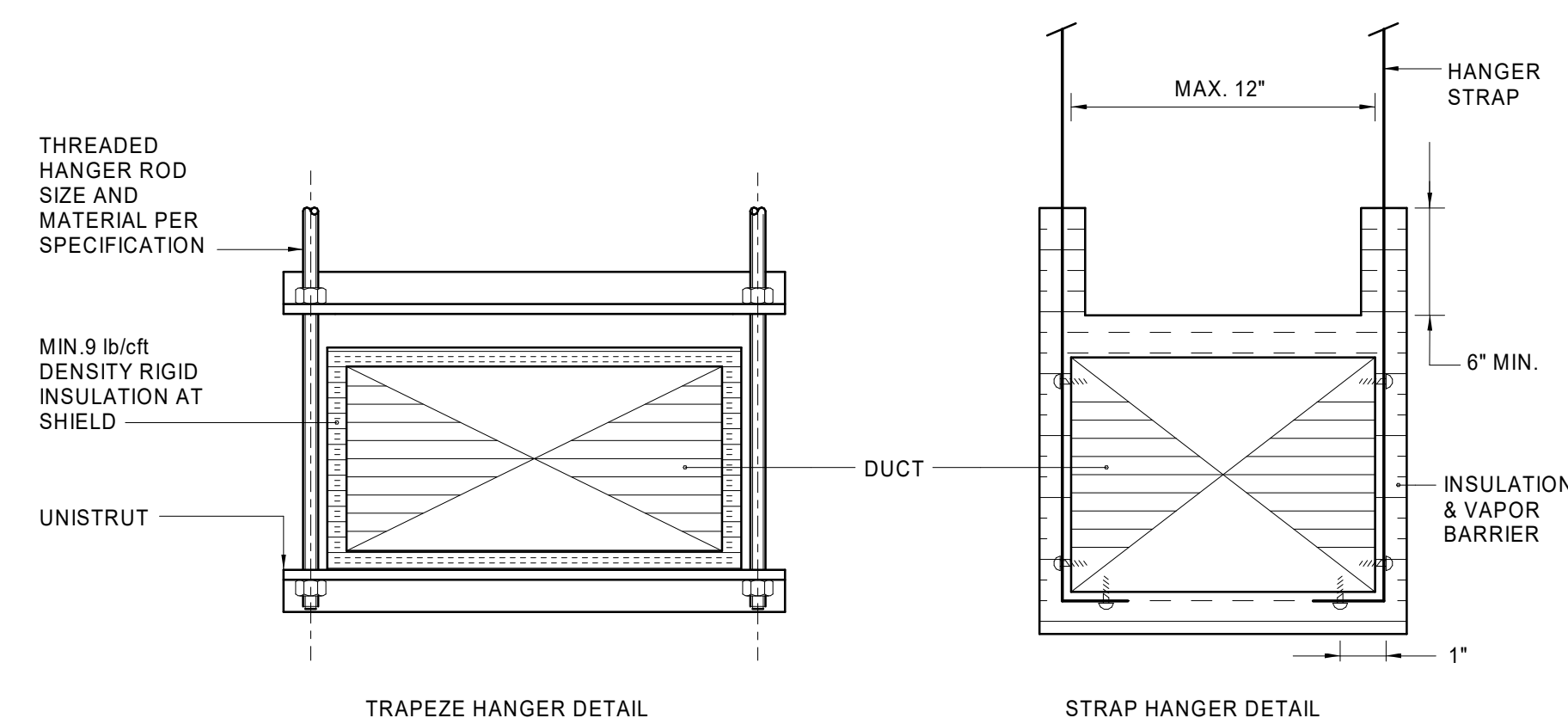
DETAIL - CEILING DIFFUSER BRANCH DUCTS

SCALE: NONE 2



DETAIL - LOW VELOCITY BRANCH TAKE-OFF

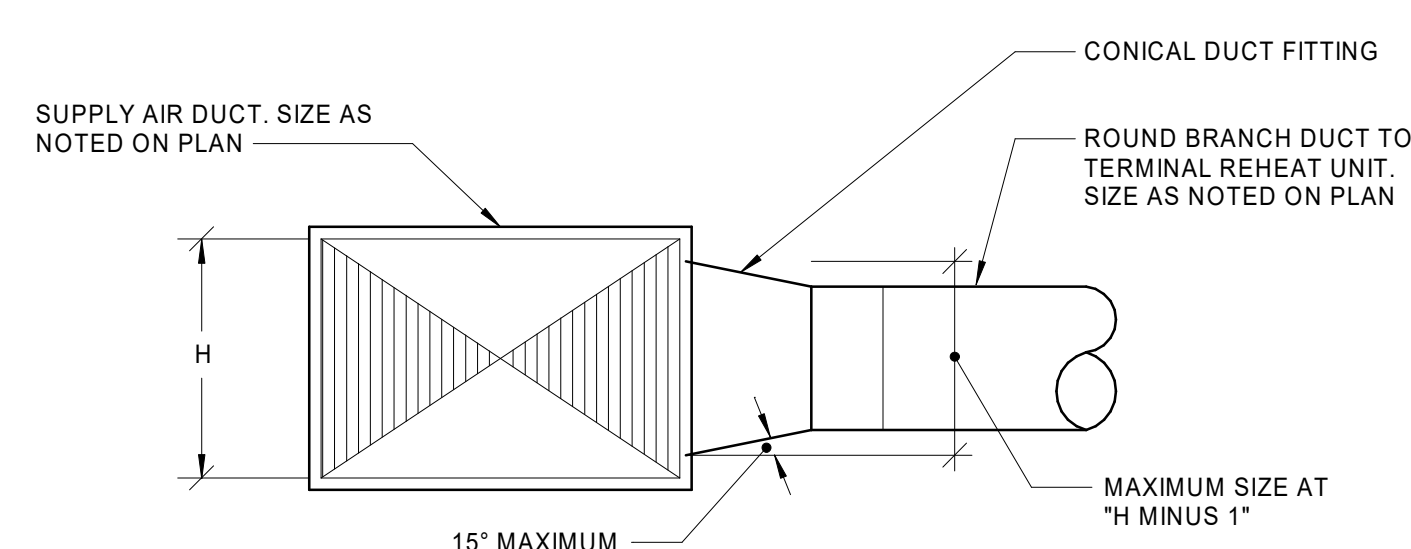
SCALE: NONE 1



- NOTES:
1. TRAPEZE HANGERS SHALL BE PROVIDED FOR ALL DUCT WORK. TRAPEZE HANGERS CANNOT BE USED FOR BRANCH DUCT WORK 12" IN WIDTH AND SHORTER REFER TO STRAP HANGER DETAIL.
  2. SUPPORTS SHALL BE SPACED AND SIZED AS PER SPECIFICATIONS.
  3. RIGID INSULATION SHALL EXTEND MINIMUM OF 3" BEYOND STRUT ON BOTH SIDES. MAINTAIN VAPOR BARRIER ACROSS STRUT.

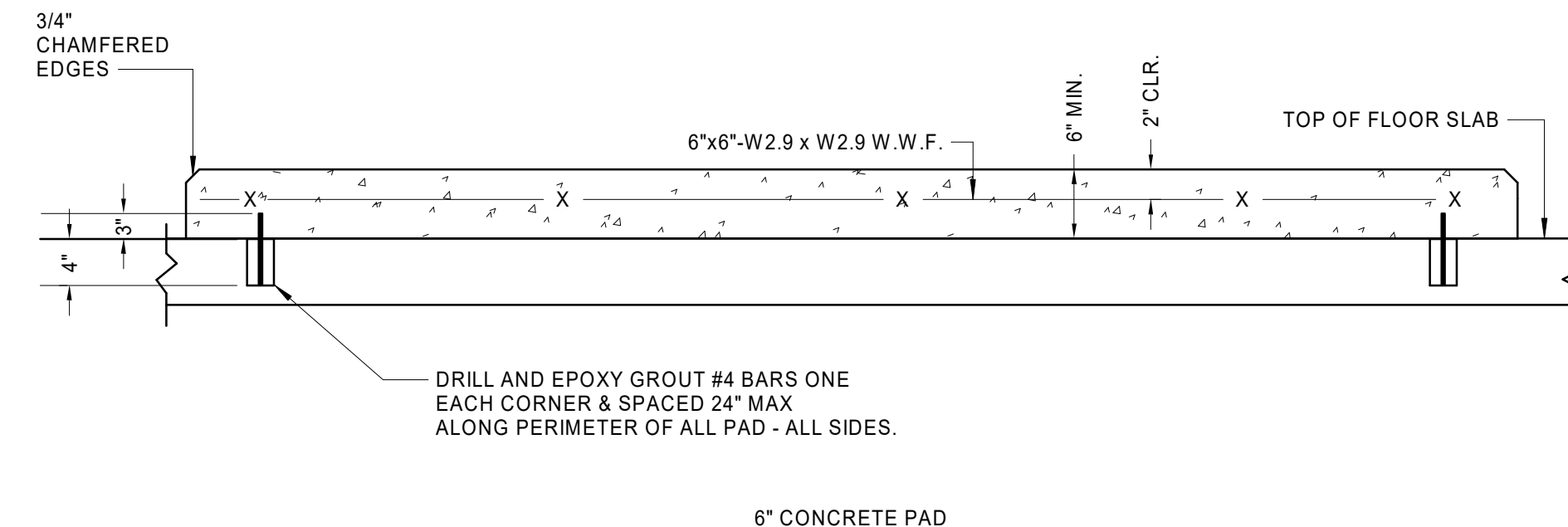
DETAIL - DUCT SUPPORT

SCALE: NONE 6



DETAIL - CONICAL DUCT TAP FITTING

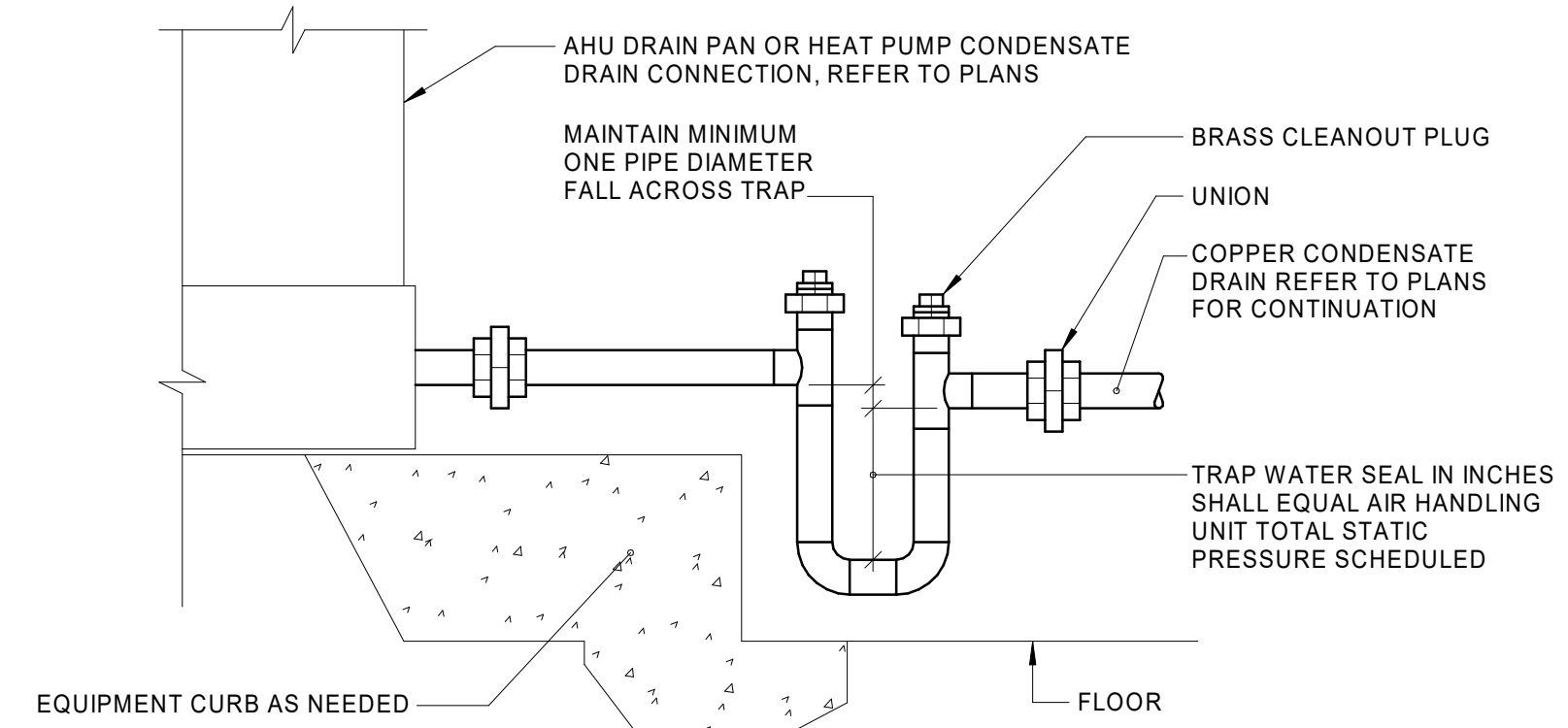
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- NOTE:
1. SIZE PAD 6" LARGER ALL AROUND TO SUIT EQUIPMENT FURNISHED.

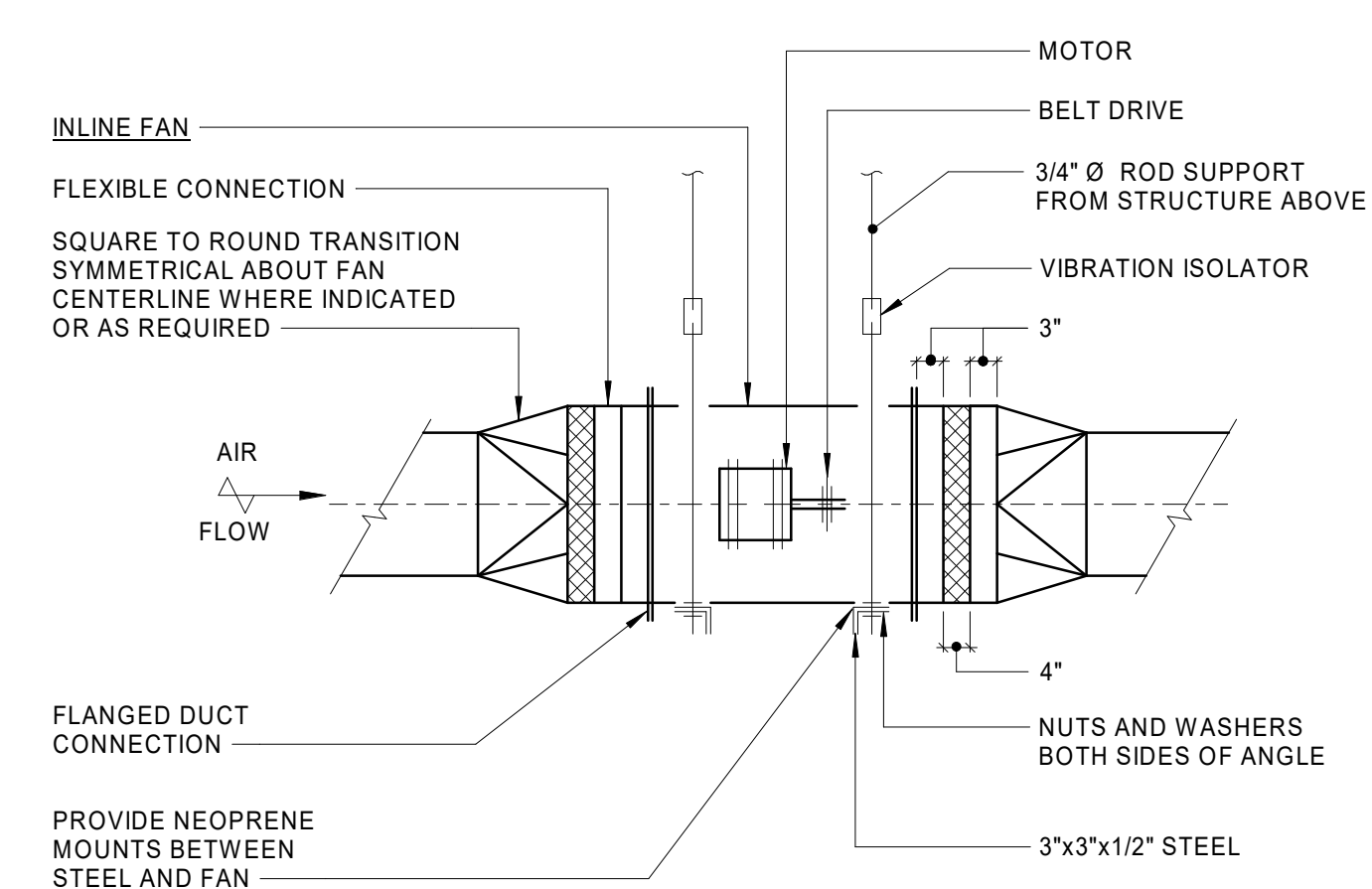
DETAIL - CONCRETE PAD

SCALE: NONE 4



DETAIL - COIL CONDENSATE CONCRETE CURB

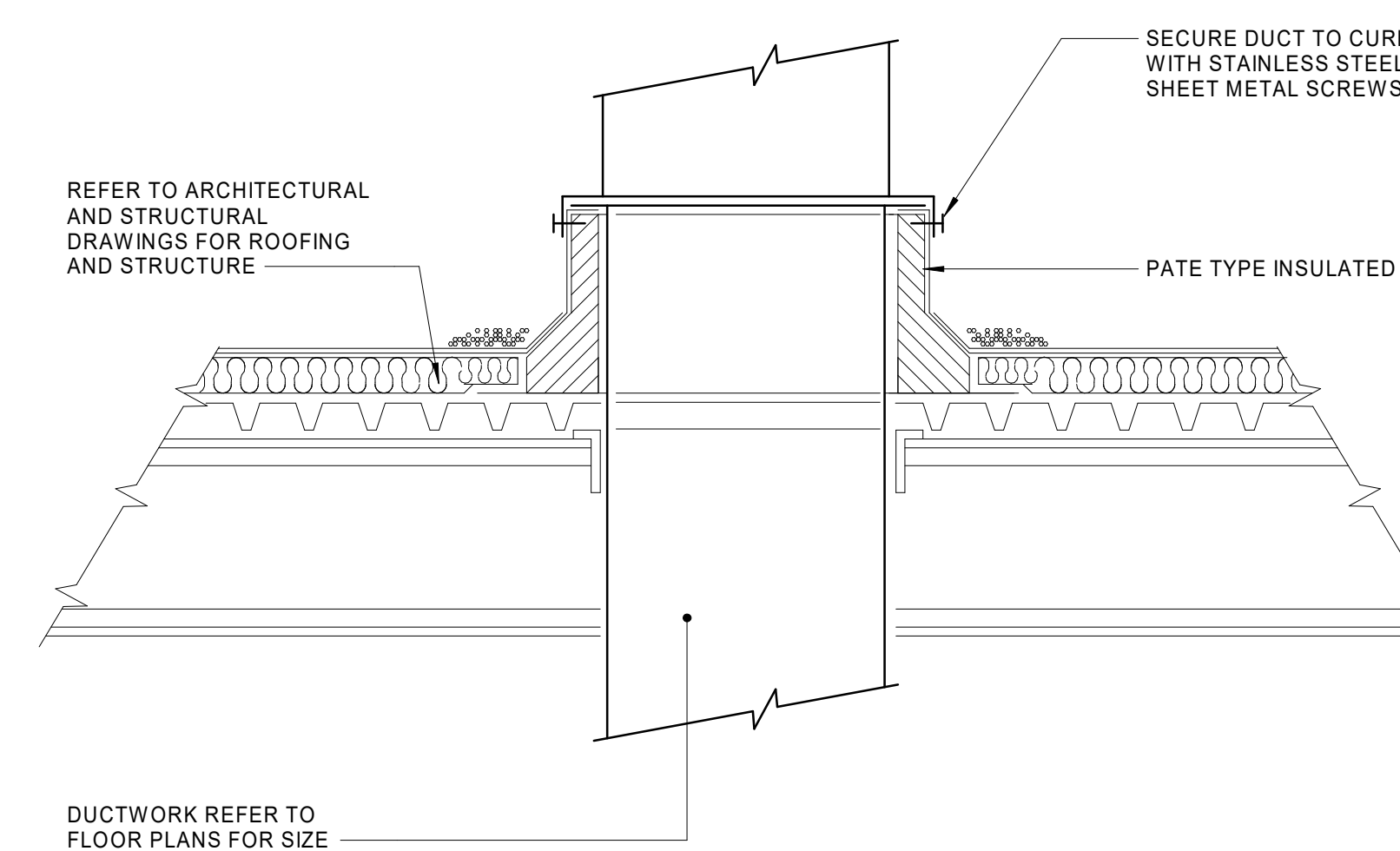
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- NOTE:
1. PROVIDE FLEXIBLE CONNECTIONS BEFORE OR AFTER TRANSITIONS AS INDICATED ON THE PLANS.

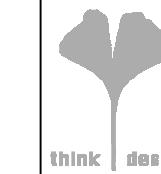
DETAIL - INLINE EXHAUST FAN

SCALE: NONE 8



DETAIL - ROOF DUCT PENETRATION

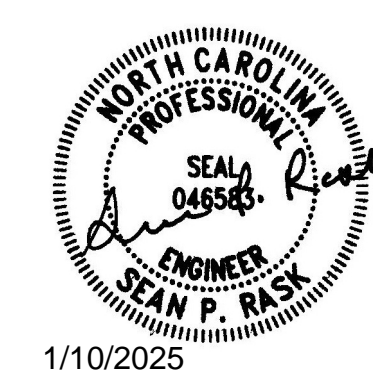
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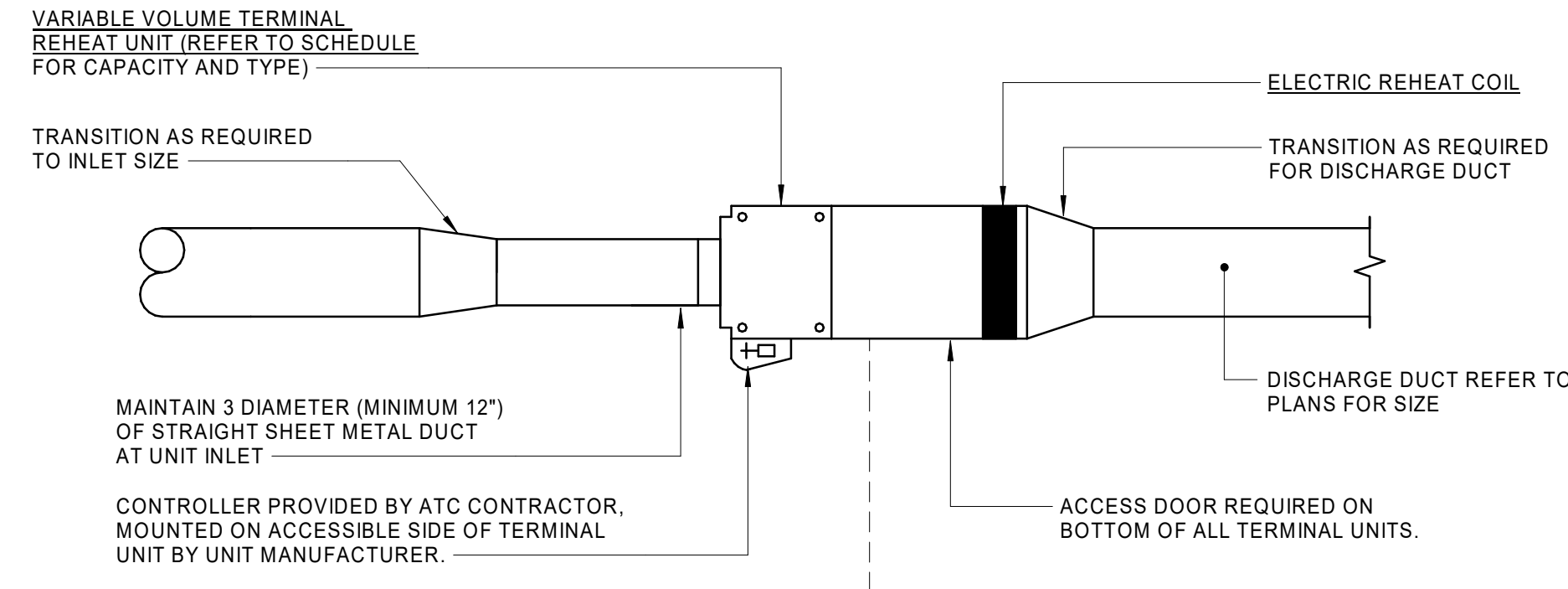
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Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title  
**MECHANICAL DETAILS**

Sheet  
**M501**  
Plate

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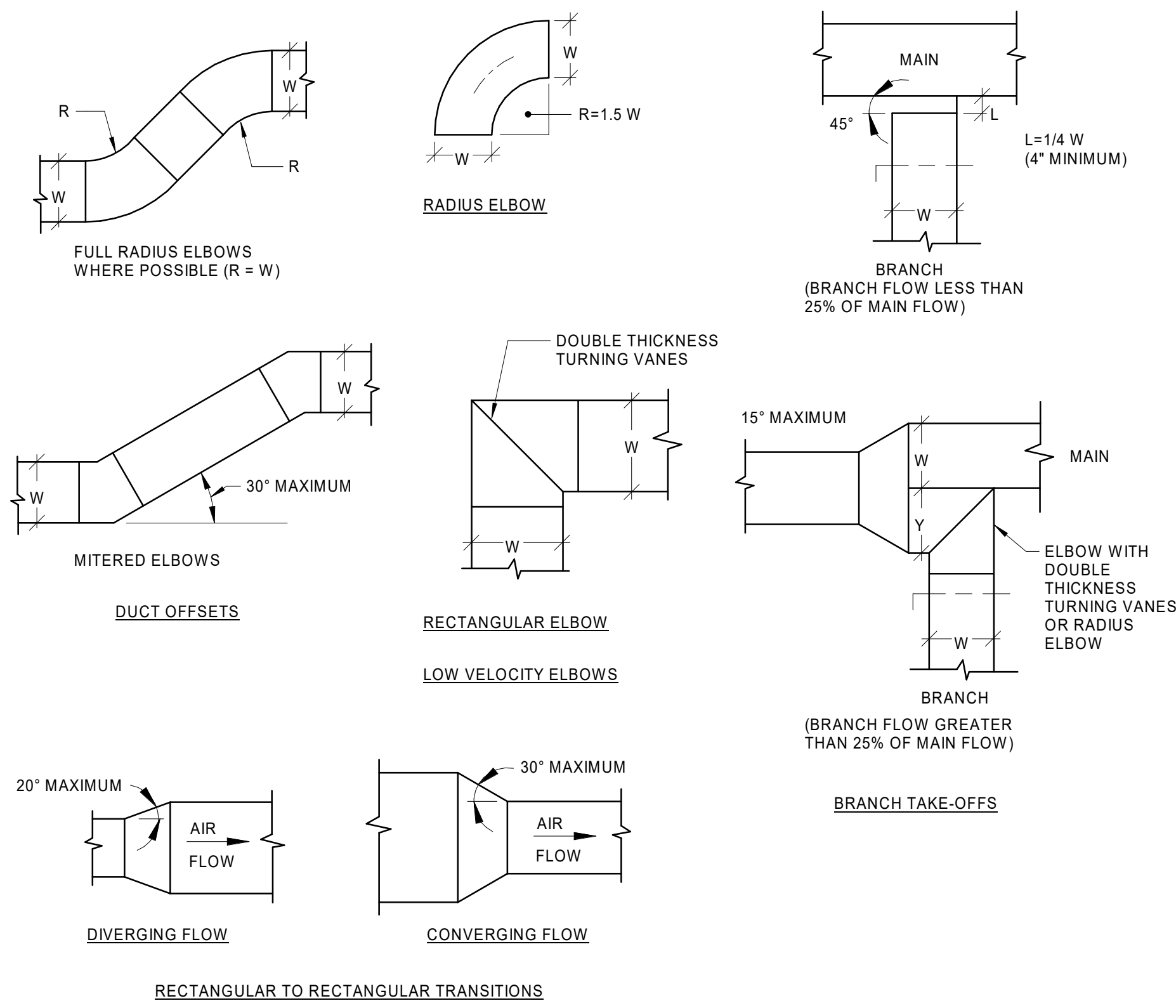
- NOTES:
1. A STRAIGHT SECTION OF UNRESTRICTED DUCT AT LEAST THREE (3) DIAMETERS LONG SHALL BE INSTALLED AT THE TERMINAL UNIT INLET.
  2. 3" MINIMUM CLEARANCE IS REQUIRED IN FRONT OF THE VAV BOX CONTROL/ELECTRICAL ENCLOSURE PER UL REGULATIONS.

DETAIL - VARIABLE AIR VOLUME TERMINAL REHEAT UNIT

SCALE: NONE 1

SCALE: NONE

SCALE: NONE

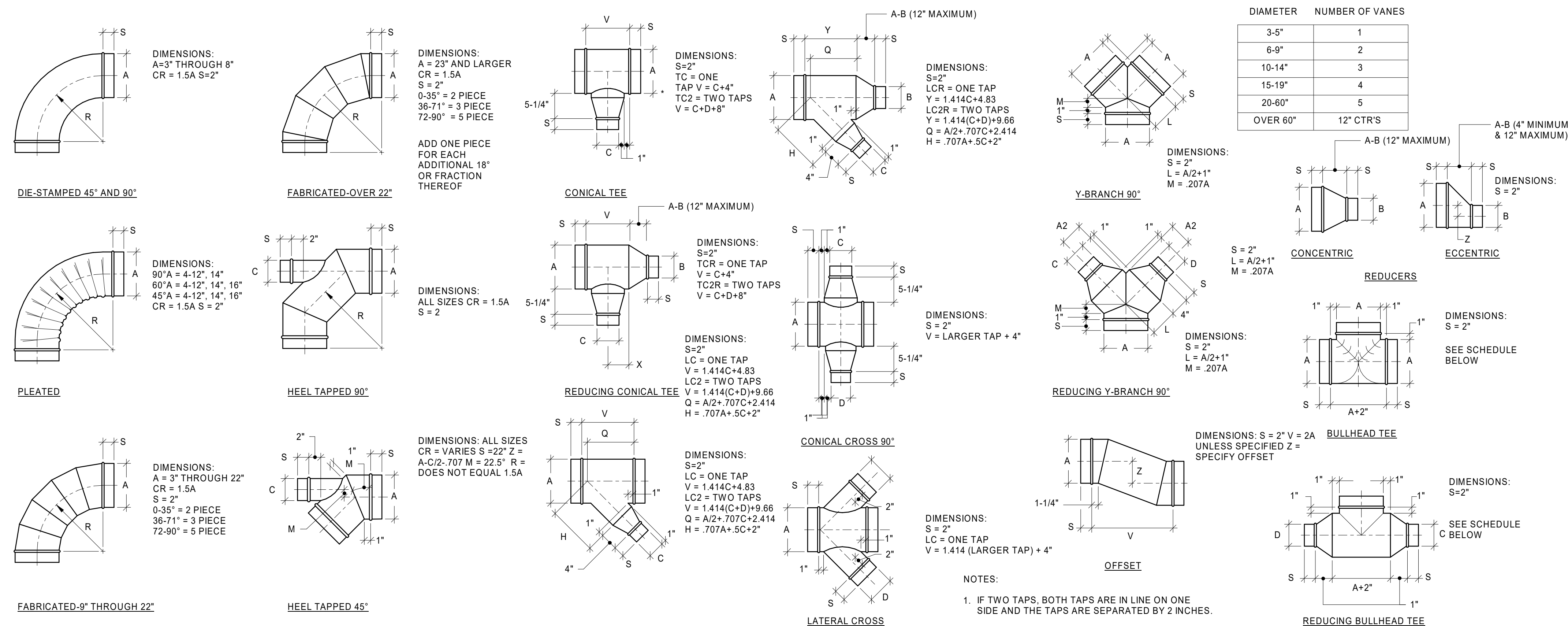


DETAIL - RECTANGULAR DUCT FITTINGS

SCALE: NONE 2

SCALE: NONE

SCALE: NONE



DETAIL - ROUND DUCT FITTINGS

SCALE: NONE 3

SCALE: NONE

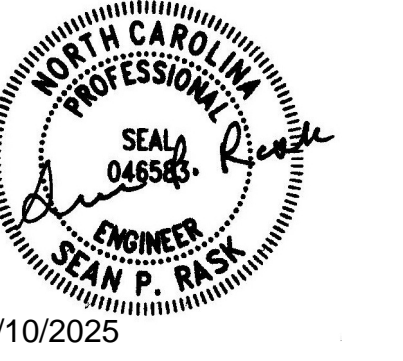
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Raleigh, NC  
SCO ID No.: 22-24494-01A  
Code: 42124 Item: 315  
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Project Number 132  
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**MECHANICAL DETAILS**

Sheet  
**M502**  
Plate

INPUT/OUTPUT SUMMARY

Table with columns: POINT NO., SYSTEM APPARATUS OR AREA POINT DESCRIPTION, ANALOG (MEASURED, CALC.), BINARY, OUTPUTS (BINARY, ANALOG), SYSTEM FEATURES (ALARMS, PROGRAMS), GENERAL. Rows include components like SUPPLY FAN, DUCT SMOKE DETECTORS, AIR DAMPERS, AIR FLOW STATION, VELOCITY SENSORS, AIR STREAM TEMP. SENSORS, RETURN AIR HUMID., HIGH STATIC PRESSURE, SYSTEM STATIC PRESSURE, AHU-1 FILTER DP, AHU-1 SUPPLY FAN DIFFERENTIAL PRESSURE, LOW STATIC PRESSURE, SPACE CO2 PPM, OUTSIDE AIR CO2 PPM, OUTDOOR AIR HUMIDITY/WB TEMP, OUTSIDE AIR TEMPERATURE.

AHU-1 SEQUENCE OF OPERATION

GENERAL:

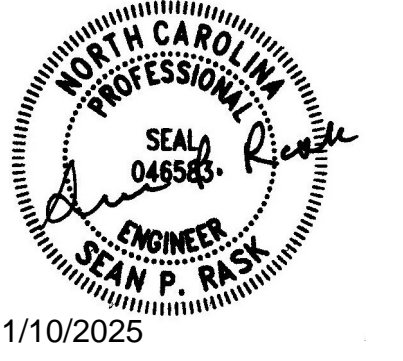
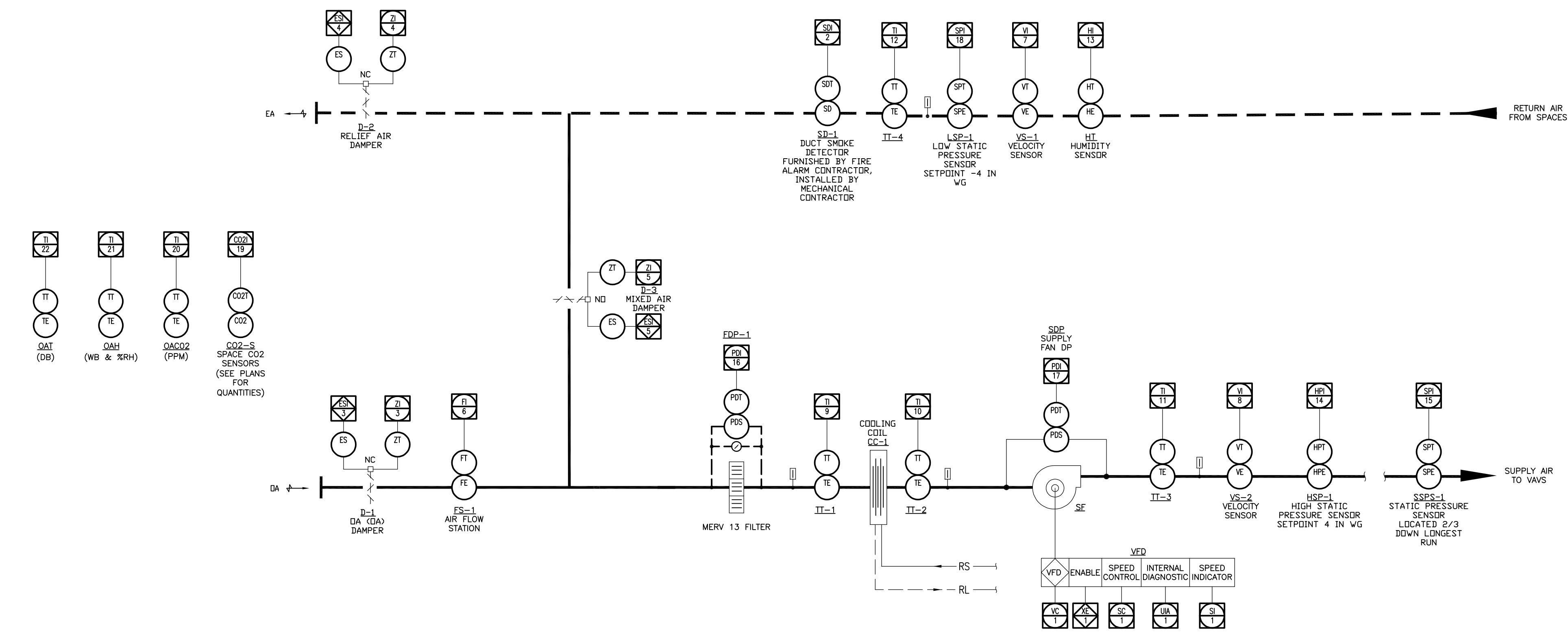
- A. SEE PLANS FOR LOCATIONS OF ALL ROOM THERMOSTATS, DAMPERS, VALVES, AND EQUIPMENT; WHERE SUCH DEVICES ARE NOT INDICATED, BUT ARE REQUIRED BY THE SEQUENCES, THEY SHALL BE PROVIDED AND LOCATED IN THE FIELD BY THE ENGINEER.
B. DIVISION 26 SHALL PROVIDE ALL DETECTION DEVICES (HEAT/SMOKE) AS REQUIRED BY NFPA STANDARD 96 AND 90A AND THE BUILDING CODE. THE INSTALLATION OF DETECTION DEVICES AND ALL CONTROL/POWER WIRING FOR SMOKE DETECTION DEVICES SHALL BE PROVIDED UNDER THIS SECTION. DETECTION DEVICES SHALL PROVIDE AUTOMATIC SHUTDOWN OF THE HVAC SYSTEMS IN ACCORDANCE WITH NFPA 90A.
C. SMOKE DAMPER SHALL BE NORMALLY CLOSED AND SHALL BE OPENED WHEN THE SUPPLY FAN IS ENERGIZED. DUCT MOUNTED SMOKE DETECTOR SHALL, ON THE DETECTION OF PRODUCTS OF COMBUSTION, SHUTDOWN THE SUPPLY FAN AND CLOSE ALL SYSTEM DAMPERS.
D. ALL TEMPERATURE, HUMIDITY, PRESSURE, AND TIME SET POINTS SHALL BE FULLY ADJUSTABLE FROM THE BMS.

AIR HANDLING UNIT CONTROL:

- A. THE BMS SHALL DETERMINE THE "OCCUPIED, UNOCCUPIED AND WARMUP" MODES OF OPERATION. WHEN THE UNIT IS DE-ENERGIZED, SUPPLY FAN AND RETURN FAN SHALL BE OFF. OUTSIDE AND RELIEF AIR DAMPERS D-1 & D-2 SHALL CLOSE. MIXED AIR DAMPER D-3 SHALL REMAIN OPEN.
B. SUPPLY FAN CONTROL:
WHEN THE UNIT IS COMMANDED ON EITHER LOCALLY OR VIA THE CCMS, DAMPERS D-1 AND D-2 SHALL OPEN. ONCE D-1 AND D-2 ARE PROVEN OPEN, RETURN FAN SHALL START AT MINIMUM SPEED (SEE RETURN FAN PARAGRAPH "C" FOR RETURN FAN OPERATION). ONCE RETURN FAN IS PROVEN ON VIA ITS DIFFERENTIAL PRESSURE SWITCH, SUPPLY FAN SHALL START AFTER A 30 SECOND DELAY (ADJ.). SUPPLY FAN VFD SHALL START AT LOW SPEED AND BE MODULATED TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT AS SENSED BY SSPS-1.

- 1. SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET UPWARD BY 0.1 IN W.C. (ADJ.), AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL NO VAV DAMPER IS MORE THAN 85% OPEN (ADJ) OR THE STATIC PRESSURE SETPOINT HAS RESET UPWARD TO THE SYSTEM MAXIMUM DUCT STATIC PRESSURE SETPOINT OF 3.0 IN W.C. (ADJ) OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MAXIMUM SPEED SETTING.
2. WHEN ALL VAV DAMPERS ARE LESS THAN 65% (ADJ.) OPEN, THE SUPPLY FAN DISCHARGE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET DOWNWARD BY 0.1 IN W.C. (ADJ.), AT A FREQUENCY OF 15 MINUTES (ADJ.), UNTIL AT LEAST ONE DAMPER IS MORE THAN 65% OPEN OR THE STATIC PRESSURE SETPOINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM DUCT STATIC PRESSURE SETPOINT OR THE AHU VARIABLE-FREQUENCY DRIVE IS AT THE MINIMUM SPEED SETTING OF 18 HZ (ADJ.).
3. THE CONTROL BANDS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.
4. THE BMS SHALL HAVE THE CAPABILITY TO ALLOW THE OPERATOR TO EXCLUDE "PROBLEM" ZONES THAT SHOULD NOT BE CONSIDERED WHEN DETERMINING THE OPTIMIZED SETPOINT.
5. THE BMS SHALL ALSO READ THE STATUS OF THE SUPPLY AIR STATIC PRESSURE SENSOR AND DISPLAY THE ACTIVE DUCT STATIC PRESSURE READING ON THE STATUS SCREEN.
6. THE BMS SHALL BE PROGRAMMED TO IDENTIFY, AND DISPLAY TO THE USER, THE VAV BOX THAT SERVES THE CRITICAL ZONE (THAT IS, THE ZONE WITH THE MOST WIDE-OPEN VAV DAMPER). THIS INFORMATION SHALL UPDATE DYNAMICALLY AS THE LOCATION OF THE CRITICAL ZONE CHANGES BASED ON BUILDING LOAD, AND DUCT STATIC PRESSURE SETPOINT OPTIMIZATION CONTROL.
7. DURING THE COMMISSIONING PROCESS, THE CONTROLS CONTRACTOR SHALL DEMONSTRATE THE PERFORMANCE OF FAN PRESSURE OPTIMIZATION.

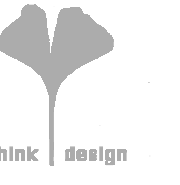
- C. OA SYSTEM VENTILATION
1. THE AHU OUTDOOR-AIR DAMPER SHALL BE CONTROLLED TO DELIVER REQUIRED OUTDOOR AIRFLOW AT ALL LOAD CONDITIONS.
D. UNOCCUPIED MODE:
1. IN UNOCCUPIED MODE OUTSIDE AIR DAMPER D-1 AND RELIEF AIR DAMPER D-2 SHALL BE FULLY CLOSED. MIXED AIR DAMPER D-3 SHALL BE FULLY OPEN. SUPPLY FAN SHALL BE OFF. DX COOLING SYSTEM AND HOT GAS REHEAT SYSTEMS SHALL BE OFF. IF ANY ZONE CALLS FOR HEATING OR COOLING BASED ON THEIR UNOCCUPIED SPACE TEMPERATURE SETPOINT OF 85°F (ADJ.) COOLING MODE / 60°F (ADJ.) IN HEATING MODE, SUPPLY FAN SHALL START UNDER THEIR RESPECTIVE SEQUENCE. OUTSIDE AIR DAMPER D-1 AND RELIEF AIR DAMPER D-2 SHALL REMAIN CLOSED. DX COOLING SYSTEM AND HOT GAS REHEAT SYSTEM SHALL OPERATE WITHOUT OVERLAP TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (ADJ.) AS SENSED BY IT-4. ONCE SPACE TEMPERATURES HAVE BEEN SATISFIED DAMPERS, CONTROL VALVES AND FANS SHALL RETURN TO THEIR RESPECTIVE POSITIONS AND FAN STATUS OFF.
E. WARMUP MODE:
1. 60 MINUTES (ADJ.) PRIOR TO CHANGE OVER FROM UNOCCUPIED MODE TO OCCUPIED MODE MIXED AIR DAMPER D-3 SHALL OPEN AND SUPPLY FAN AND RETURN FAN SHALL START UNDER THEIR RESPECTIVE SEQUENCE. OUTSIDE AIR DAMPER D-1 AND RELIEF AIR DAMPER D-2 SHALL REMAIN CLOSED. DEHUMIDIFICATION MODE SHALL BE INOPERATIVE. ONCE RETURN AIR TEMPERATURE AS SENSED BY IT-4 REACHES 70°F (HEATING MODE) OR 74°F (COOLING MODE) THE UNIT SHALL TRANSFER TO OCCUPIED MODE OPERATION.
G. OCCUPIED MODE:
1. IN OCCUPIED MODE DAMPERS D-1 & D-2 SHALL OPEN AND SUPPLY FAN AND RETURN FAN SHALL OPERATE PER THEIR FAN CONTROL SEQUENCES. OUTSIDE AIR DAMPER D-1 SHALL OPEN TO OBTAIN THE CALCULATED OA FLOW RATE AS MEASURED BY FLOW STATION ES-1. OUTSIDE AIR DAMPER D-2 SHALL MODULATE OPEN PER THE ECONOMIZER CONTROL SEQUENCE. RELIEF AIR DAMPER D-2 SHALL MODULATE AS REQUIRED TO MAINTAIN UNIT AIR FLOW BALANCE BASED ON AIR FLOW MEASUREMENTS AS SENSED BY AIR FLOW STATIONS ES-1, VS-1, AND VS-2. DX COOLING SYSTEM SHALL OPERATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT OF 55°F (ADJ.) AS SENSED BY IT-4. DEHUMIDIFICATION SHALL BE OPERATIVE.
H. ECONOMIZER MODE:
1. WHEN OUTSIDE AIR TEMPERATURE FALLS BELOW 60°F (ADJ.) AND ABOVE 55°F (ADJ.) THE ECONOMIZER MODE SHALL BE ENABLED. IN ECONOMIZER MODE OUTSIDE AIR DAMPER D-1 SHALL BE OPEN TO ITS MAXIMUM PREDETERMINED POSITION, MIXED AIR DAMPER D-3 SHALL FULLY CLOSE, AND RELIEF AIR DAMPER D-2 SHALL FULLY OPEN. OTHERWISE THE UNIT SHALL OPERATE IN ITS NORMAL OPERATIONAL SEQUENCE. WHEN OUTSIDE AIR TEMPERATURE IS 55°F (ADJ.) OR LESS AND GREATER THAN 45°F (ADJ.) THE UNIT SHALL BE IN PARTIAL ECONOMIZER MODE. THE BMS SHALL OPEN OUTSIDE AIR DAMPER D-1 TO ITS MAXIMUM PREDETERMINED POSITION, MIXED AIR DAMPER D-3 AND RELIEF AIR DAMPER D-2 IN UNISON TO MAINTAIN MIXED AIR TEMPERATURE OF 53°F (ADJ.) AS DETERMINED BY TEMPERATURE SENSOR IT-4.
I. DEHUMIDIFICATION MODE:
1. THE AHU SHALL BE PLACED IN DEHUMIDIFICATION MODE SHOULD THE RETURN AIR HUMIDITY SENSED BY HT-1 RISE ABOVE SETPOINT (55% ADJ.). THE DX COOLING SYSTEM SHALL BE OVERRIDDEN TO OPEN TO OBTAIN A COIL DISCHARGE TEMPERATURE OF 53°F (ADJ.) AS SENSED BY TEMPERATURE SENSOR IT-2. THE HOT-GAS REHEAT COIL SHALL MODULATE UNTIL THE RETURN AIR HUMIDITY FALLS BELOW SETPOINT (50% ADJ.). THE DISCHARGE AIR TEMPERATURE SENSOR IT-4 WILL RESUME CONTROL OF THE DX COOLING SYSTEM.
J. DEMAND CONTROL VENTILATION MODE:
1. UPON A RISE IN SPACE CO2 READING ABOVE 800 PPM, THE UNIT SHALL ENABLE DEMAND CONTROL VENTILATION MODE. IN DEMAND CONTROL VENTILATION MODE, THE OUTSIDE AIR DAMPER D-1 SHALL MODULATE OPEN (BETWEEN 1,000 CFM AND 1,325 CFM OF OUTSIDE) AN ADDITIONAL 5% EACH 15 MINUTES THAT THE SPACE AIR CO2 IS ABOVE SETPOINT. OTHERWISE THE UNIT SHALL OPERATE IN ITS NORMAL OPERATIVE SEQUENCE.
K. SUPPLY AIR TEMPERATURE RESET:
1. DURING OCCUPIED MODE, SUPPLY AIR TEMPERATURE SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE AND RETURN AIR RELATIVE HUMIDITY TO SATISFY THE MORE DEMANDING REQUIREMENT.
L. SAFETIES:
1. THE FOLLOWING SAFETIES SHALL DE-ENERGIZE THE SUPPLY AND RETURN FANS, CLOSE DAMPERS TO OUTSIDE AIR, OPEN CHILLED AND HOT WATER VALVES AND GENERATE AN ALARM THE CCMS SYSTEM:
a. SHUTDOWN SIGNAL FROM THE FIRE ALARM SYSTEM
b. DISCHARGE HIGH STATIC PRESSURE SWITCH @ 4" WC (ADJ.).
c. RETURN AIR HIGH NEGATIVE PRESSURE SWITCH @ 4" WC NEG. (ADJ.).
d. FAN FAILURE.
ALL SAFETIES REQUIRE MANUAL RESET FROM THE CCMS.
M. ADDITIONAL ALARMS:
1. A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR FILTER LOADING AND GENERATE AN ALARM UPON ACTIVATION.



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Table with columns: Description, Value. Rows include: Drawn JSC, Checked SPR, Date 1/10/2025, Revisions.

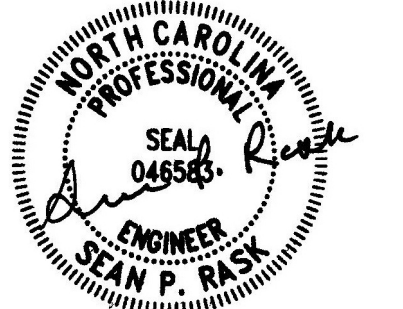
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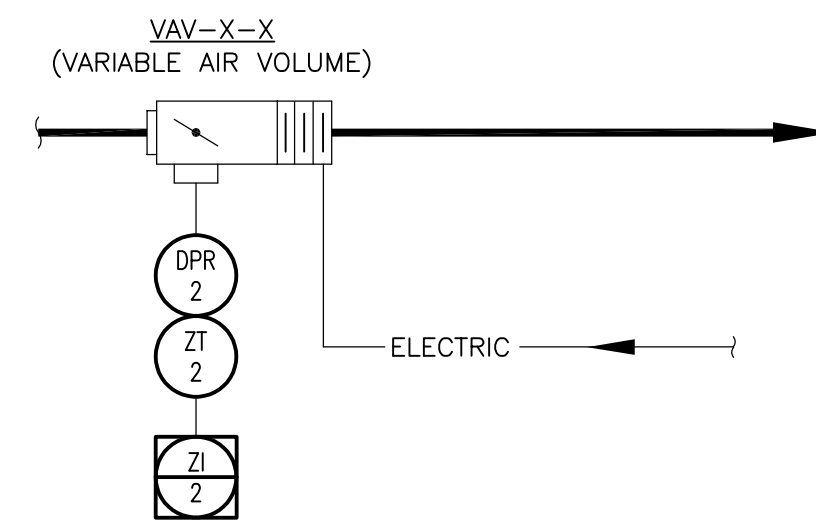


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POINT NO.	SYSTEM APPARATUS OR AREA POINT DESCRIPTION	INPUTS																			OUTPUTS					SYSTEM FEATURES					GENERAL									
		ANALOG									BINARY										BINARY	ANALOG	ALARMS	PROGRAMS	GENERAL	ALARMS	PROGRAMS	GENERAL	ALARMS	PROGRAMS	GENERAL									
		MEASURED					CALC.				BINARY					BINARY																								
SPEED (FREQ)	VOLTS	AMPS	VALVE/DAMPERS POSITION	TEMPERATURE	HUMIDITY	STATIC PRESSURE	DIFFERENTIAL PRESSURE	TEMPERATURE	CO2	CO	RAVIA	RELATIVE HUMIDITY	ENTHALPY	STATUS (DIFF. PRESS)	HIGH HVAL LIMIT	LOW TEMP LIMIT	END SWITCH (ES) POSITION	ENABLE-DISABLE	DAMPERS POSITION	DIFFERENTIAL PRESSURE	VALVE POSITION	DAMPERS POSITION	LOW TEMP LIMIT	HIGH TEMP LIMIT	LESS LIMIT	HAZARD	HIGH OR LOW LEVEL ALARM	FIRE ALARM	TIME SCHEDULING	TIME DELAY START	SCHEDULE	ALARMS(S)	TREND INTERVAL (MIN)	RUN TIME TOTALIZE	LOGGING	EXERCISE OR OFFLINE				
1, 1a	TYPICAL EXHAUST FAN SYSTEM SEQUENCE																																							
2, 2a	TYPICAL SUPPLY VAV	X	X	X	X	X									X	X	X	X	X																					



TYPICAL TERMINAL UNIT (VAV)

GENERAL:

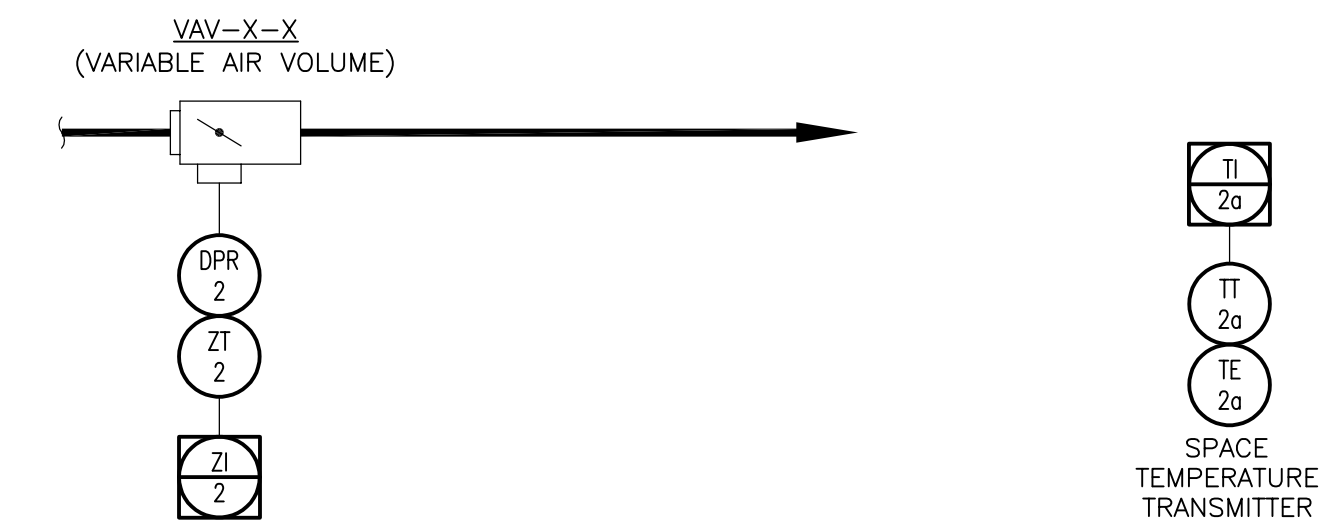
- A. SEE PLANS FOR LOCATIONS OF ALL DAMPERS AND EQUIPMENT; WHERE SUCH DEVICES ARE NOT INDICATED, BUT ARE REQUIRED BY THE SEQUENCES, THEY SHALL BE PROVIDED BY THE CONTRACTOR AND LOCATED IN THE FIELD BY THE ENGINEER.
- B. THE BUILDING MANAGEMENT SYSTEM (BMS) SHALL DETERMINE OCCUPIED MODE, UNOCCUPIED MODE AND EMERGENCY POWER MODE AS SCHEDULED BY THE OWNER AND DUE TO A LOSS OF POWER RESPECTIVELY.
- C. THE BMS SHALL DETERMINE COOLING MODE AND HEATING MODE. THE SYSTEM SHALL BE IN COOLING MODE WHEN OUTDOOR AIR (OA) TEMPERATURE IS AT OR ABOVE 60°F (ADJ) AND SHALL BE IN HEATING MODE WHEN OA TEMPERATURE IS AT OR BELOW 55°F (ADJ). SYSTEM SHALL REMAIN IN COOLING MODE WHEN OA TEMPERATURE FALLS BELOW 60°F (ADJ) INTO THE DEAD BAND OF 55°F (ADJ) AND 60°F (ADJ) AND SHALL BE IN HEATING MODE WHEN OA TEMPERATURE RISES ABOVE 55°F (ADJ) INTO THE DEAD BAND OF 55°F (ADJ) AND 60°F (ADJ).

OCCUPIED MODE:

- A. VARIABLE AIR VOLUME SUPPLY BOX VAV-X-X SHALL MODULATE EQUALLY (SUPPLY DEMAND AIR FLOW) BETWEEN MINIMUM AND MAXIMUM AIR FLOW SETPOINTS AS INDICATED ON THE SCHEDULES TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 75°F (ADJ) DURING COOLING MODE AND 70°F (ADJ) DURING HEATING MODE.

UNOCCUPIED MODE:

- A. VARIABLE AIR VOLUME SUPPLY BOX VAV-X-X SHALL BE AT ITS MINIMUM AIR FLOW RATE AS PER THE SCHEDULES.



ELEC/DATA TERMINAL UNIT (VAV)

GENERAL:

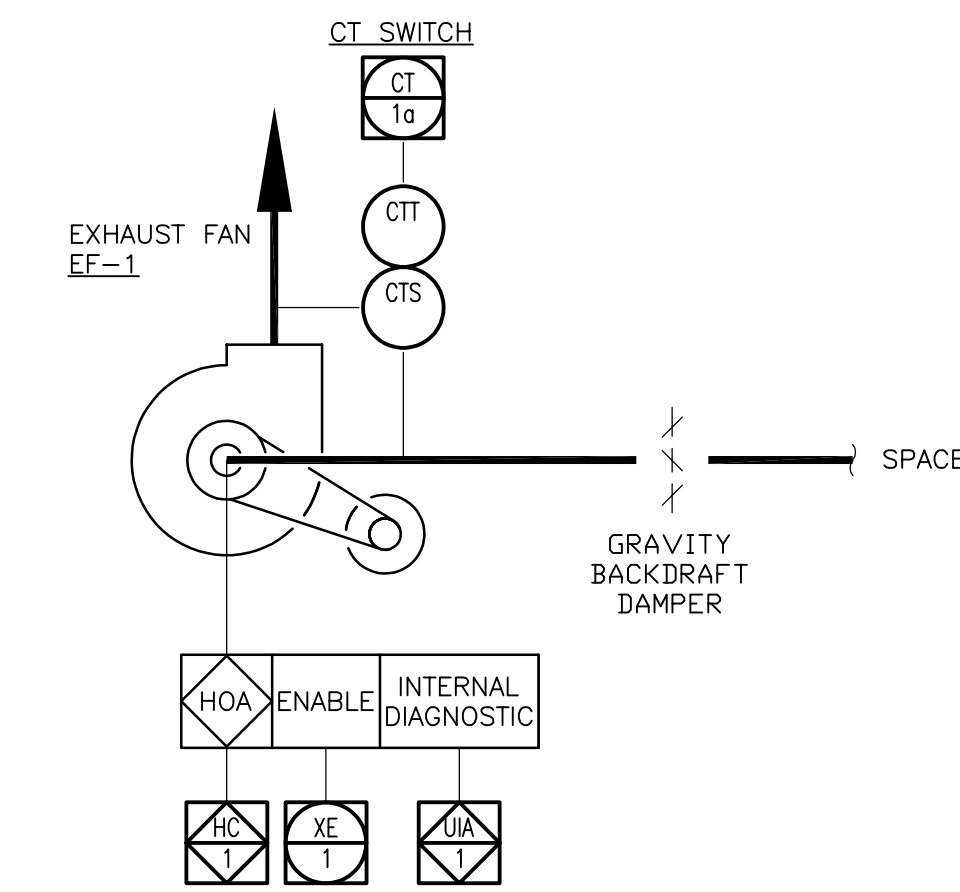
- A. SEE PLANS FOR LOCATIONS OF ALL DAMPERS AND EQUIPMENT; WHERE SUCH DEVICES ARE NOT INDICATED, BUT ARE REQUIRED BY THE SEQUENCES, THEY SHALL BE PROVIDED BY THE CONTRACTOR AND LOCATED IN THE FIELD BY THE ENGINEER.
- B. THE BUILDING MANAGEMENT SYSTEM (BMS) SHALL DETERMINE OCCUPIED MODE, UNOCCUPIED MODE AND EMERGENCY POWER MODE AS SCHEDULED BY THE OWNER AND DUE TO A LOSS OF POWER RESPECTIVELY.
- C. THE BMS SHALL DETERMINE COOLING MODE AND HEATING MODE. THE SYSTEM SHALL BE IN COOLING MODE WHEN OUTDOOR AIR (OA) TEMPERATURE IS AT OR ABOVE 60°F (ADJ) AND SHALL BE IN HEATING MODE WHEN OA TEMPERATURE IS AT OR BELOW 55°F (ADJ). SYSTEM SHALL REMAIN IN COOLING MODE WHEN OA TEMPERATURE FALLS BELOW 60°F (ADJ) INTO THE DEAD BAND OF 55°F (ADJ) AND 60°F (ADJ) AND SHALL BE IN HEATING MODE WHEN OA TEMPERATURE RISES ABOVE 55°F (ADJ) INTO THE DEAD BAND OF 55°F (ADJ) AND 60°F (ADJ).

OCCUPIED MODE:

- A. VARIABLE AIR VOLUME SUPPLY BOX VAV-X-X SHALL MODULATE EQUALLY (SUPPLY DEMAND AIR FLOW) BETWEEN MINIMUM AND MAXIMUM AIR FLOW SETPOINTS AS INDICATED ON THE SCHEDULES TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 75°F (ADJ) DURING COOLING MODE AND 70°F (ADJ) DURING HEATING MODE.

UNOCCUPIED MODE:

- A. VARIABLE AIR VOLUME SUPPLY BOX VAV-X-X SHALL BE AT ITS MINIMUM AIR FLOW RATE AS PER THE SCHEDULES.



TYPICAL EXHAUST FAN SYSTEM SEQUENCE OF OPERATION

GENERAL:

- A. SEE PLANS FOR LOCATIONS OF ALL DEVICES AND EQUIPMENT; WHERE SUCH DEVICES ARE NOT INDICATED, BUT ARE REQUIRED BY THE SEQUENCES, THEY SHALL BE PROVIDED BY CONTRACTOR AND LOCATED IN THE FIELD BY THE ENGINEER. EXHAUST FANS SHALL SHUT DOWN UPON FIRE ALARM.
- B. EXHAUST FANS SHALL BE PROVIDED WITH HOA CONTROL AND SHALL BE STARTED LOCALLY OR VIA THE BMS. WHEN HOA SWITCH IS IN OFF, FAN SHALL BE OFF AND BMS CONTROL SHALL BE DISABLED. WHEN HOA SWITCH IS IN HAND THE FAN SHALL BE ON AND BMS CONTROL SHALL BE DISABLED. WHEN HOA SWITCH IS IN AUTO FAN SHALL OPERATE VIA BMS CONTROL.
- C. EXHAUST FANS SHALL BE ENABLED DURING OCCUPIED PERIODS AND DISABLED DURING UNOCCUPIED PERIODS BY THE BMS.
- D. PROVIDE AIRFLOW PROVING SWITCH FOR ALL EXHAUST FANS, AN ALARM SHALL BE GENERATED AT THE BMS WHENEVER THE FAN IS RUNNING AND THE AIRFLOW PROVING SWITCH IS NOT SENSING AIR MOVEMENT.
- E. PROVIDE EXHAUST FAN RELAY FOR REMOTE SHUTDOWN OPERATION.

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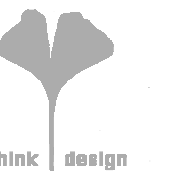
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MISCELLANEOUS SCHEMATIC

Sheet

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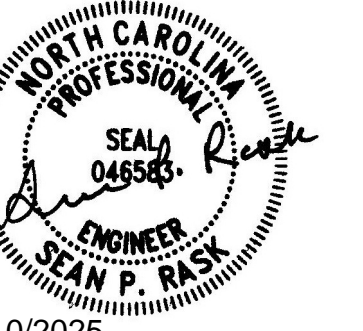
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Revisions

AIR HANDLING UNIT SCHEDULE table with columns: DESIGNATION, SERVICE, REFRIGERANT TYPE, SUPPLY AIR (CFM COOLING, CFM HEATING, MIN. OA CFM, NO. OF FANS, DRIVE TYPE, ESP INCH WC, TSP INCH WC), MOTOR (EACH) (BHP, HP, RPM), COOLING SECTION (DX) (EAT °F DB WB, LAT °F DB WB, TOTAL MBH, SENS MBH, EER, SEER), ELECTRICAL (POWER V/PH/Hz, FLA (AMPS), MCA (AMPS), MOC (AMPS)), WEIGHT (LBS), BASIS OF DESIGN, REMARKS.

- 1. PROVIDE VFD FOR SUPPLY FAN. UNIT MOUNTED DISCONNECT, 2" PLEATED (MERV 13) UPSTREAM OF COOLING COIL.
2. EQUIVALENT APPROVED MANUFACTURERS INCLUDE DAIKIN, JCI AND CARRIER.

AIR DEVICE SCHEDULE table with columns: NO. CFM, SERVICE, CFM RANGE LOW-HIGH, MODULE SIZE (IN), NECK SIZE (IN), FRAME TYPE, BLOW, NC, AIR PRESSURE DROP (INWG), BASIS OF DESIGN, REMARKS.

- 1. PROVIDE INSULATION FOR ALL DIFFUSERS AND GRILLES WITH PLENUM BOXES.
2. SEE SPECIFICATION 233713.13 & 233713.23 FOR EQUIVALENT MANUFACTURERS. EQUIVALENT APPROVED MANUFACTURERS INCLUDE TITUS AND PRICE.
3. PROVIDE NECK SIZE DUCT ELBOW PRIOR TO TRANSITIONING TO EXHAUST DUCT.
4. ALL DEVICES SHALL BE INDEPENDENTLY SUPPORTED.
5. ALL AIR DEVICES ARE SPECIFIC TO A CEILING TYPE. COORDINATE WITH ARCHITECTURAL DRAWING FOR PROPER APPLICATION.
6. PROVIDE MERV 8 FILTER AT RETURN GRILLE/REGISTER FACE.

EXHAUST FAN SCHEDULE table with columns: DESIGNATION, SERVICE, TYPE, CFM, ESP INCH WG, APPROXIMATE RPM, BHP, MOTOR WATTS, DRIVE, ELECTRICAL (FLA, MCA, MOP, V/PH/Hz), APPROXIMATE WEIGHT LBS, BASIS OF DESIGN, REMARKS.

- 1. PROVIDE ELECTRONICALLY COMMUTATED MOTOR, UNIT MOUNTED DISCONNECT SWITCH, GRAVITY BACKDRAFT DAMPER AND ROOF TERMINATION KIT. EXHAUST FAN SHALL BE CONTROLLED BY BAS SCHEDULE.
2. PROVIDE ELECTRONICALLY COMMUTATED MOTOR, UNIT MOUNTED DISCONNECT SWITCH, GRAVITY BACKDRAFT DAMPER, AND WALL LOUVER TERMINATION KIT. EXHAUST FAN SHALL BE CONTROLLED BY BAS SCHEDULE.
3. EXHAUST FAN AND ALL ASSOCIATED DUCTWORK AND ACCESSORIES ARE INCLUDED IN ADD ALTERNATE NO.5.
4. SEE SPECIFICATION 233416 FOR EQUIVALENT MANUFACTURERS. EQUIVALENT APPROVED MANUFACTURERS INCLUDE LOREN COOK AND PENNBARRY.

AHU-1 VENTILATION SCHEDULE table with columns: ASHRAE Standard, Room Name, Area, Ceiling Height, Pop., CFM per Person, CFM per Area, Breathing Zone CFM, Distribution Eff., Zone Outdoor Airflow\*, Zone Supply Airflow, Zone Exhaust Airflow, Outdoor Air Fraction, Max. Outdoor Air Fraction, System Vent. Efficiency, Uncorrected Outdoor Air Intake\*\*, Outdoor Air Intake Flow Rate, Actual OA Flow Rate, Required Pressurization.

\*\*Diversity factor assumed to be 75%

SA Total: 2385

OA Total: 830

VARIABLE AIR VOLUME SCHEDULE table with columns: DESIGNATION, AREA SERVED, MAXIMUM COOLING CFM, MAXIMUM HEATING CFM, MINIMUM CFM, UNOCCUPIED MINIMUM CFM, INLET SIZE, OUTLET SIZE, EAT (°F), LAT (°F), COIL (MBH), COIL SIZE (KW), ELECTRICAL (V/PH/Hz), REMARKS.

- NOTES:
1. SOUND DATA SHALL BE OBTAINED FROM TESTS CONDUCTED IN ACCORDANCE WITH ARI STANDARD 880-98.
2. ALL CFM, PRESSURE AND HEATING PERFORMANCE VALUES ARE CORRECTED FOR ALTITUDE.
3. NC LEVELS SHALL NOT EXCEED 25.
4. AIR PRESSURE DROP SHALL NOT EXCEED 0.5" W.C.
5. PROVIDE FACTORY PROVIDED DISCONNECT SWITCH AND 24V TRANSFORMER.
6. ELECTRIC REHEAT SHALL BE SCR CONTROLLED.
7. SEE SPECIFICATION 233600 FOR MANUFACTURERS.

CABINET UNIT HEATER SCHEDULE table with columns: DESIGNATION, SERVICE, CFM, ELECTRICAL (V/PH/Hz, KW, AMPS), APPROXIMATE WEIGHT LBS, BASIS OF DESIGN, REMARKS.

- NOTES:
1. PROVIDE UNIT MOUNTED DISCONNECT SWITCH, UNIT MOUNTED THERMOSTAT AND KEY LOCK FOR FRONT COVER.
2. PROVIDE WALL MOUNTED SWITCH TO ENABLE/DISABLE CABINET UNIT HEATER.
3. PROVIDE FULLY RECESS TRIM KIT.
4. EQUIVALENT APPROVED MANUFACTURERS INCLUDE MODINE AND INDECO.

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NCSU Apiculture Facility
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SCO ID No.: 22-24494-01A
Code: 42124 Item: 315
NCSU: 202220007

Project Number 132

Title
MECHANICAL
SCHEDULES

Sheet

M701

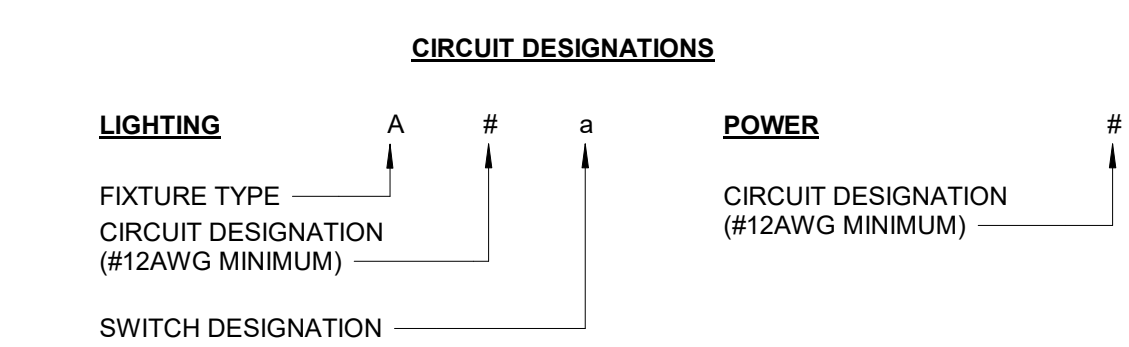
Plate

ELECTRICAL SYMBOLS

Table of electrical symbols categorized into Lighting Symbols, Special Systems Symbols, and Power Symbols. Each symbol includes a description, mounting height (MH), and unit of measurement (UON).

ELECTRICAL ABBREVIATIONS

Table of electrical abbreviations with columns for Symbol, Description, and Unit of Measurement (UON). Includes notes on standard abbreviations and specific symbols for lighting and power.

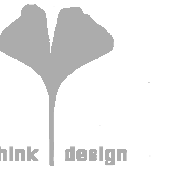


ELECTRICAL SYMBOLS NOTES

- 1. THIS IS A STANDARD SYMBOL LIST. SOME SYMBOLS MAY NOT APPEAR ON THE ACCOMPANYING DRAWINGS.
2. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
3. PLAN AND SECTION SYMBOLS MAY ALSO BE USED ON RISER DIAGRAMS.
4. ON SINGLE LINE DIAGRAMS FOR 3 PHASE SYSTEMS, DEVICE QUANTITY = 3, UNLESS OTHERWISE NOTED.
5. DEVICE SHALL BE MOUNTED A MINIMUM OF 90" AFF TO BOTTOM OF DEVICE OR BELOW THE FINISHED CEILING OF NOT LESS THAN 6" TO TOP OF DEVICE, WHICHEVER IS LOWER, UNLESS OTHERWISE NOTED, ALL INTERIOR CONDUITS AND BOXES SHALL BE CONCEALED.

ELECTRICAL DRAWING PRESENTATION

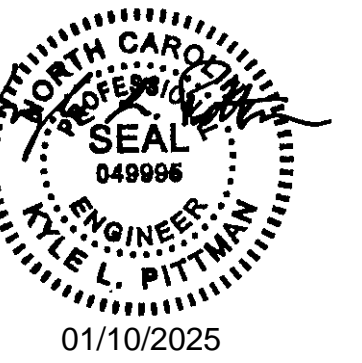
Table showing electrical drawing presentation symbols and their descriptions. Includes symbols for revision numbers, drawing note numbers, section/elevation identification, part plan and detail identification, and existing/new/demolition line types.



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Project Number 132

ELECTRICAL NOTES, SYMBOLS AND ABBREVIATIONS

Sheet

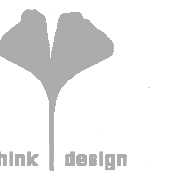
E001

Plate

**DRAWING NOTES**

- ① BASIS OF DESIGN FOR POLE LIGHT, FIXTURE TYPE P1 IS LITHONIA OSK2-LED-40-40K-80CRI-3-ANVOLT. ACCEPTABLE ALTERNATES SHALL HAVE SIMILAR CHARACTERISTICS. FIXTURE SHALL BE CONNECT TO RP1-46 AND CONTROLLED THROUGH THE TIME CLOCK RELAY.
- ② PROVIDE 12"X12" HAND HOLE FOR PULL POINT FROM INTERIOR PANEL.
- ③ TELECOM DUCTBANK TO INWOOD ROAD.
- ④ PRIMARY DUCTBANK TO DUKE ENERGY TRANSFORMER.

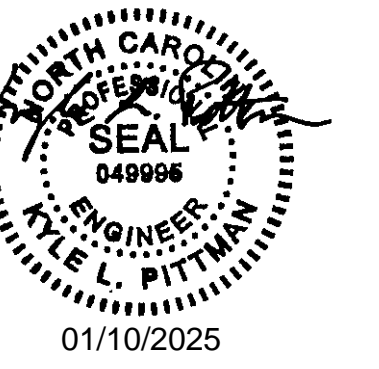
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NCSU: 20222007

Project Number 132

**ELECTRICAL SITE PLAN**

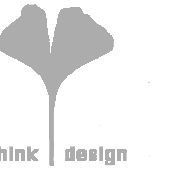
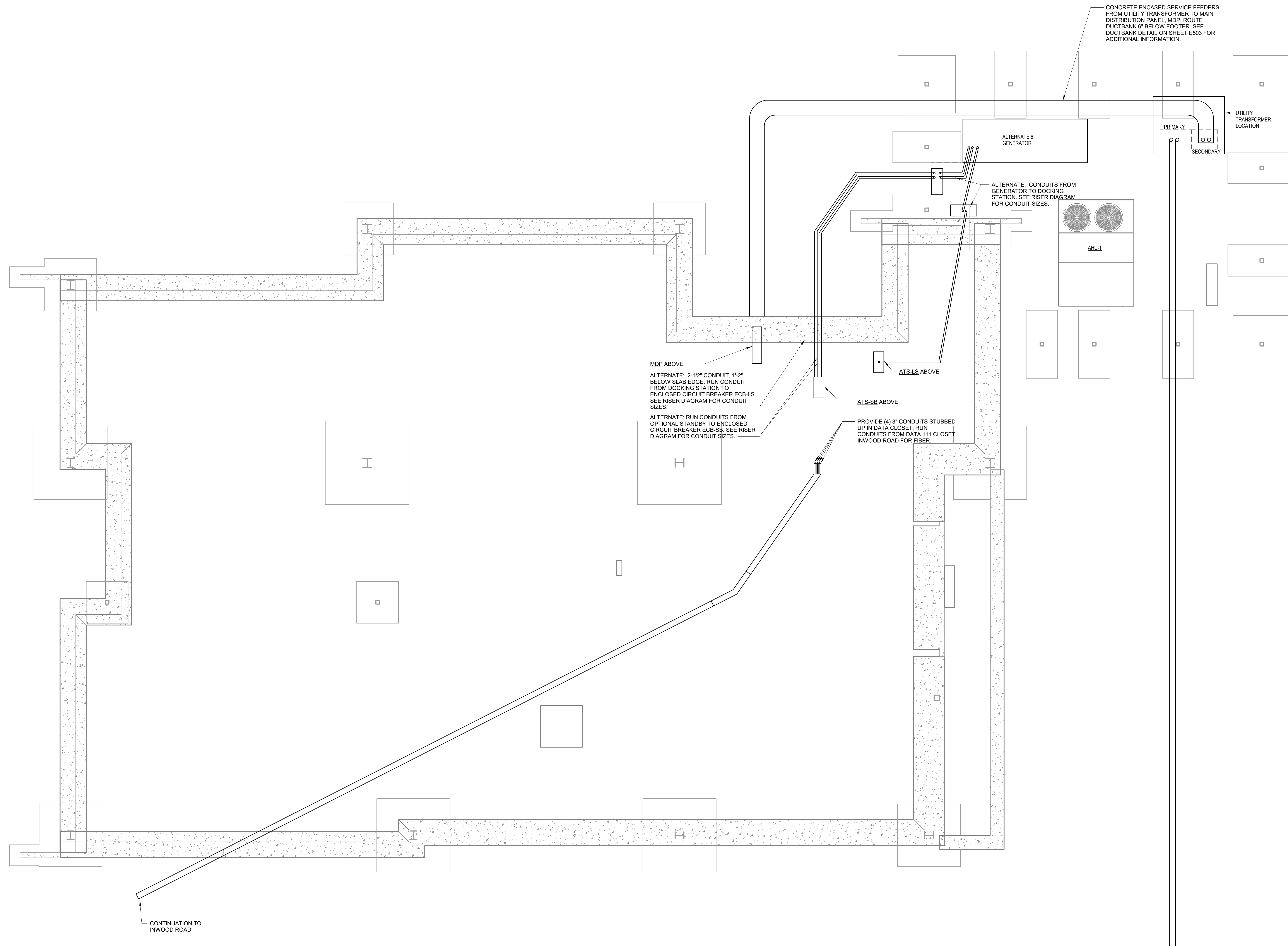
Sheet

**E101**

Plate



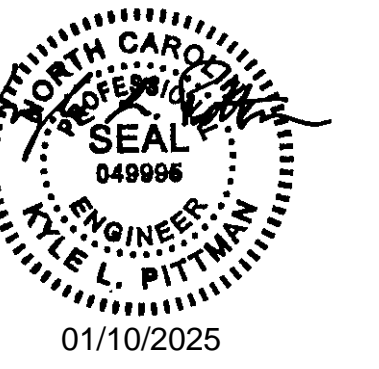




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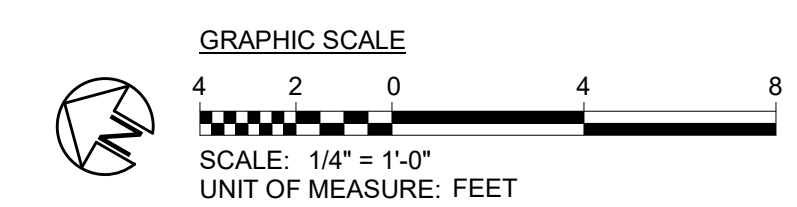
Project Number: 132

## ELECTRICAL UNDER SLAB PLAN

Sheet

# E102

Plate

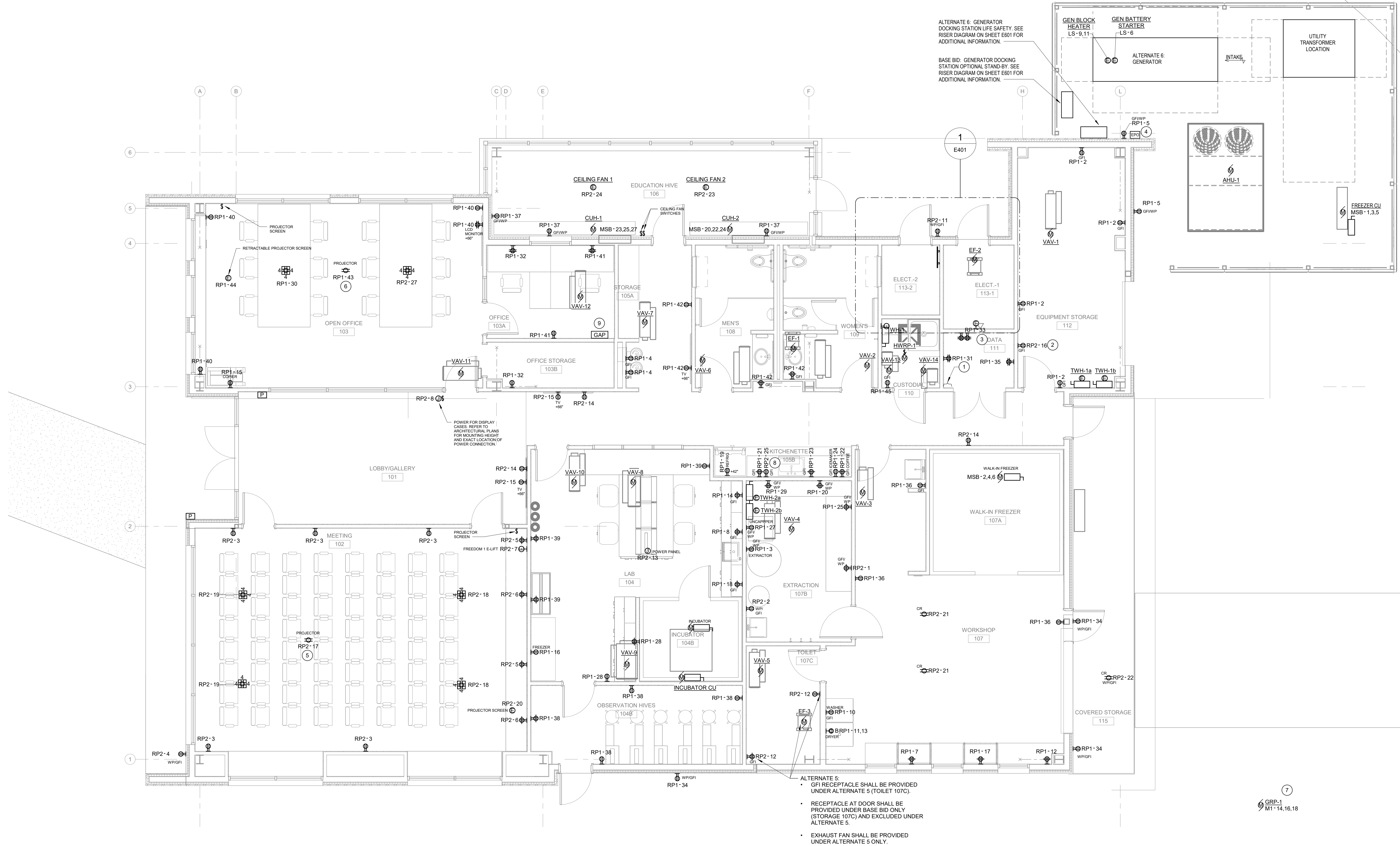


### GENERAL NOTES

A. SEE SHEET E701 FOR MOTOR AND EQUIPMENT CONNECTIONS.

### DRAWING NOTES

- CONDUITS FROM HANDHOLE OUTSIDE OF BUILDING FOR FIBER SERVICE.
- PROVIDE POWER FOR SECURITY PANEL. COORDINATE MOUNTING HEIGHT AND EXACT PLACEMENT IN FIELD WITH SECURITY INSTALLER.
- PROVIDE 3/4" THICK, FIRE-RETARDANT PLYWOOD ON WALLS FROM FLOOR TO 8'-0" AFF.
- PROVIDE EPO SWITCH FOR GENERATOR.
- PROJECTOR RECEPTACLE SHALL BE MOUNTED ABOVE FLOATING CEILING. COORDINATE PROJECTOR LOCATION AND MOUNTING WITH NCSU CLASSTECH.
- COORDINATE PROJECTOR LOCATION AND MOUNTING WITH NCSU CLASSTECH.
- GRINDER PUMP LOCATED OUTSIDE BUILDING. COORDINATE LOCATION AND PUMP SIZE WITH CIVIL DRAWINGS.
- MICROWAVE RECEPTACLE SHALL BE MOUNTED 24" AFF. COORDINATE ROUGH-IN LOCATION WITH ARCHITECTURAL ELEVATIONS.
- ALTERNATE 6: PROVIDE 3/4" FROM GENERATOR TO GENERATOR ANNUNCIATOR PANEL (GAP). PROVIDE 2#14 TWISTED SHIELDED PAIR WIRE OR MANUFACTURER SPECIFIED WIRE.

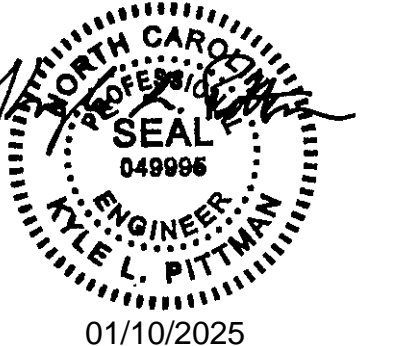


think | design

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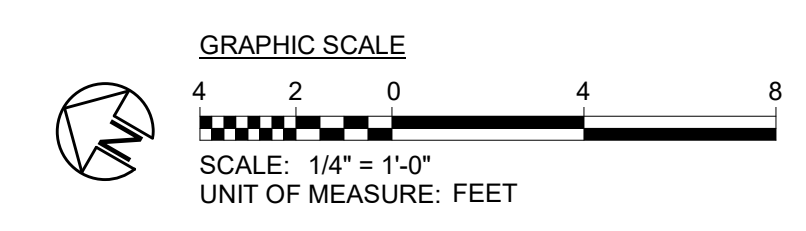
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Code: 42124 Item: 315  
NCSU: 202220007

Project Number 132  
Title  
**POWER FLOOR PLAN**

Sheet  
**E111**  
Plate

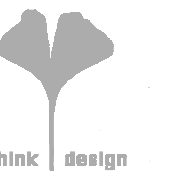


**DRAWING NOTES**

- 1 PROVIDE JUNCTION BOX (SSI-A). REFER TO DETAILS FOR ROUGH-IN INSTALLATION.
- 2 PROVIDE JUNCTION BOX (SSI-B). REFER TO DETAILS FOR ROUGH-IN INSTALLATION.
- 3 WALL MOUNTED 8" BELOW CEILING.
- 4 PROJECTOR DATA OUTLET SHALL BE MOUNTED ABOVE FLOATING CEILING. COORDINATE PROJECTOR LOCATION AND MOUNTING WITH NCSU CLASSTECH.
- 5 PROVIDE 1" CONDUIT FROM DATA JUNCTION BOX TO DATA OULET IN ADJACENT SPACE. ALL DATA CABLING SHALL BE IN CONDUIT. J-HOOKS ARE NOT ALLOWED.



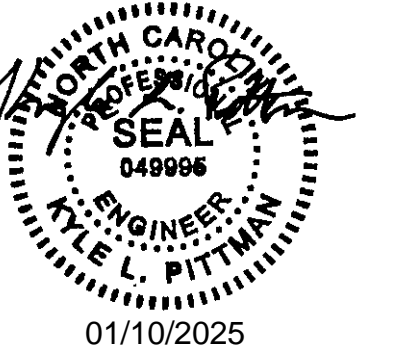
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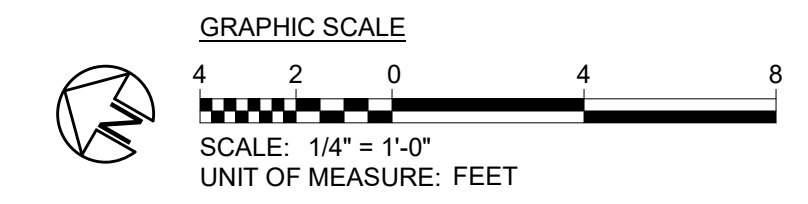
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Project Number 132  
 Title  
**SPECIAL SYSTEMS FLOOR PLAN**

Sheet  
**E121**  
 Plate



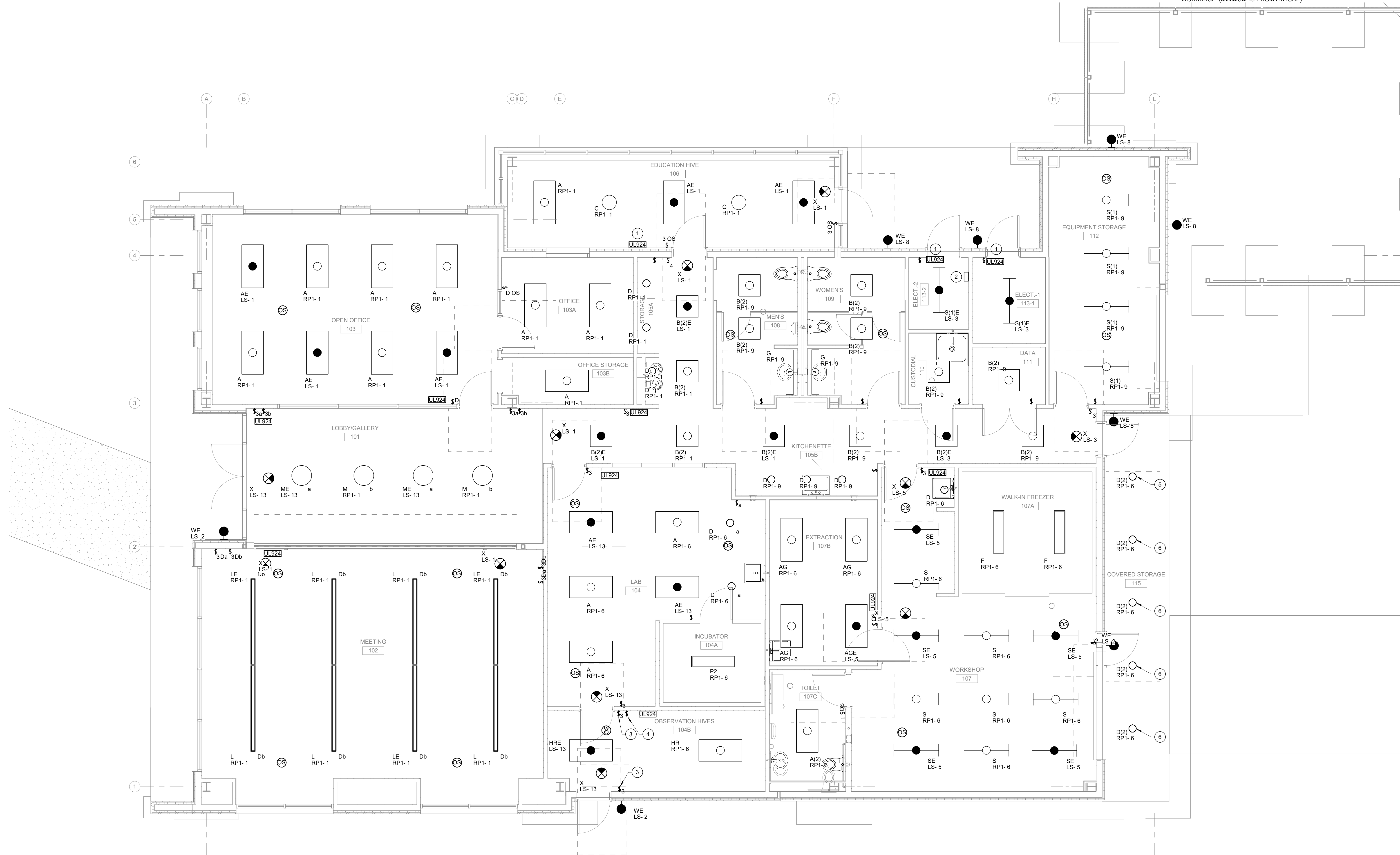
APPENDIX B CALCULATIONS: 2018 NORTH CAROLINA ENERGY CONSERVATION CODE  
BUILDING SQUARE FOOTAGE = 5171 SF  
NCECC FACTOR (SCHOOL/UNIVERSITY) = 0.87 W/SF  
5171 SF X 0.87 W/SF = 4499 W X 0.9 = 4049 W ALLOWABLE VS. 3122 W SPECIFIED

GENERAL NOTES

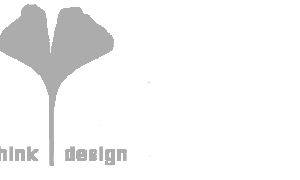
- A. ALL LIGHTING FIXTURES ARE CIRCUITED TO PANEL RP1 UNLESS STATED OTHERWISE.
- B. ALL EXTERIOR LIGHT FIXTURES SHALL BE CONTROLLED BY ASTRONOMICAL TIME CLOCK. TIME CLOCK SHALL HAVE CAPABILITY TO INDIVIDUALLY CONTROL CIRCUITS AND BE PROGRAMMABLE TO MEET BUILDING OCCUPANT REQUIREMENTS.

DRAWING NOTES

- 1. ALTERNATE 6: PROVIDE UL924 RELAY DEVICE IF ALTERNATE IS ACCEPTED AND PROVIDE ADDITIONAL EMERGENCY CIRCUIT TO EMERGENCY FIXTURES AS INDICATED IN LIGHT FIXTURE TAG. EXIT SIGNS SHALL NOT BE CONTROLLED THROUGH UL924 DEVICES AND SHALL ONLY BE SERVED BY THE EMERGENCY CIRCUIT. IF ALTERNATE IS NOT ACCEPTED, ALL EMERGENCY FIXTURES SHALL HAVE BATTERY PACKS.
- 2. TIME CLOCK LOCATED NEXT TO LIGHTING PANELS.
- 3. SWITCH SHALL CONTROL LIGHT FIXTURE WHITE CIRCUIT.
- 4. SWITCH SHALL CONTROL LIGHT FIXTURE RED CIRCUIT.
- 5. INSTALL REMOTE DRIVER IN AN ACCESSIBLE LOCATION ABOVE CEILING IN THE CORRIDOR. (MINIMUM 15' FROM FIXTURE)
- 6. INSTALL REMOTE DRIVER IN AN ACCESSIBLE LOCATION MOUNTED HIGH IN THE WORKSHOP. (MINIMUM 15' FROM FIXTURE)



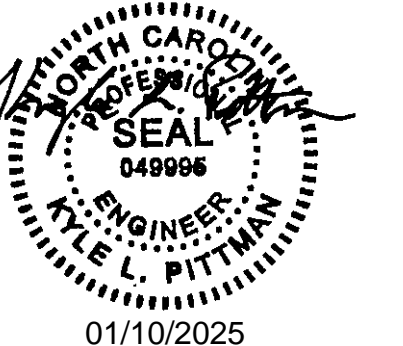
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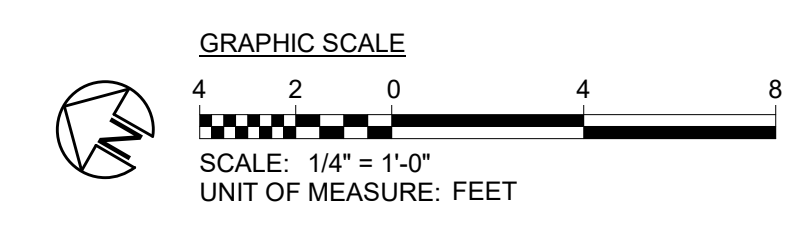
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NCSU: 202220007

Project Number 132  
Title LIGHTING FLOOR PLAN



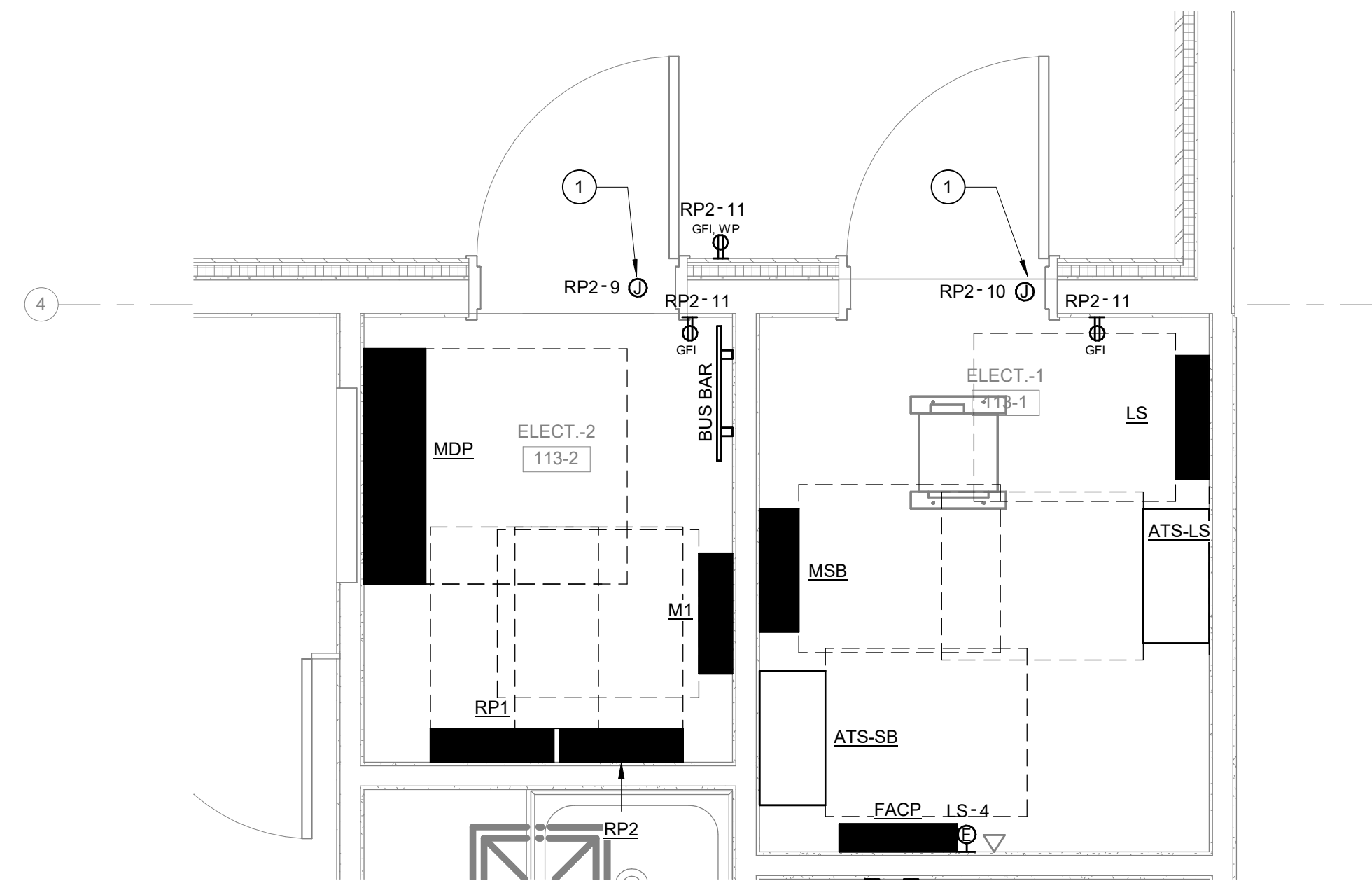
Sheet E131  
Plate

**GENERAL NOTES**

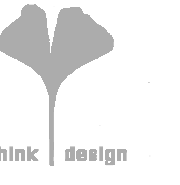
A. SEE SHEET E701 FOR MOTOR AND EQUIPMENT CONNECTIONS.

**DRAWING NOTES**

① PROVIDE POWER FOR DOOR PANIC HARDWARE.



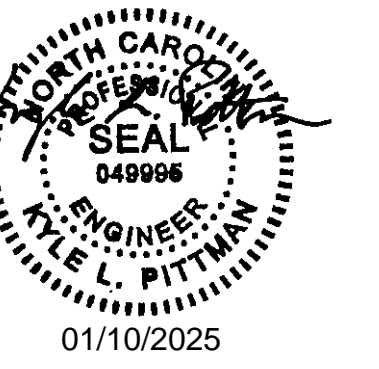
① **ELECTRICAL ROOM 112 & 112B**  
 E111 SCALE: 1/2" = 1'-0"



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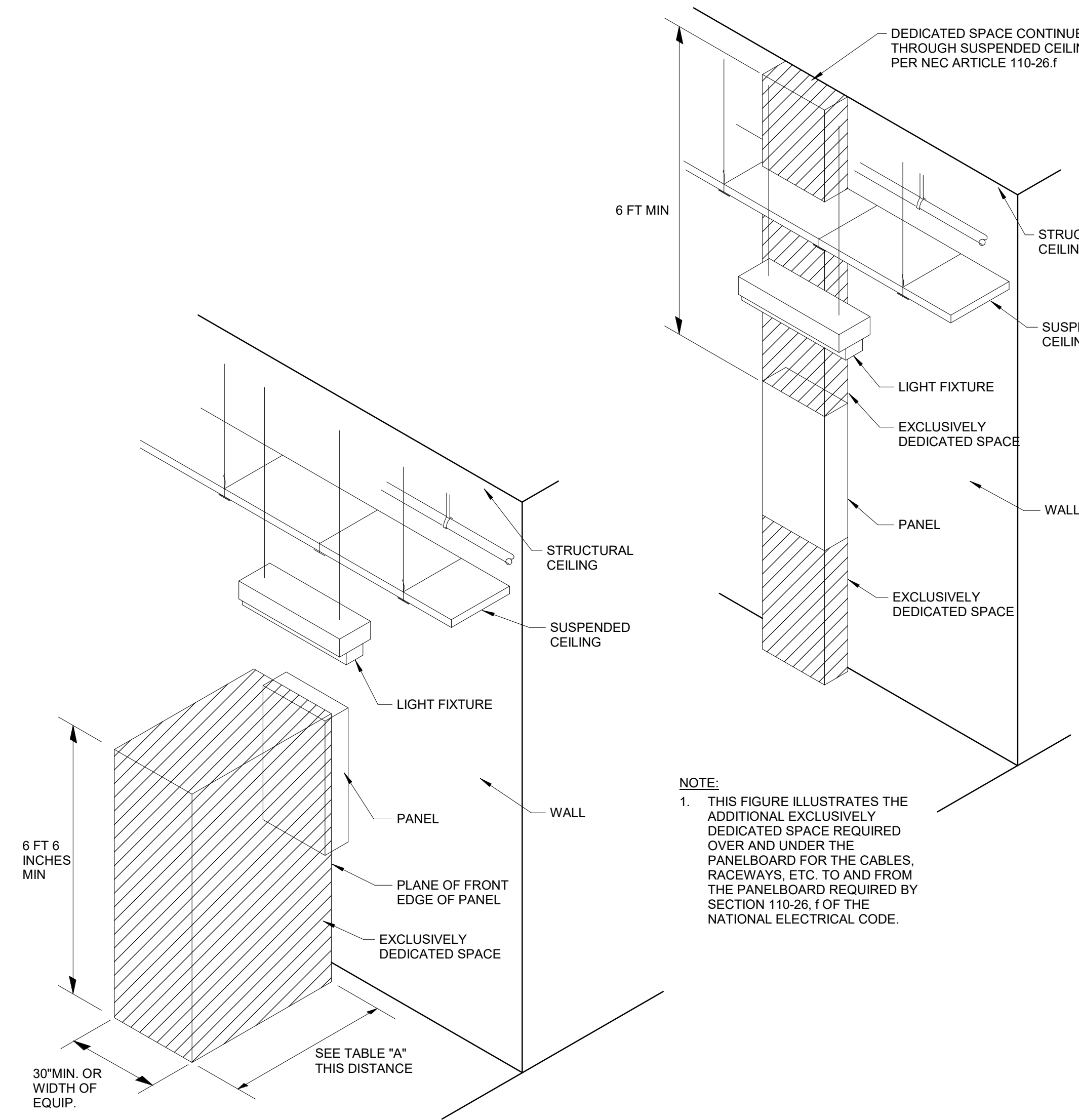
Project Number 132

Title  
**ELECTRICAL ENLARGED PLANS AND SECTIONS**

Sheet

**E401**

Plate



THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE PANELBOARD REQUIRED BY SECTION 110-26(E) OF THE NATIONAL ELECTRICAL CODE.

VOLTAGE TO GROUND, NOMINAL	MINIMUM CLEAR DISTANCE (FEET)		
	CONDITION: 1	2	3
0-150	3	3	3
151-600	3	3 1/2	4

WHERE THE "CONDITIONS" ARE AS FOLLOWS:

- EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300 VOLTS SHALL NOT BE CONSIDERED LIVE PARTS.
- EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE. CONCRETE, BRICK OR TILE SHALL BE CONSIDERED AS GROUNDED.
- EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

NOTES:

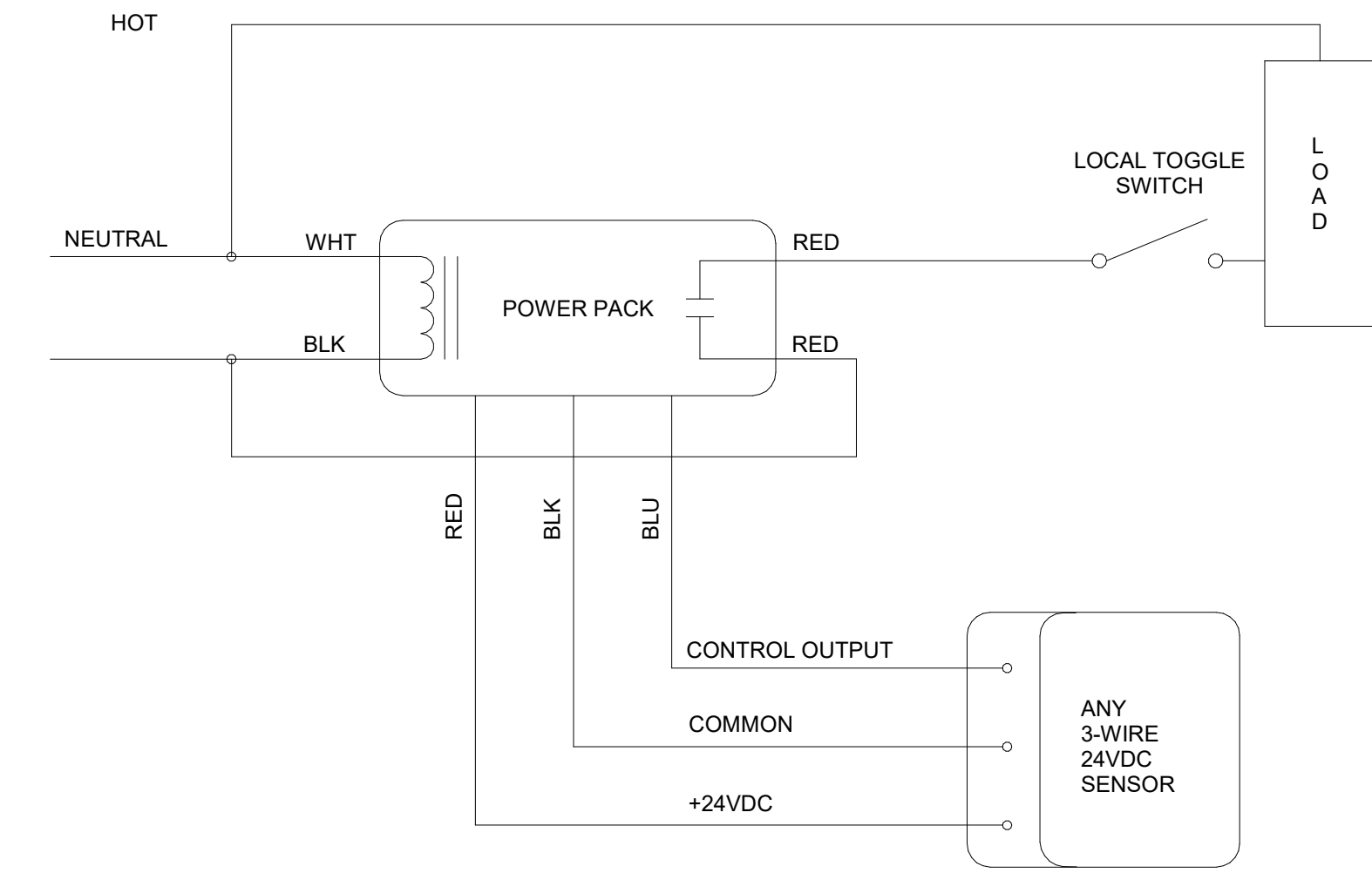
- NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES SHALL BE PERMITTED TO BE INSTALLED IN, ENTER OR PASS THROUGH THE DEDICATED SPACES SHOWN ABOVE.
- WORKING SPACES FOR EQUIPMENT DETAIL.

DETAIL - WORKING SPACES FOR EQUIPMENT

SCALE: NONE 1

DETAIL - MULTIPLE OCCUPANCY SENSORS USING ONE POWER PACK

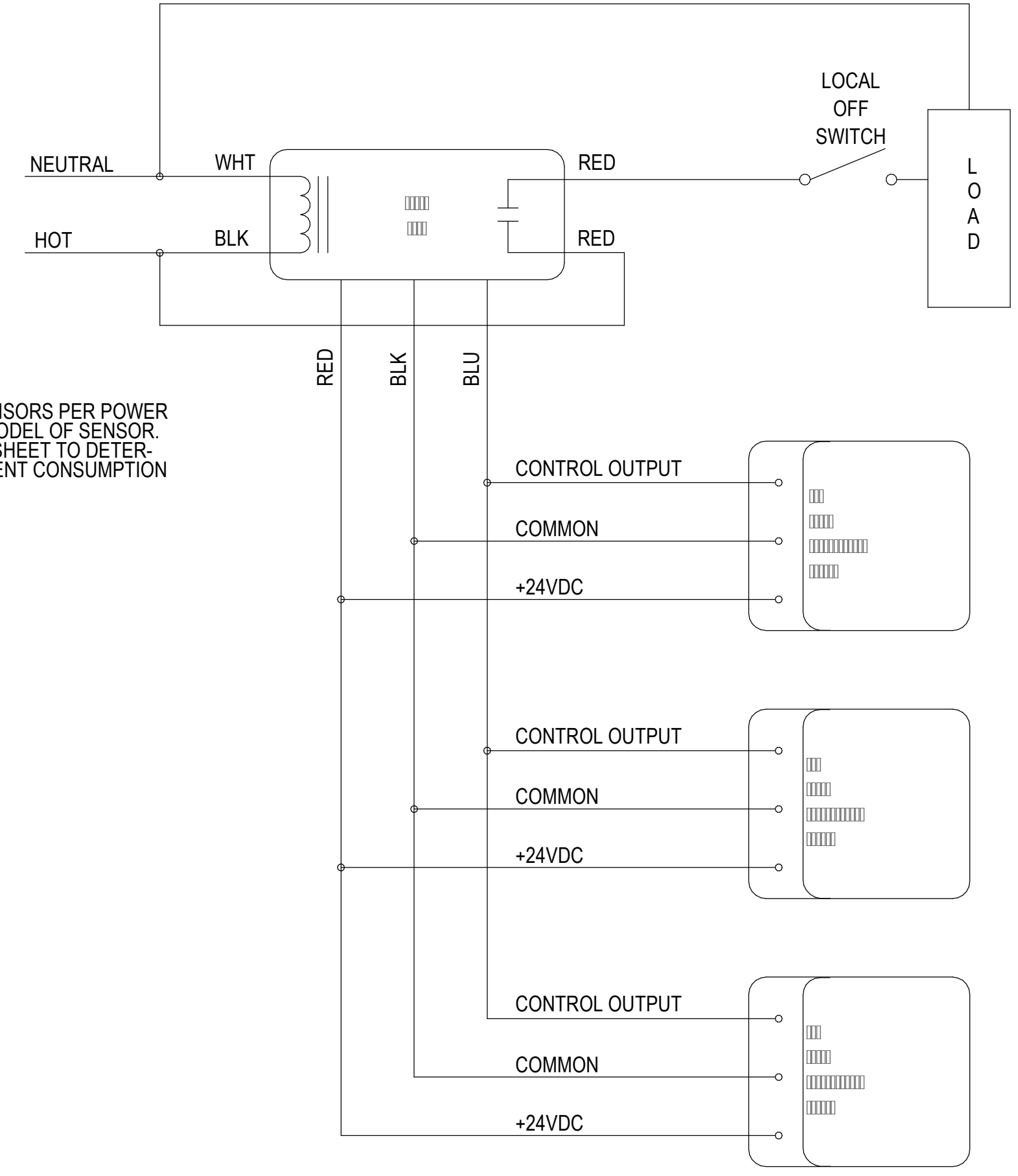
SCALE: NONE 3



DETAIL - 3-WIRE OCCUPANCY SENSOR

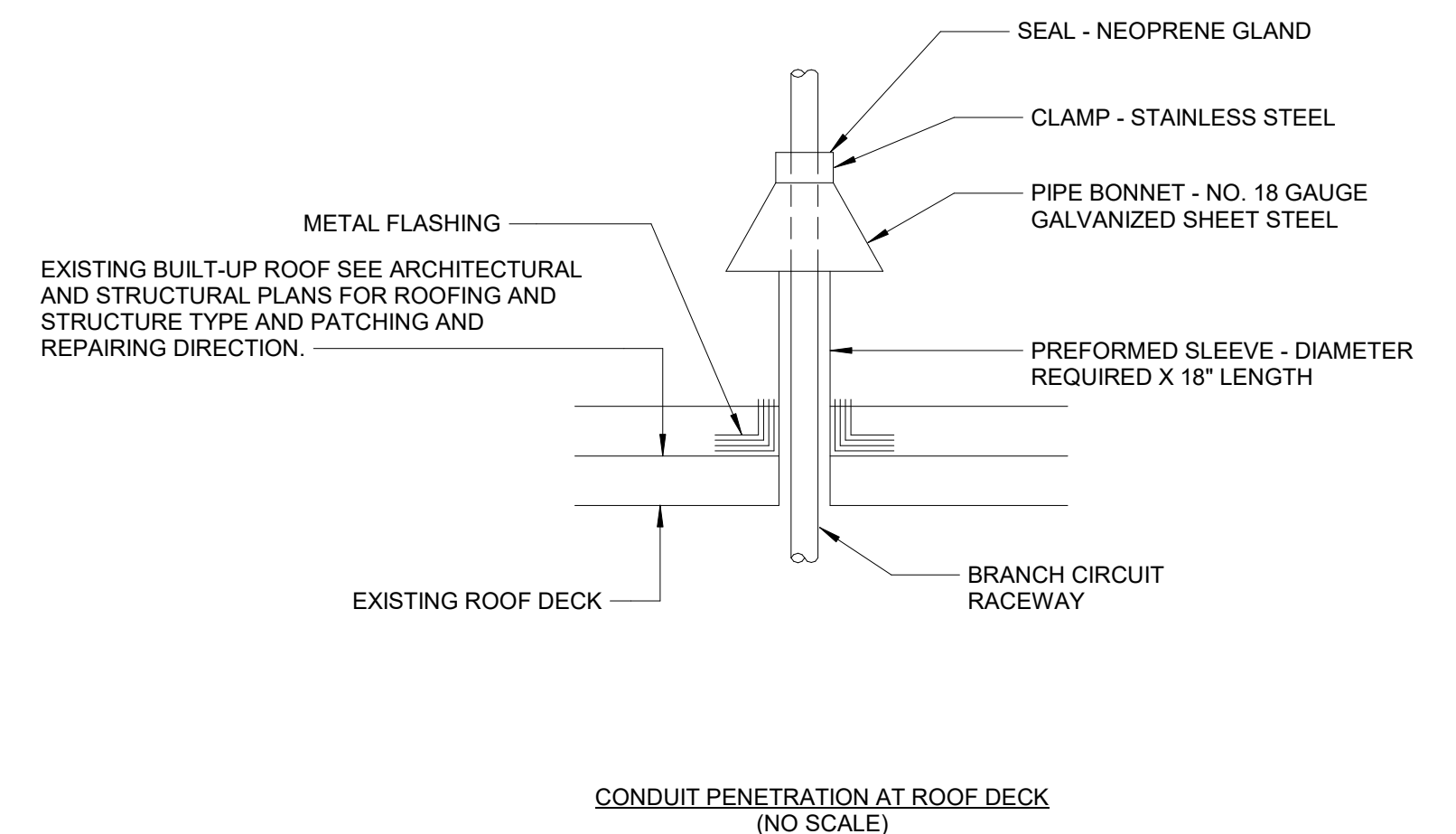
SCALE: NONE 2

NOTE: MAXIMUM NUMBER OF SENSORS PER POWER PACK DEPENDS ON THE MODEL OF SENSOR. SEE THE PRODUCT DATA SHEET TO DETERMINE THE SPECIFIC CURRENT CONSUMPTION OF EACH SENSOR.



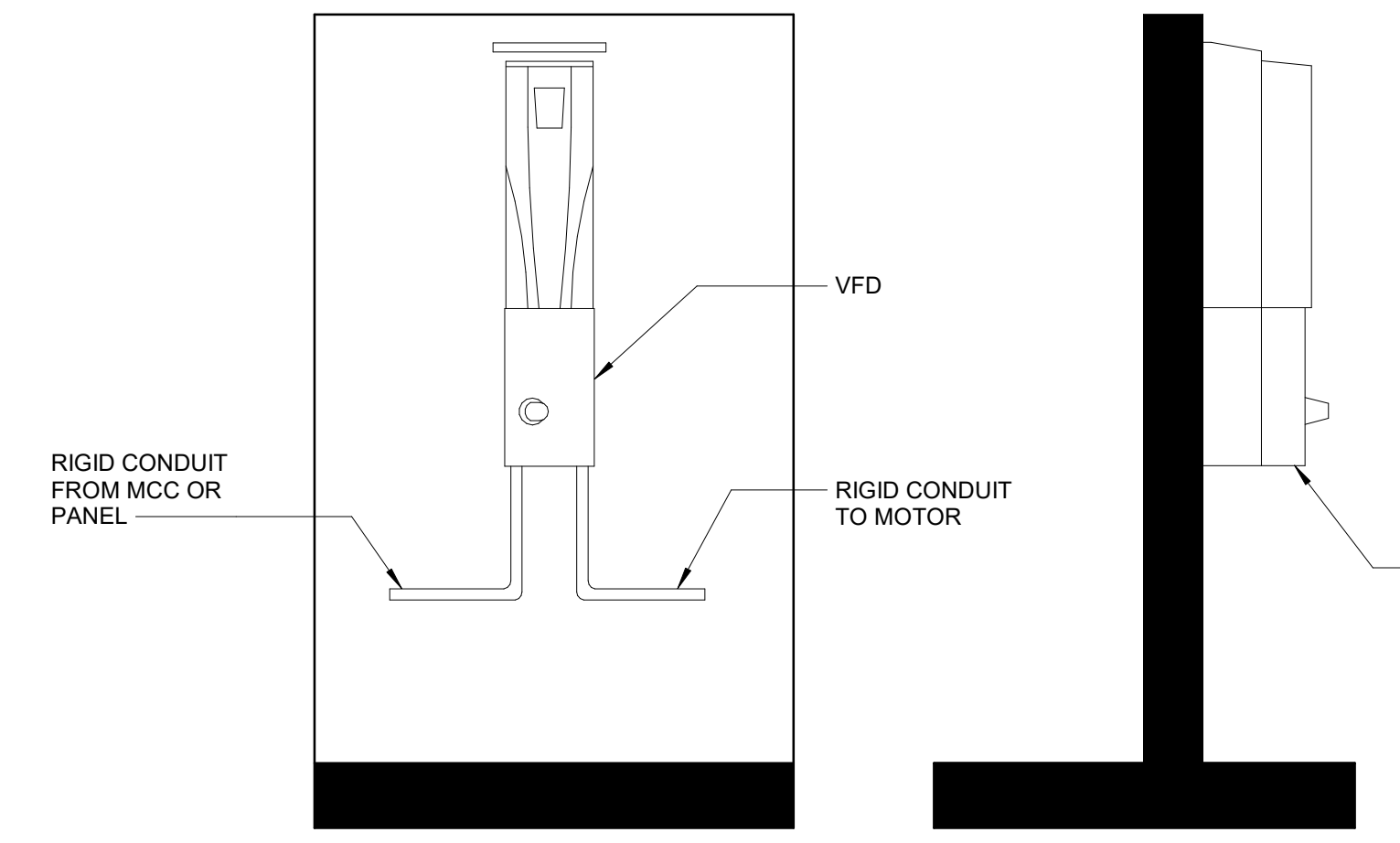
DETAIL - CEILING OCCUPANCY SENSOR WITH 3-WAY SWITCHING

SCALE: NONE 4



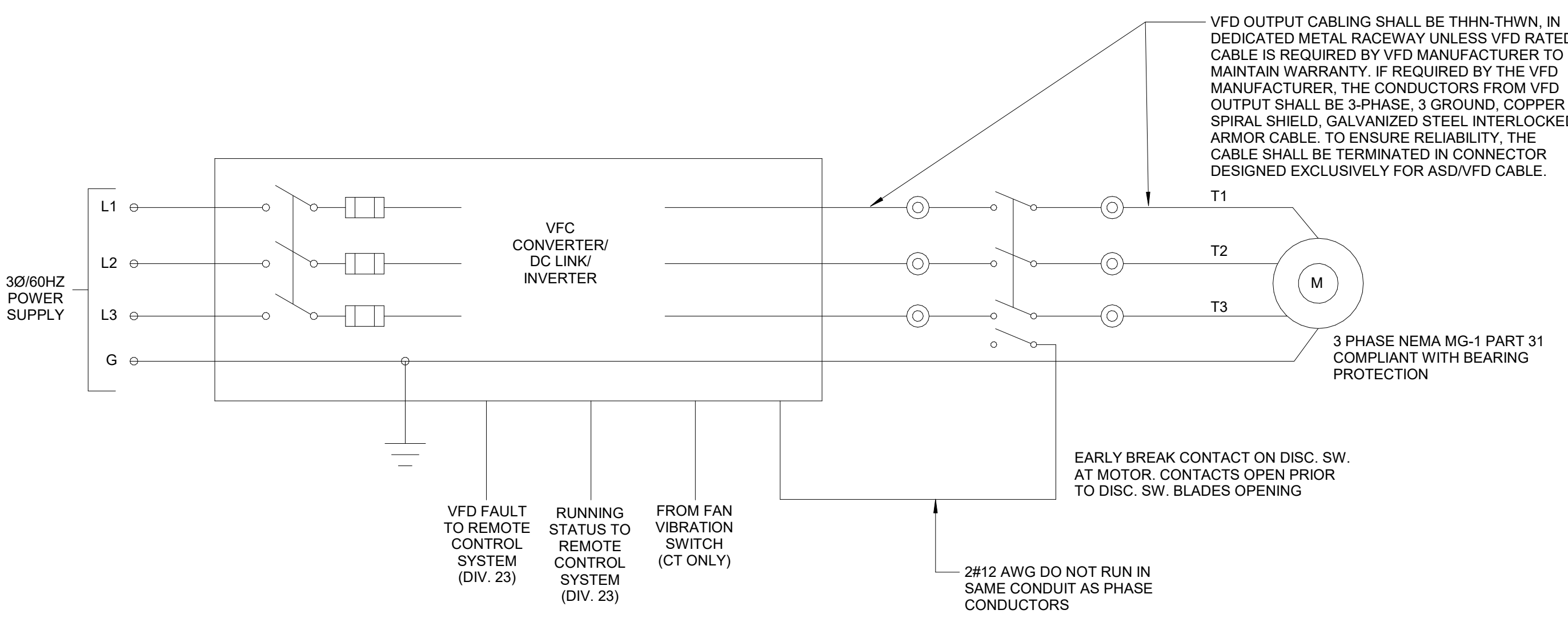
DETAIL - CONDUIT ROOF PENETRATION

SCALE: NONE 5



DETAIL - TYPICAL VFD DRIVE MOUNTING - WALL MOUNTED

SCALE: NONE 4

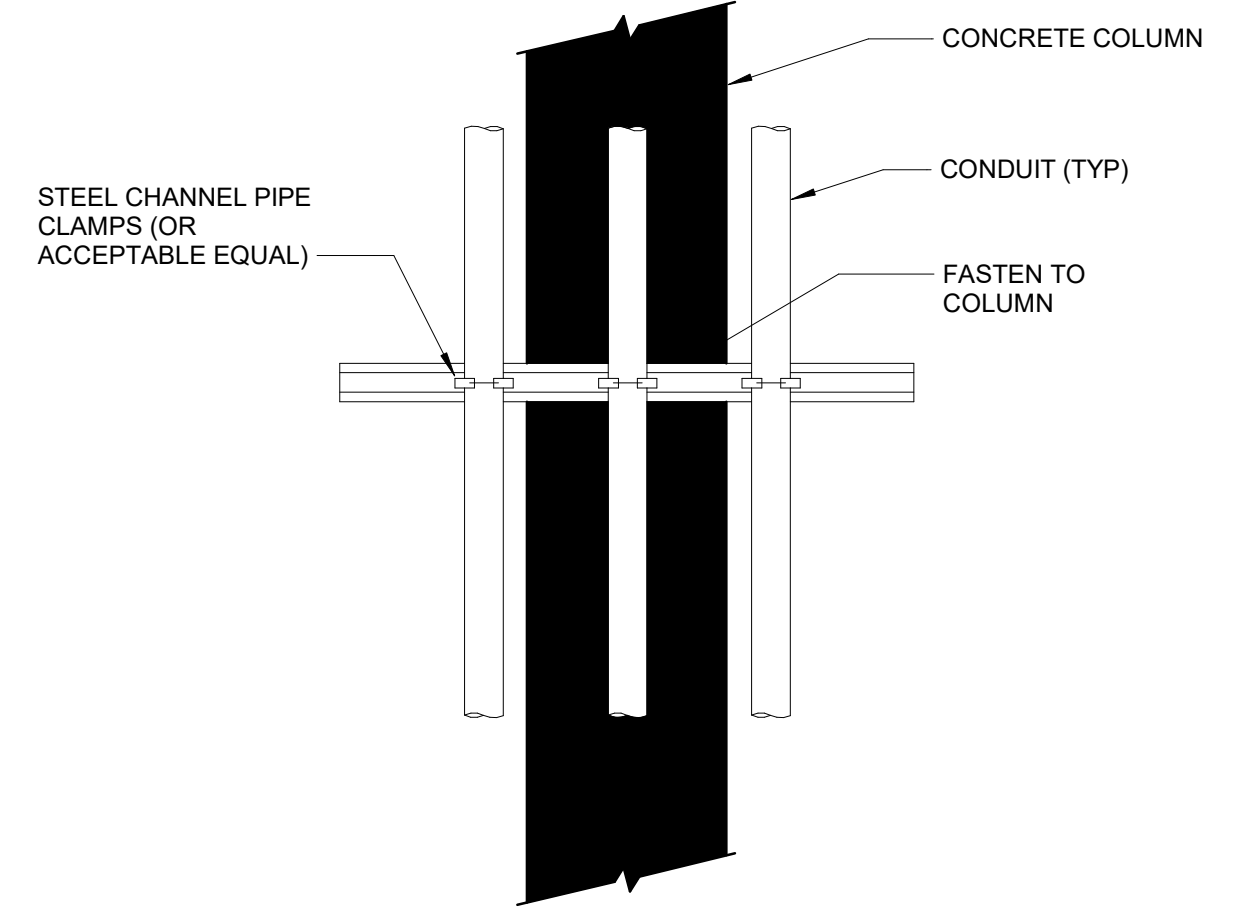


DETAIL - TYPICAL VARIABLE FREQUENCY DRIVE

SCALE: NONE 6

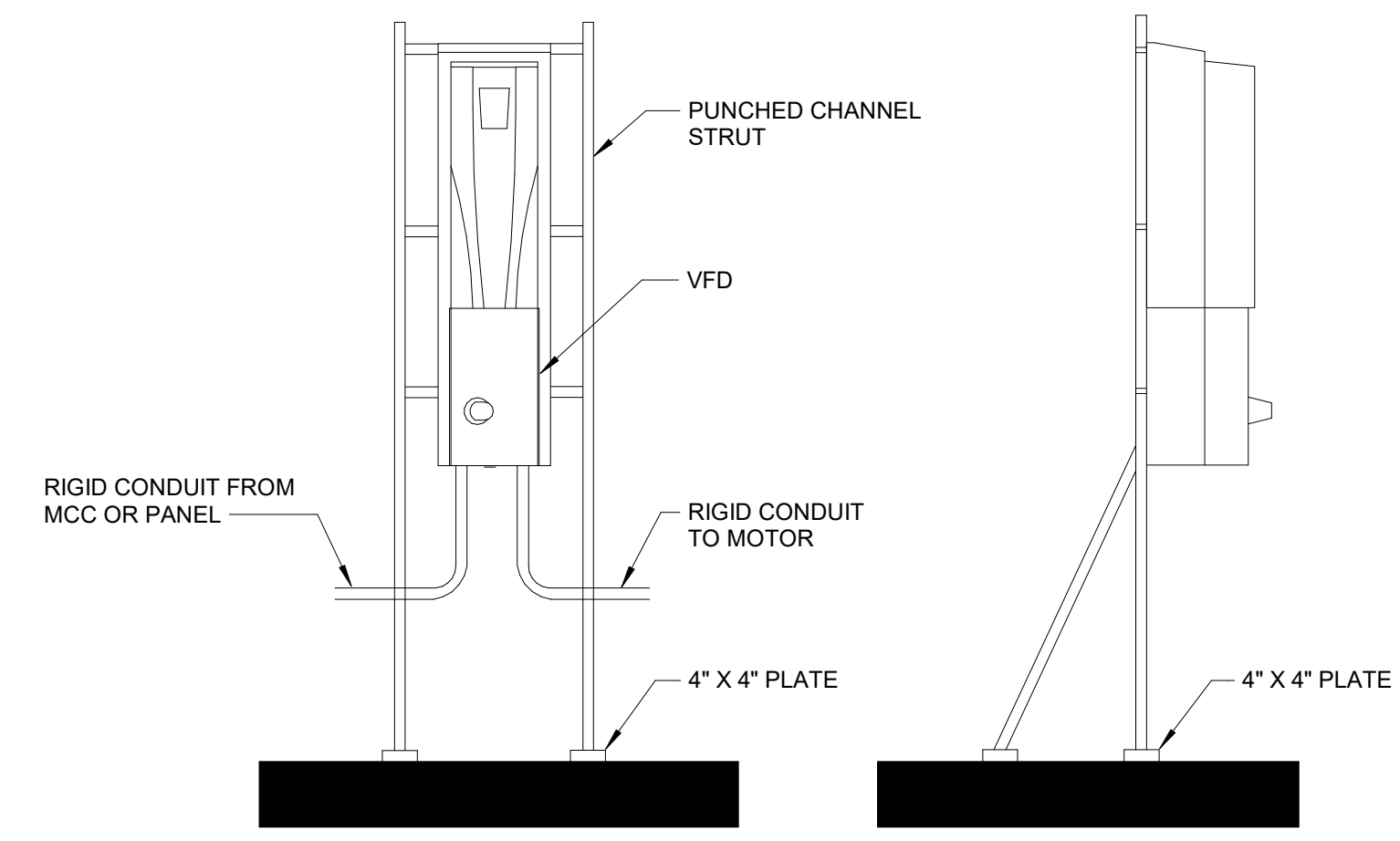
DETAIL - TYPICAL MOUNTING FOR VERTICAL CONDUIT

SCALE: NONE 7



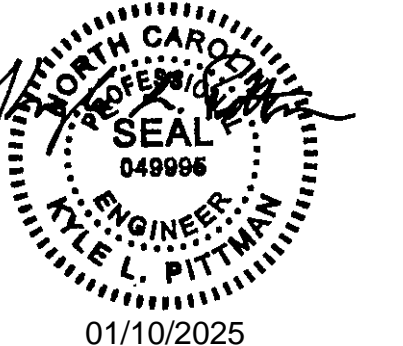
DETAIL - TYPICAL VFD DRIVE MOUNTING (SLOTTED STEEL CHANNEL)

SCALE: NONE 8



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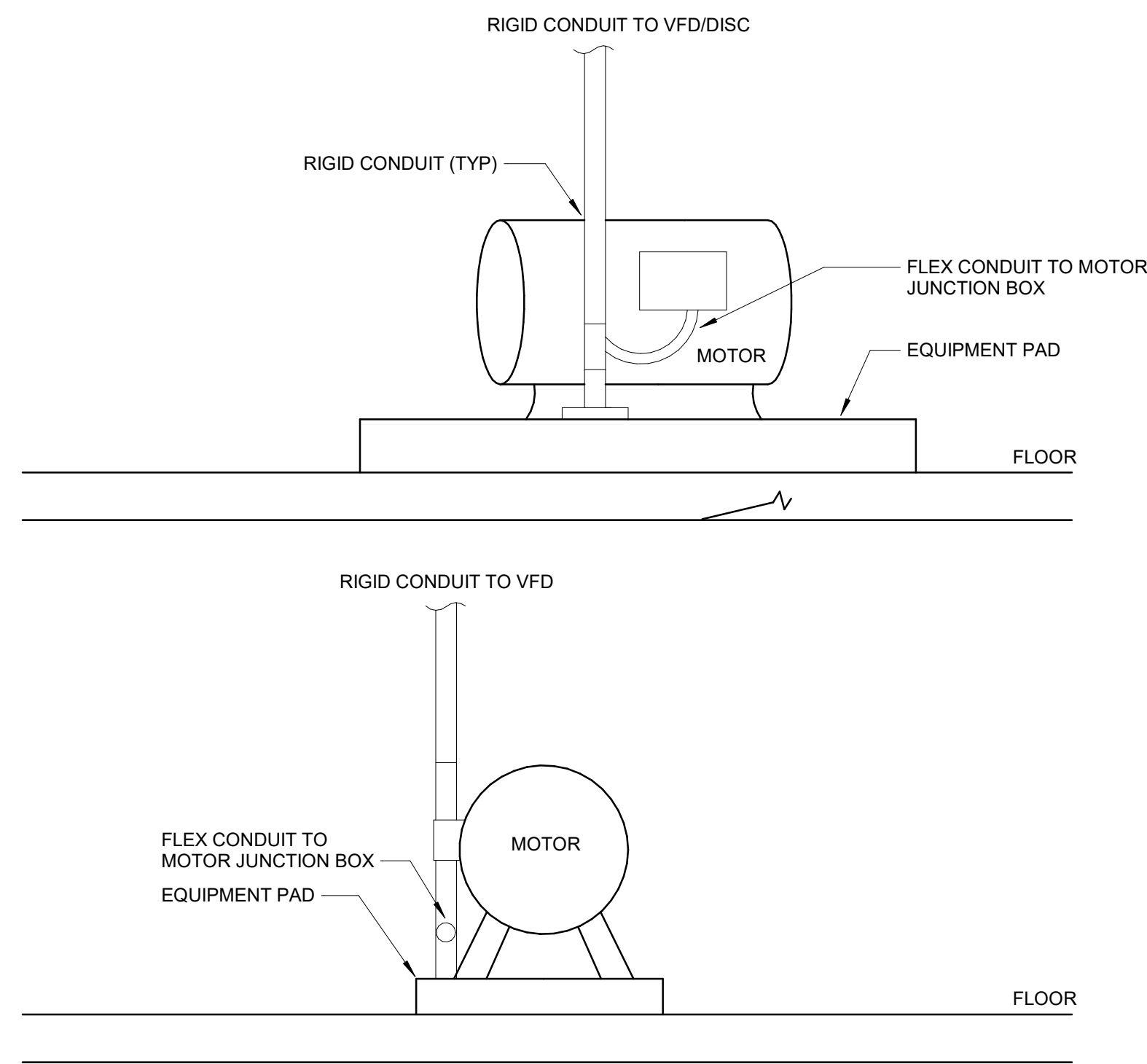
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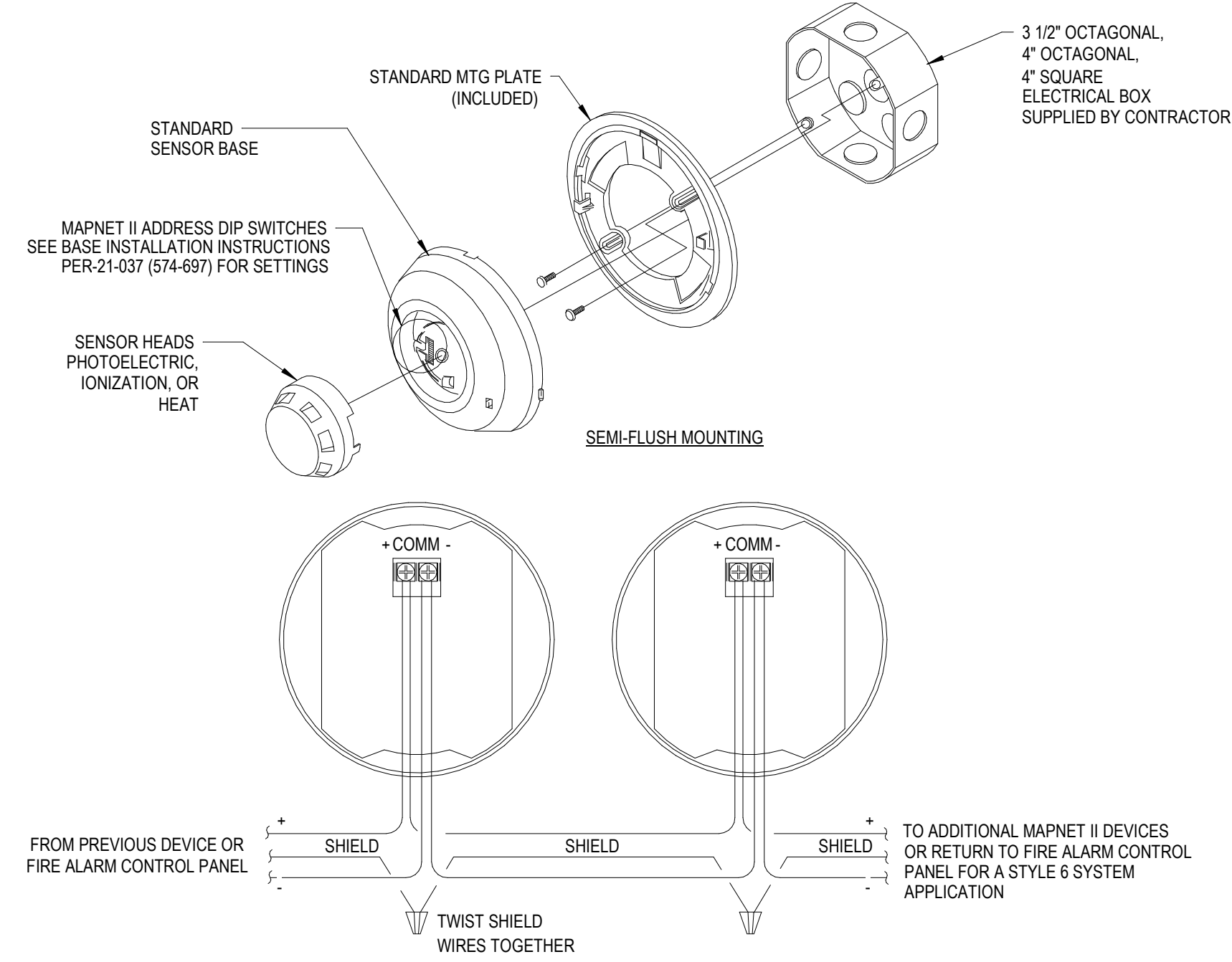
Project Number: 132  
 Title: **ELECTRICAL DETAILS**

Sheet: **E501**



DETAIL - TYPICAL CONDUIT CONNECTION TO MOTOR

SCALE: NONE 1

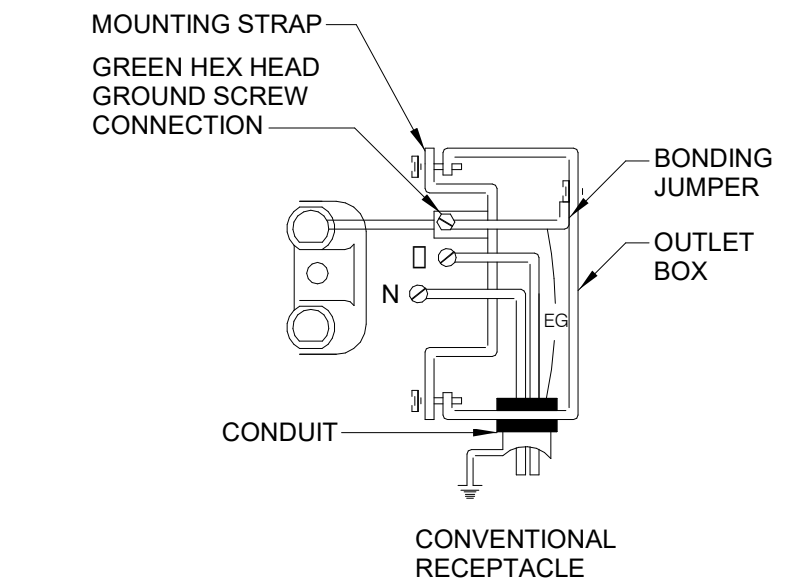
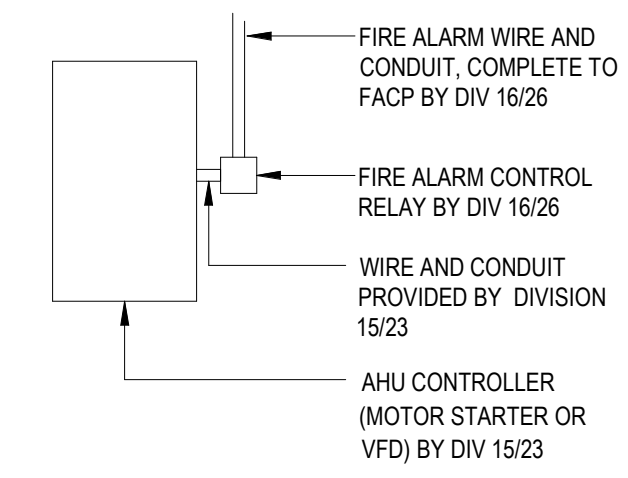


DETAIL - SMOKE DETECTOR MOUNTING

SCALE: NONE 2

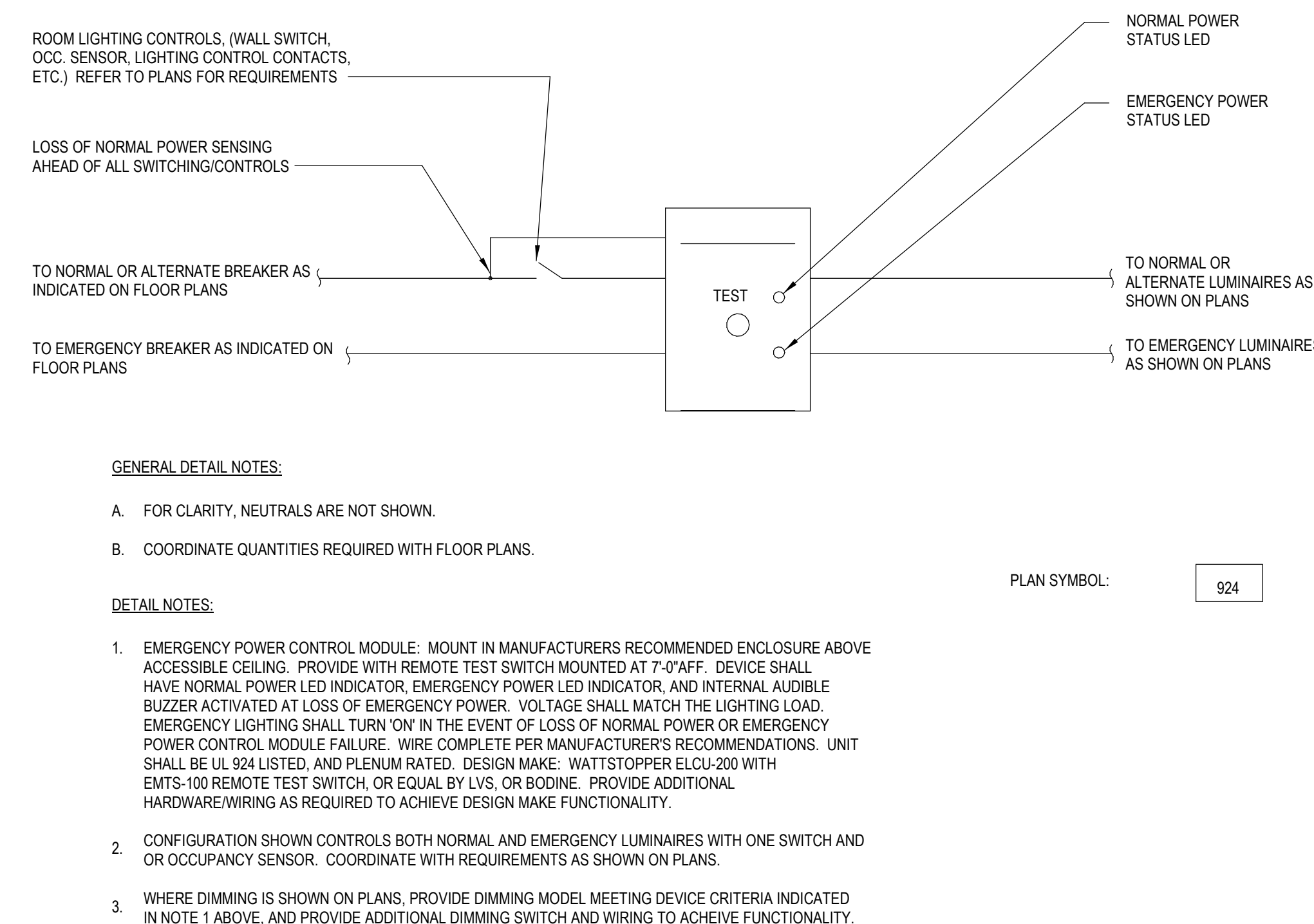
DETAIL - HVAC SHUTDOWN RELAY DIAGRAM

SCALE: NONE 3



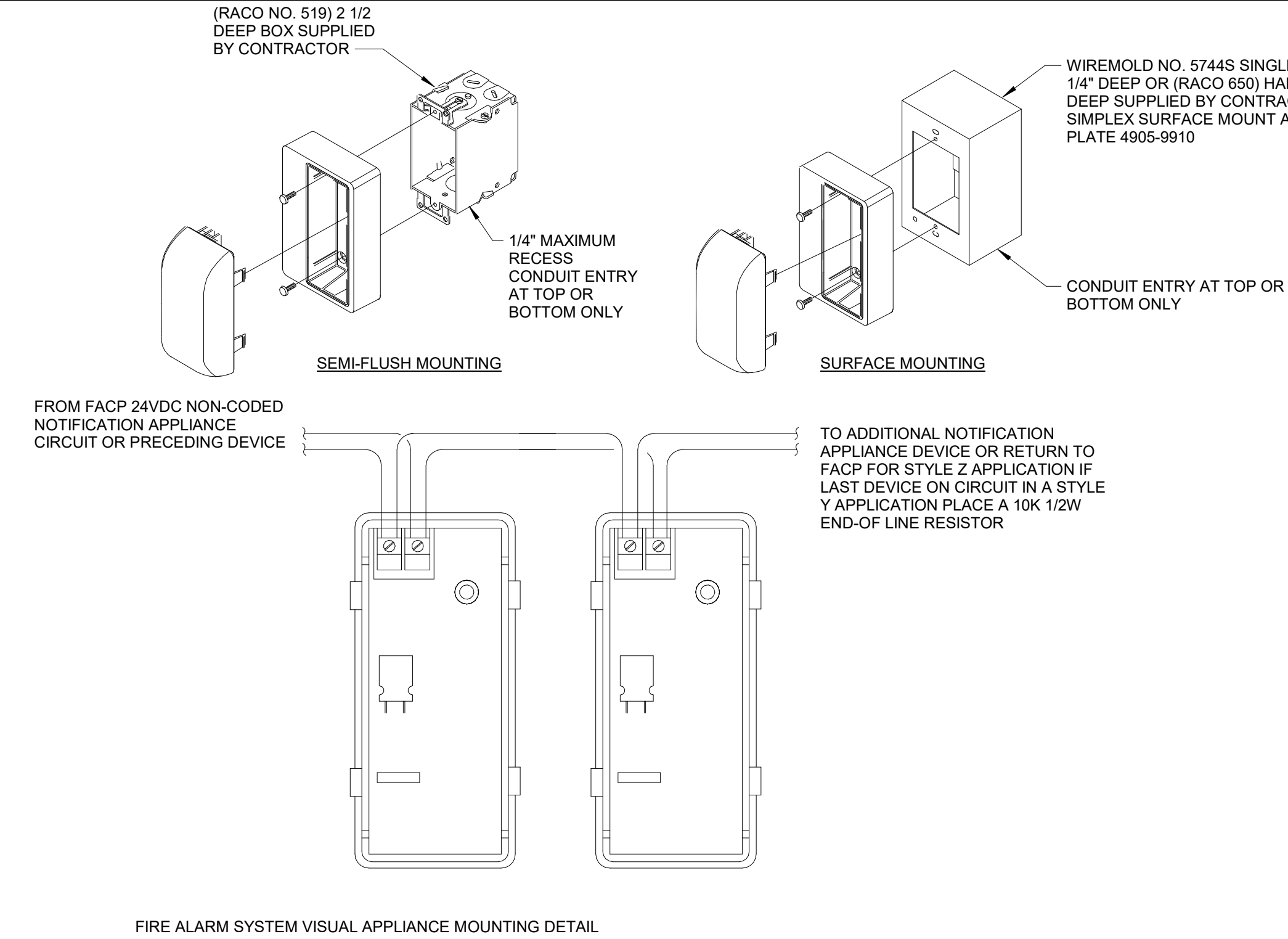
DETAIL - RECEPTACLE WIRING

SCALE: NONE 4



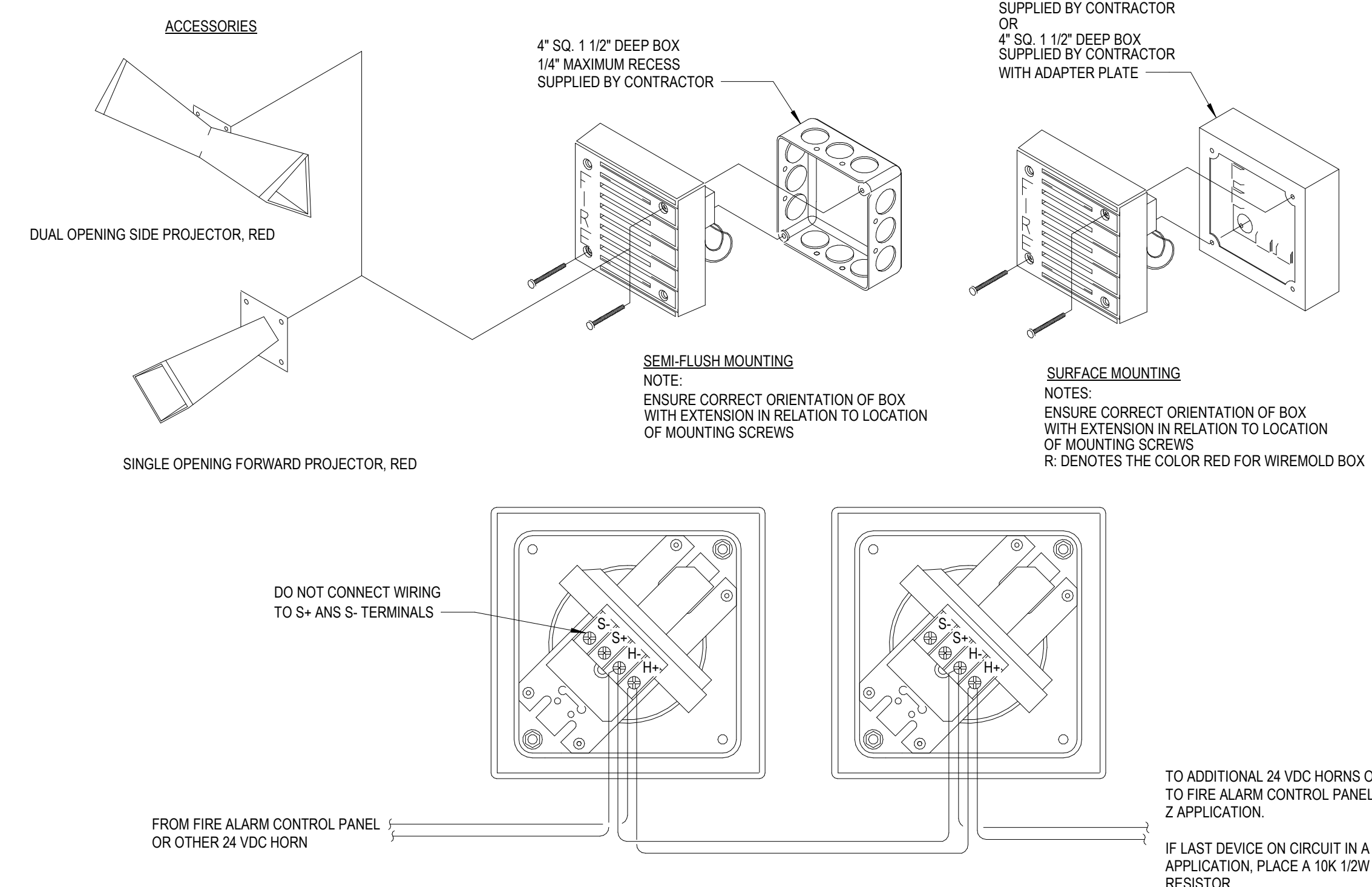
DETAIL - EMERGENCY TRANSFER RELAY CONTROL DEVICE

SCALE: NONE 5



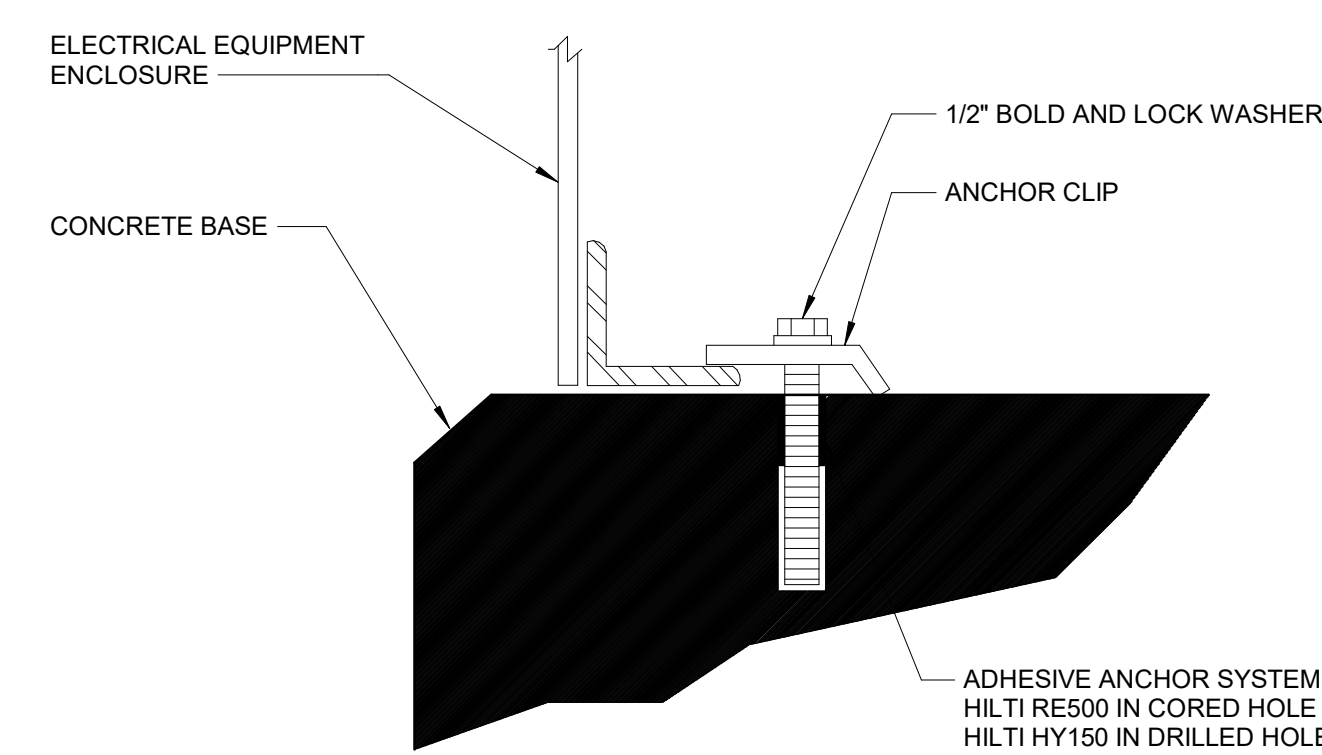
DETAIL - VISUAL APPLIANCE MOUNTING

SCALE: NONE 6



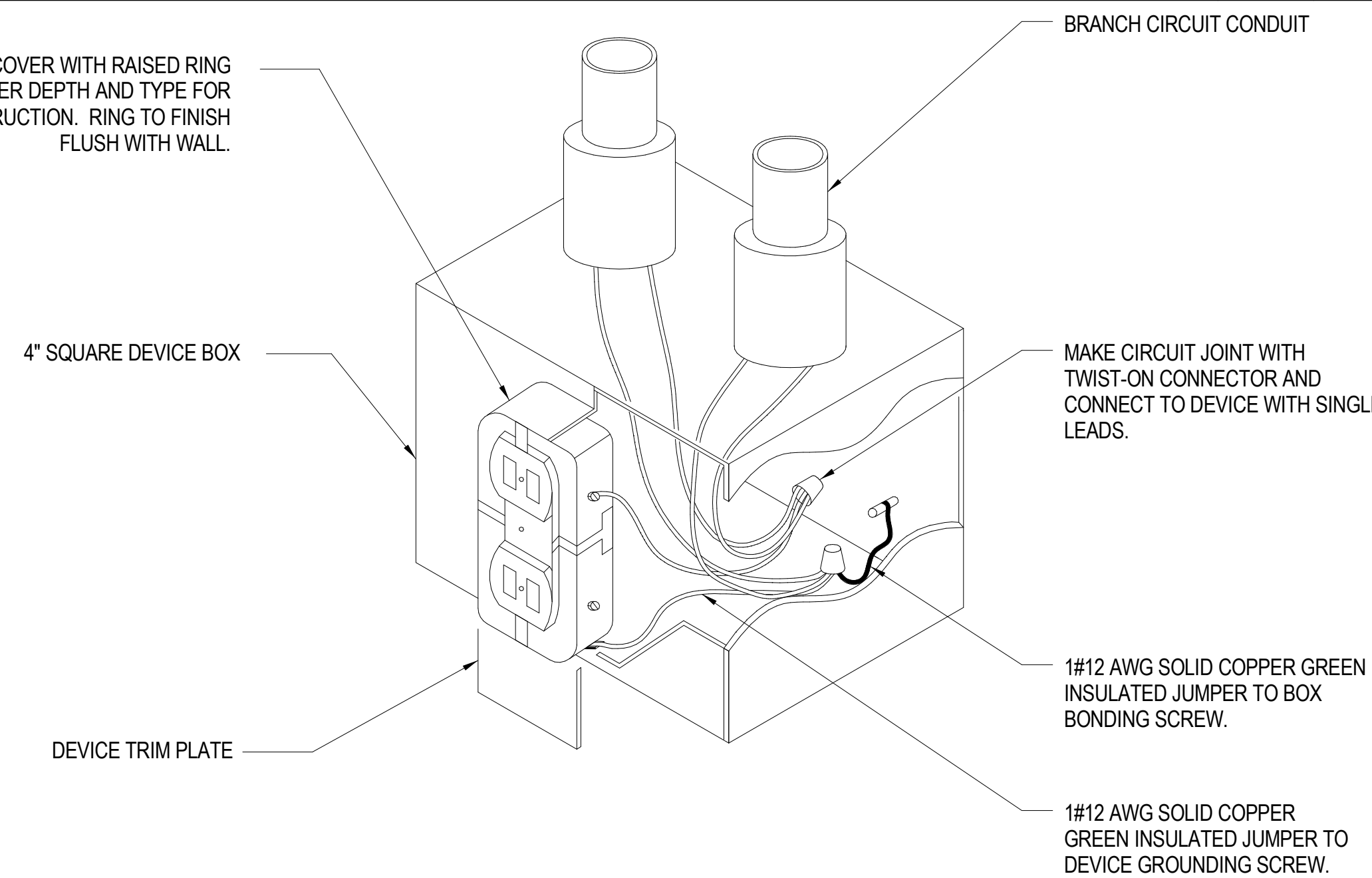
DETAIL - AUDIBLE APPLIANCE MOUNTING

SCALE: NONE 7



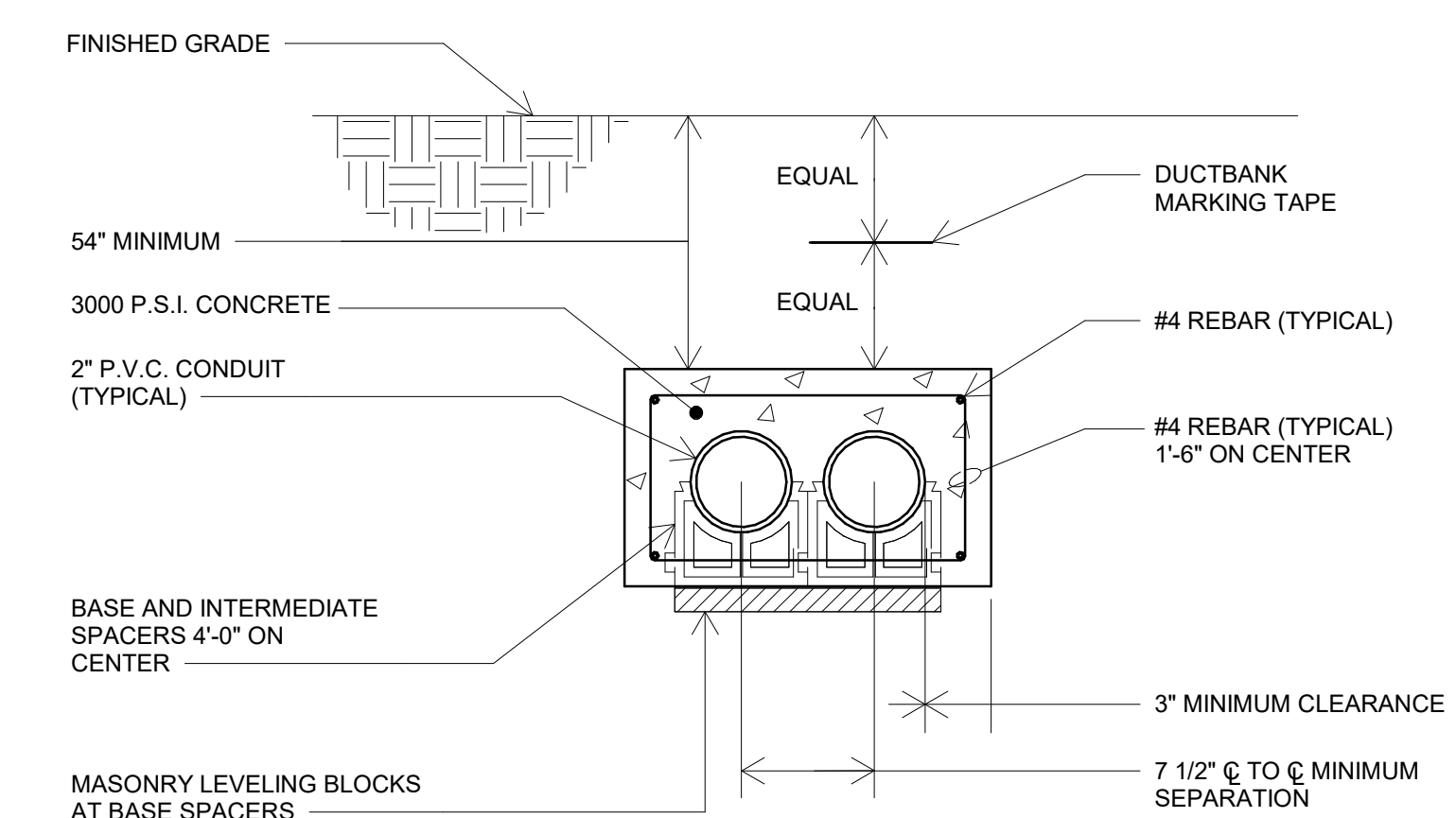
DETAIL - ELECTRICAL EQUIPMENT CONCRETE ANCHORING

SCALE: NONE 8



DETAIL - RECEPTACLE GROUNDING

SCALE: NONE 9



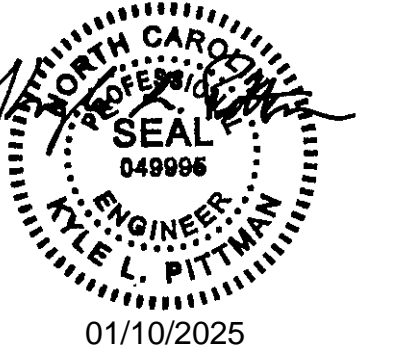
DETAIL - 2-WAY DUCTBANK (2x1) - 2\"/>

SCALE: NONE 10

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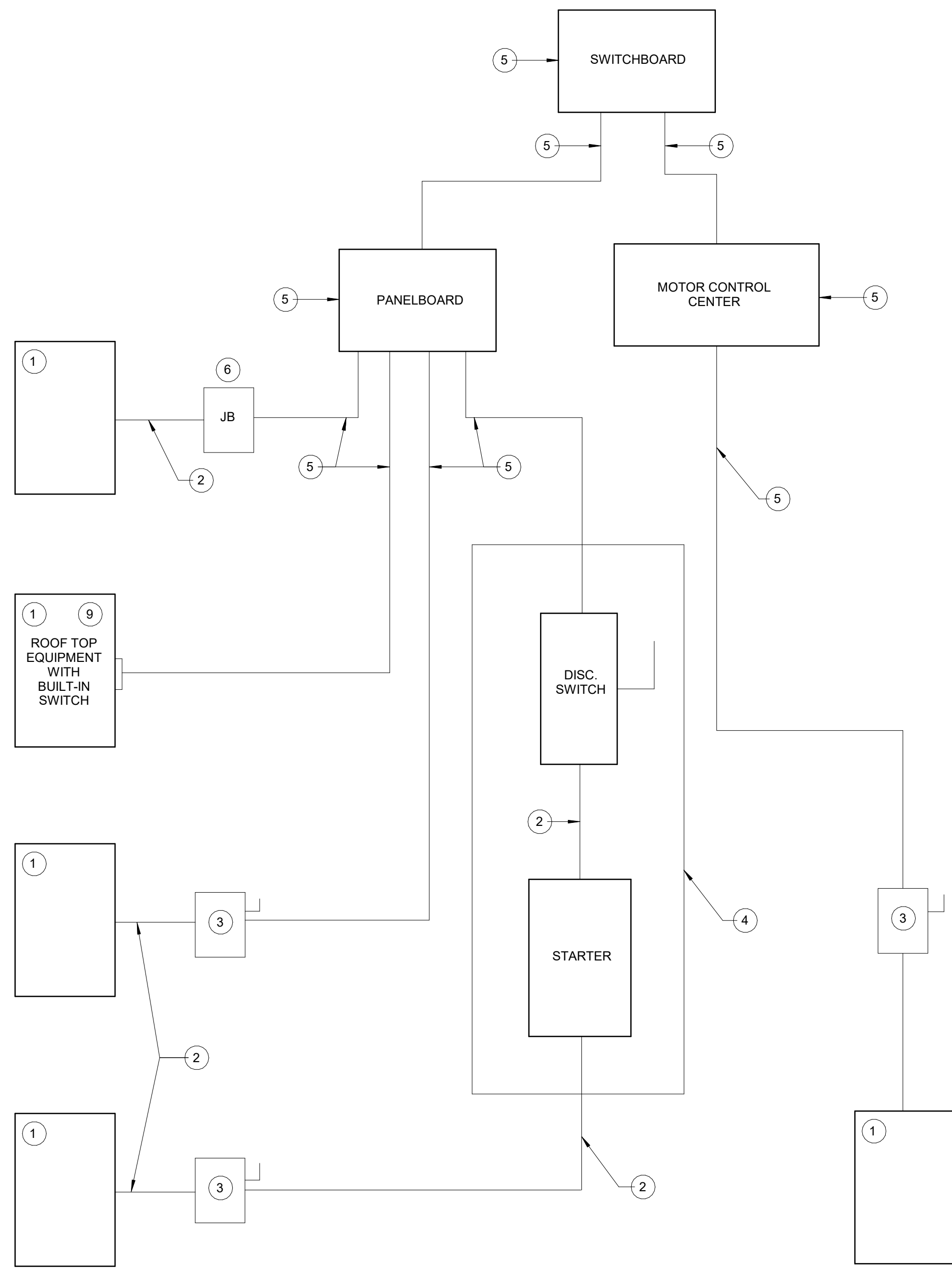
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 NCSU: 20222007

Project Number: 132  
 Title:

**ELECTRICAL DETAILS**

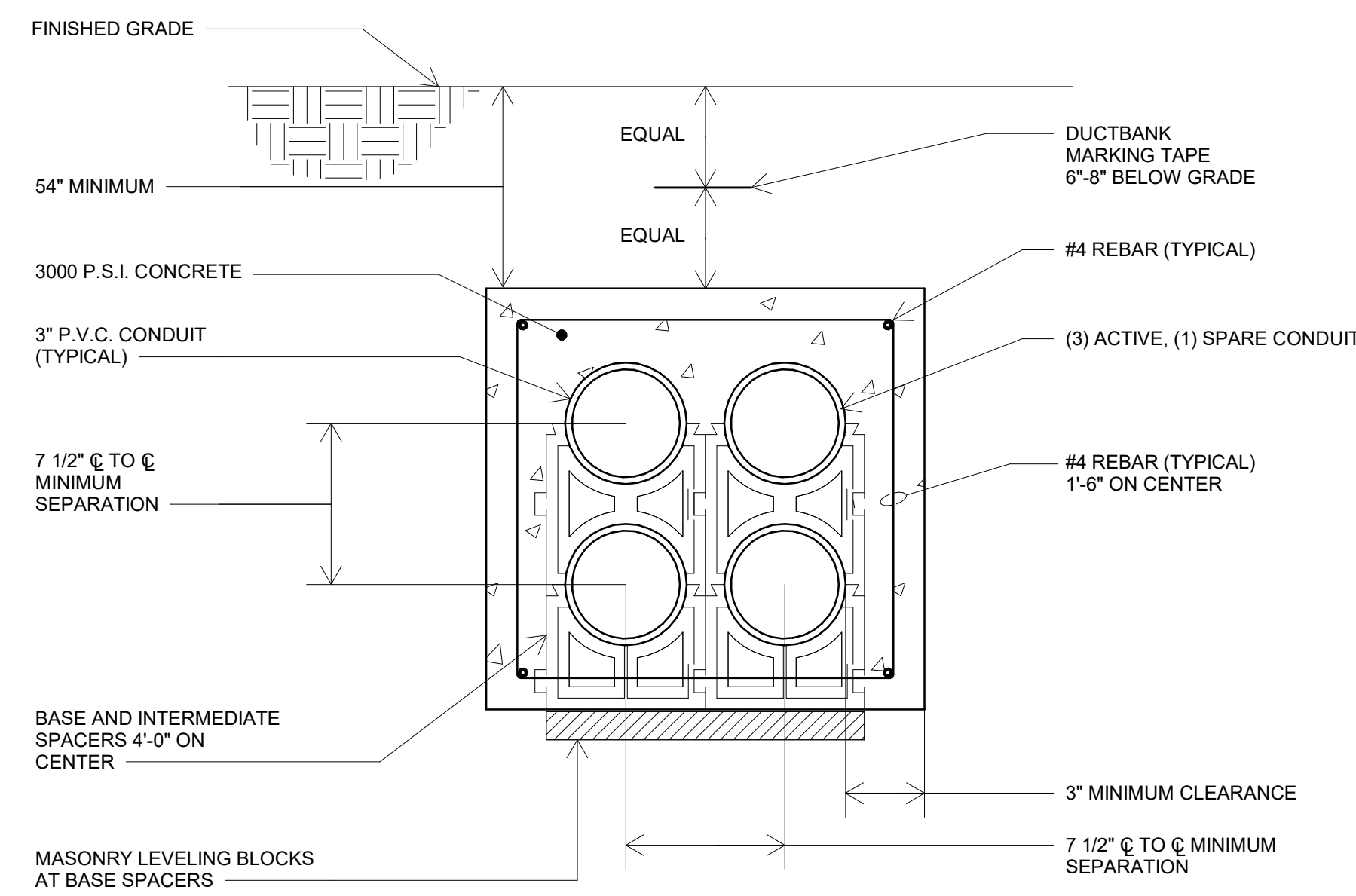
Sheet  
**E502**  
 Plate



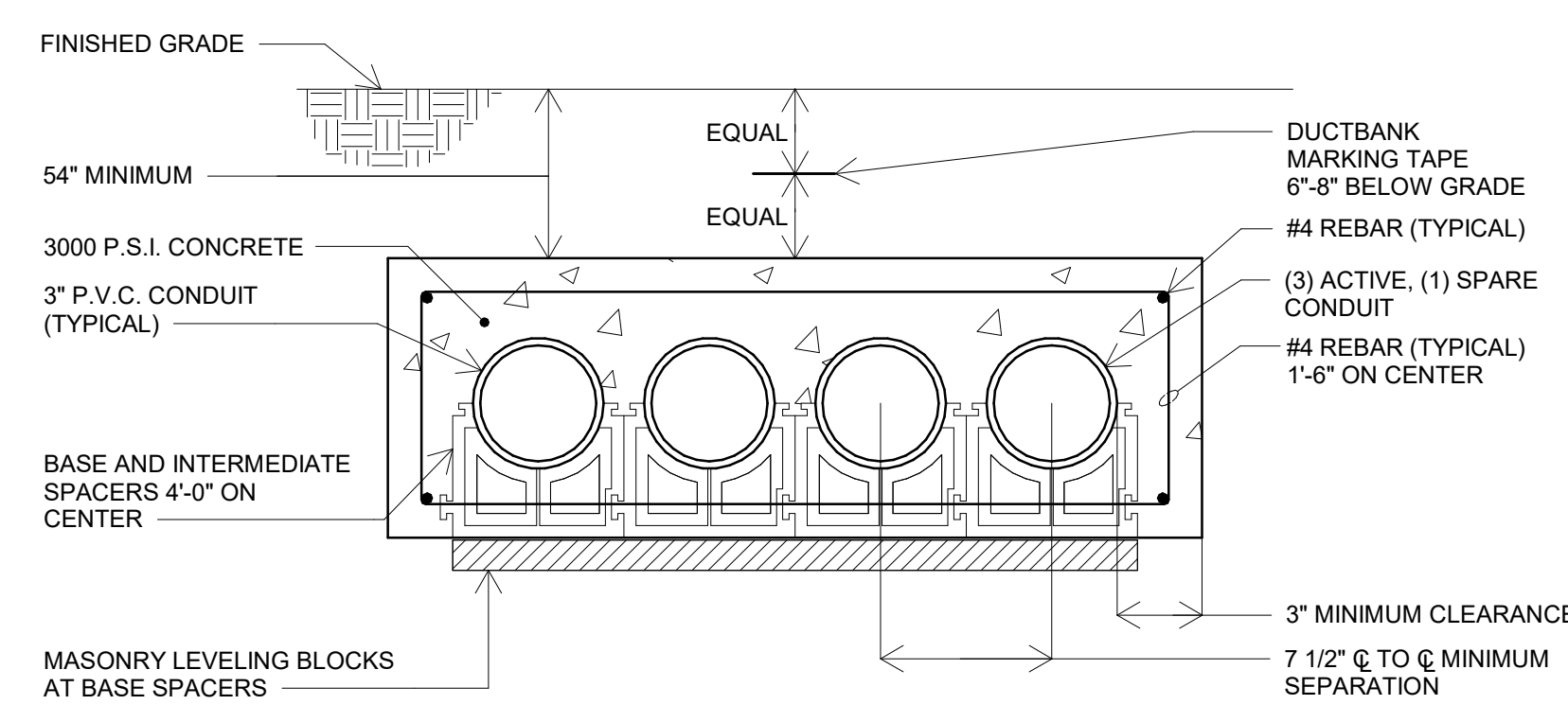
- ELECTRICAL NOTES:**
- 1 EQUIPMENT PROVIDED BY TRADES OTHER THAN ELECTRICAL.
  - 2 CONDUIT & WIRING BY MECHANICAL, PLUMBING CONTRACTOR OR OTHER TRADES OTHER THAN ELECTRICAL.
  - 3 IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR PROVIDING THE EQUIPMENT.
  - 4 A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPERATE DISCONNECT SWITCH AND STARTER. LOCATE ADJACENT TO EQUIPMENT. DISCONNECT SWITCH, VFD AND/OR STARTER SHALL BE PROVIDED BY THE CONTRACTOR PROVIDING THE EQUIPMENT.
  - 5 SWITCHBOARD, PANELBOARD, FEEDER CIRCUIT WIRING AND CONDUIT PROVIDED BY ELECTRICAL TRADE AS SHOWN ON THE ELECTRICAL DRAWINGS. SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER SIZES.
  - 6 JUNCTION BOX MAY BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT. IF NO STARTER OR DISCONNECT IS SUPPLIED, A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL BE PROVIDED BY MECHANICAL, PLUMBING CONTRACTOR OR OTHER TRADES OTHER THAN ELECTRICAL.
  - 7 FOR PROJECTS UTILIZING AN MCC, THE STARTER, CB, AND/OR THE VFD LOCATED IN THE MCC SAHLL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
  - 8 IN ALL CASES THE CONTRACTOR SUPPLYING THE EQUIPMENT SHALL MAKE THE FINAL ELECTRICAL TERMINATIONS, START UP, AND TEST THE EQUIPMENT.
  - 9 IF THE ROOF TOP EQUIPMENT IS NOT PROVIDED WITH BUILT IN DISCONNECT SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH, IN A SINGLE PRIME CONTRACT, IT IS THE RESPONSIBILITY OF THE PRIME CONTRACTOR TO COORDINATE BETWEEN THE ELECTRICAL AND THE OTHER TRADES.

**DETAIL - DIVISION OF RESPONSIBILITY**

SCALE: NONE 1



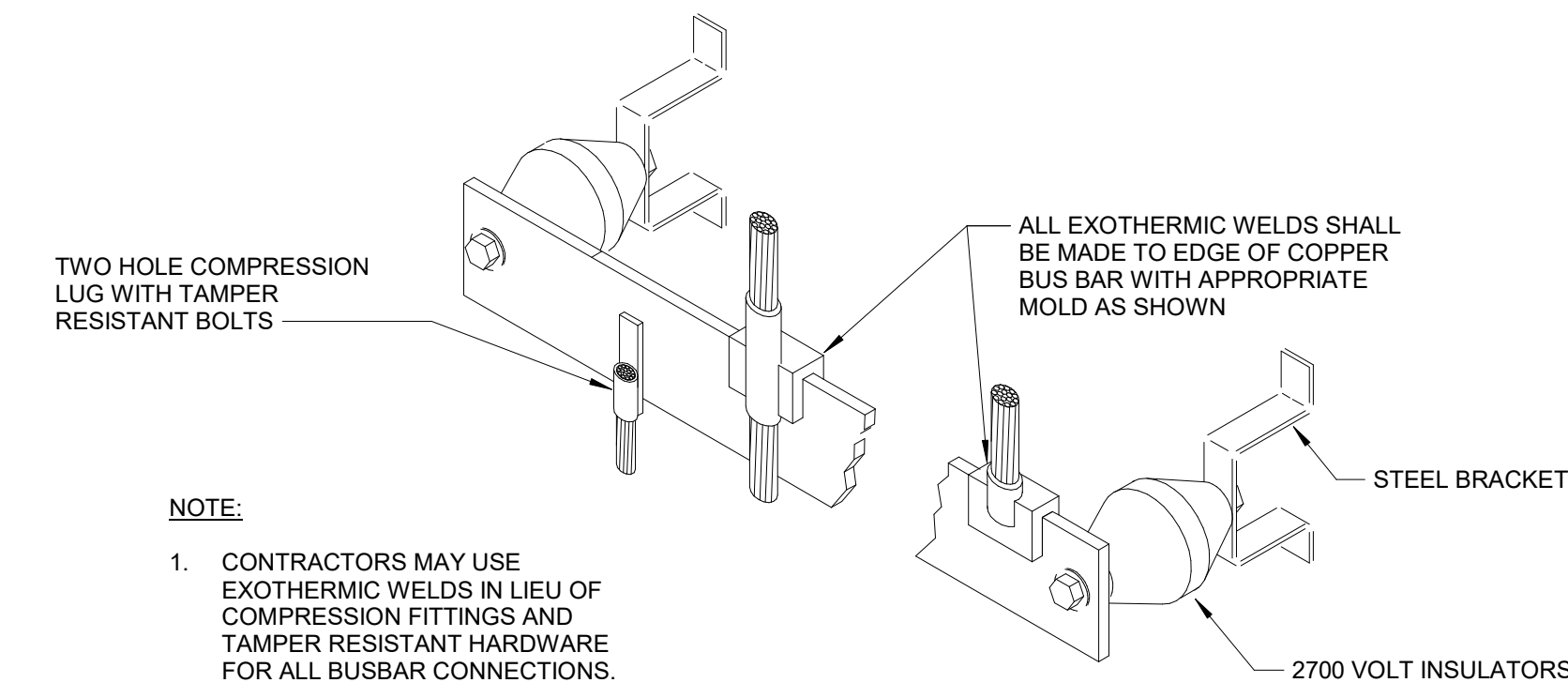
NOTE: REBAR REQUIRED UNDER ROADWAYS ONLY



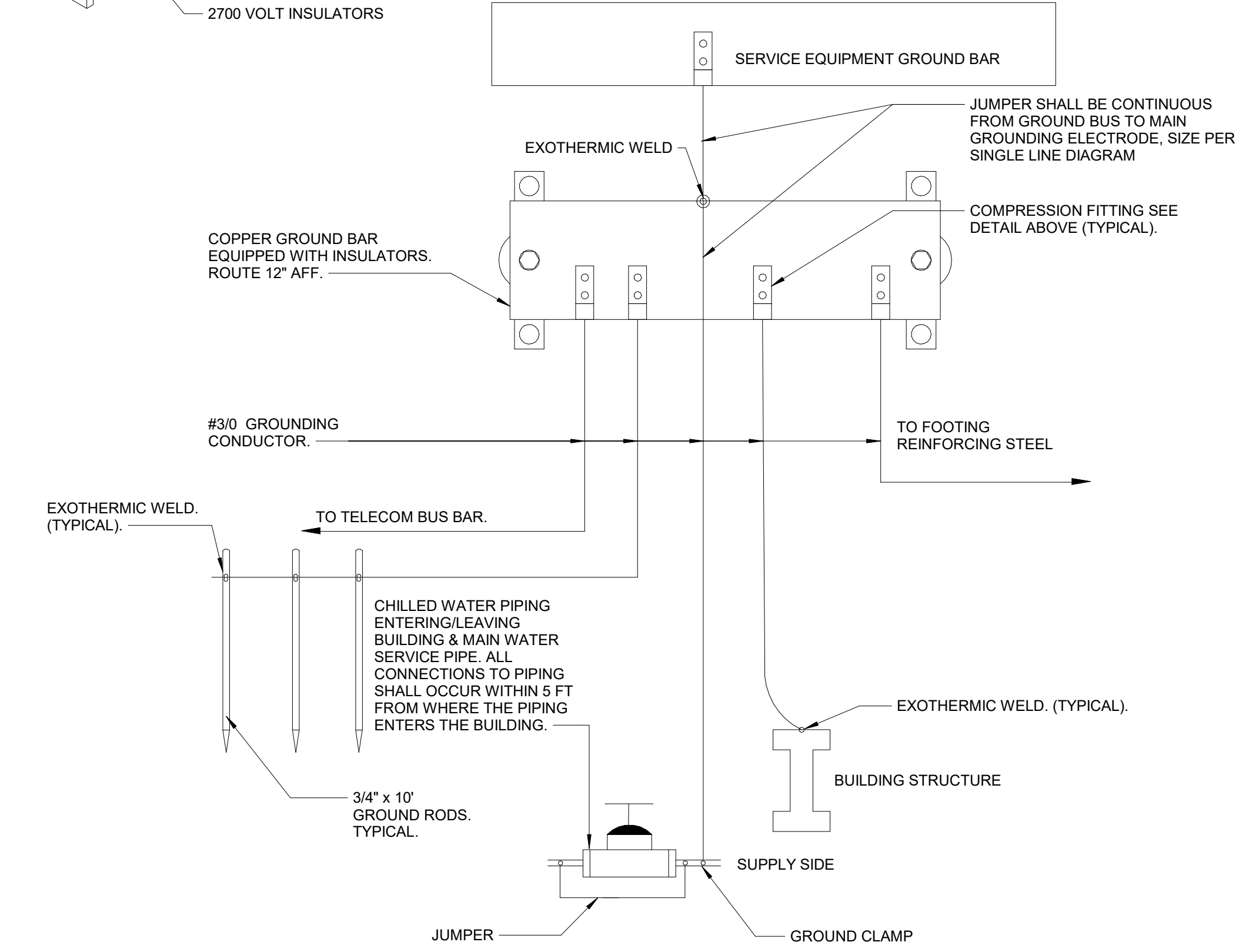
NOTE: REBAR REQUIRED UNDER ROADWAYS ONLY

**DETAIL - 4 WAY DUCTBANK (2X2) AND (4X1) 3" CONDUIT**

SCALE: NONE 3

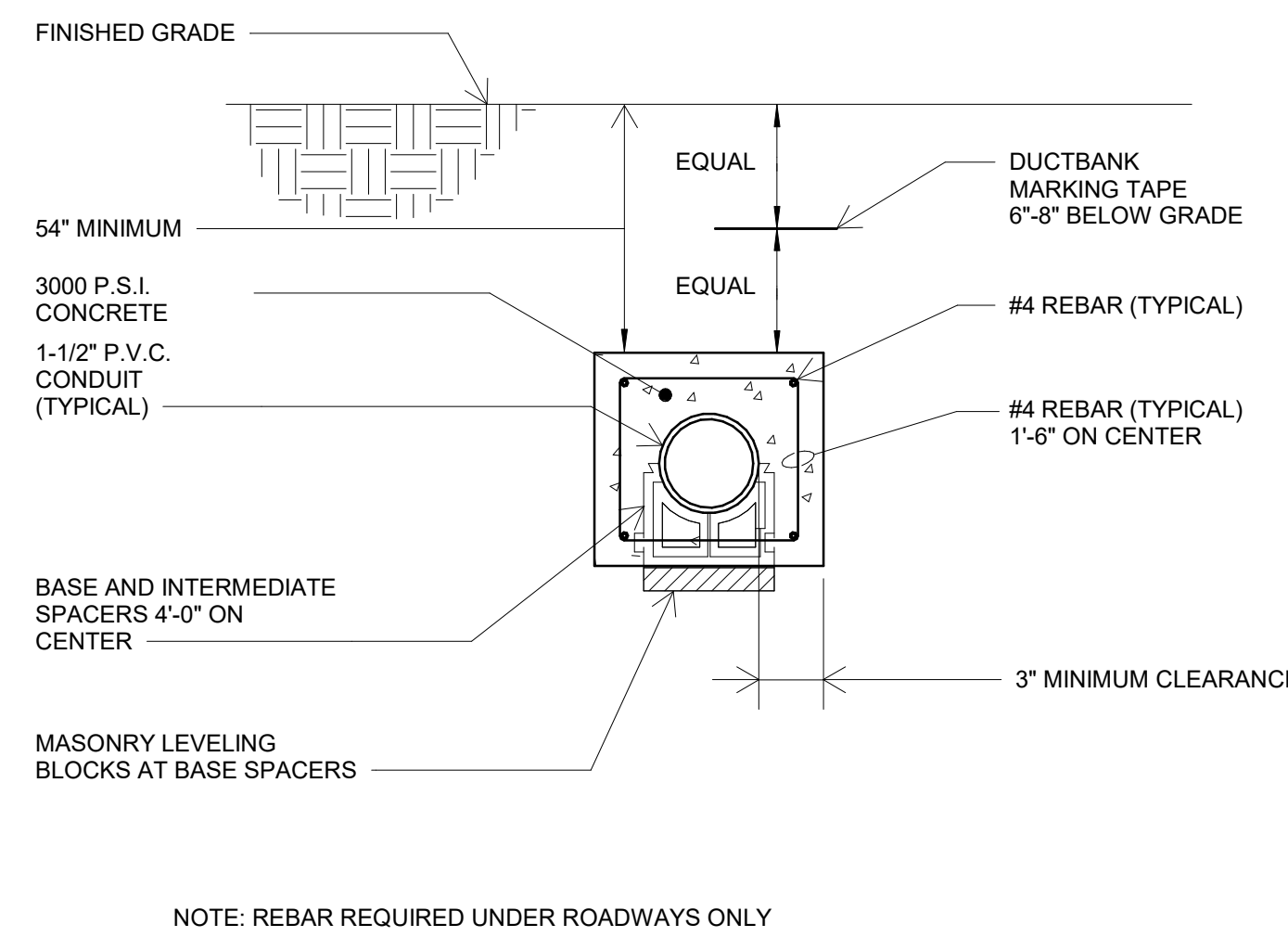


**NOTE:**  
1. CONTRACTORS MAY USE EXOTHERMIC WELDS IN LIEU OF COMPRESSION FITTINGS AND TAMPER RESISTANT HARDWARE FOR ALL BUSBAR CONNECTIONS.



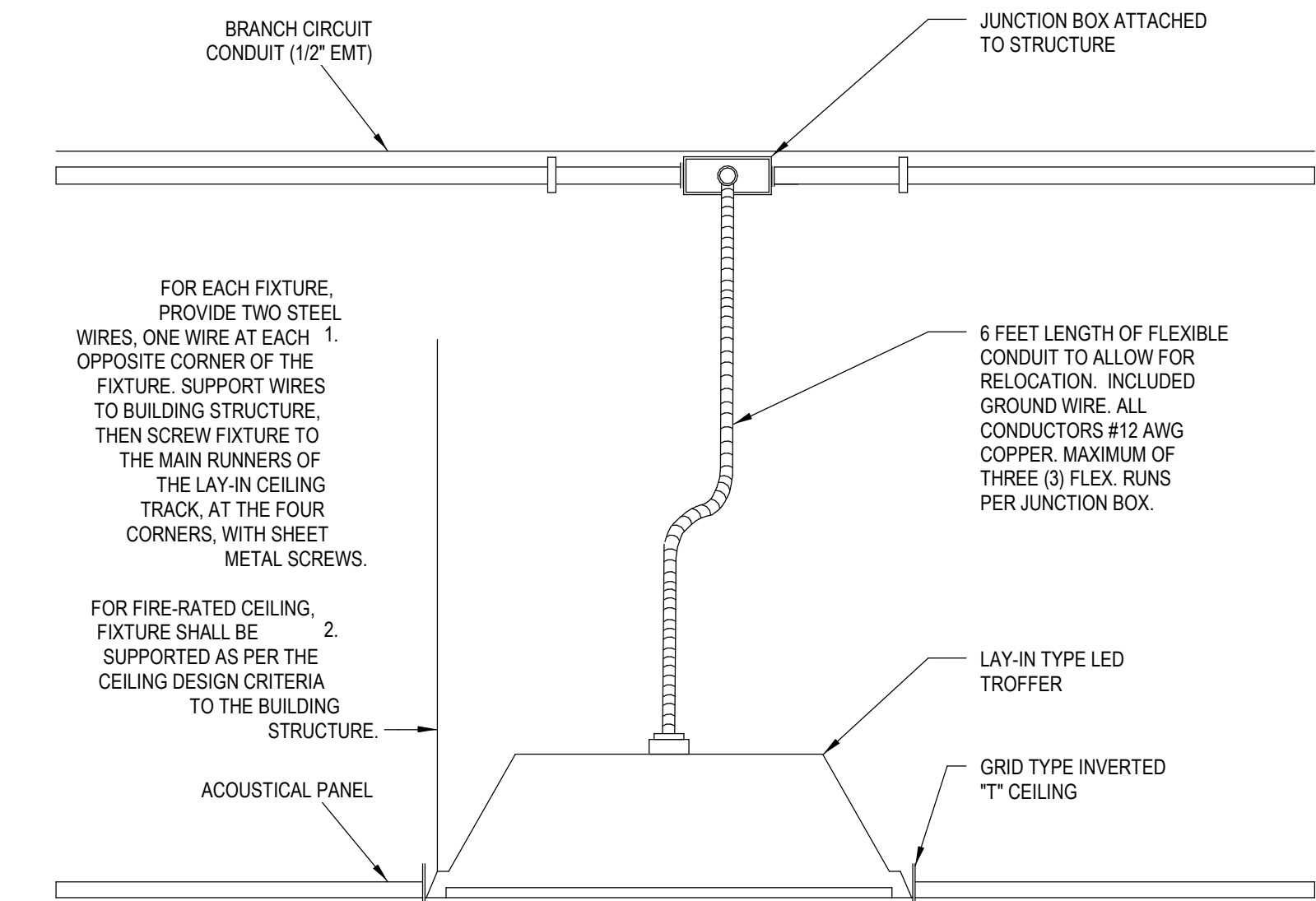
**DETAIL - GROUND BAR MOUNTING**

SCALE: NONE 2



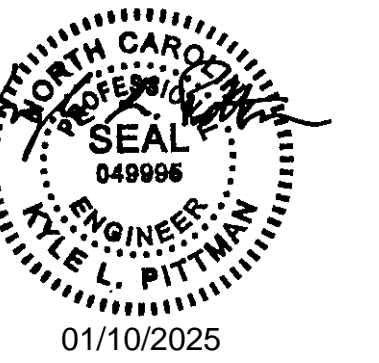
**DETAIL - 1 WAY DUCTBANK (1X1) 2" CONDUIT**

SCALE: NONE 4



**DETAIL - LIGHTING FIXTURE MOUNTING**

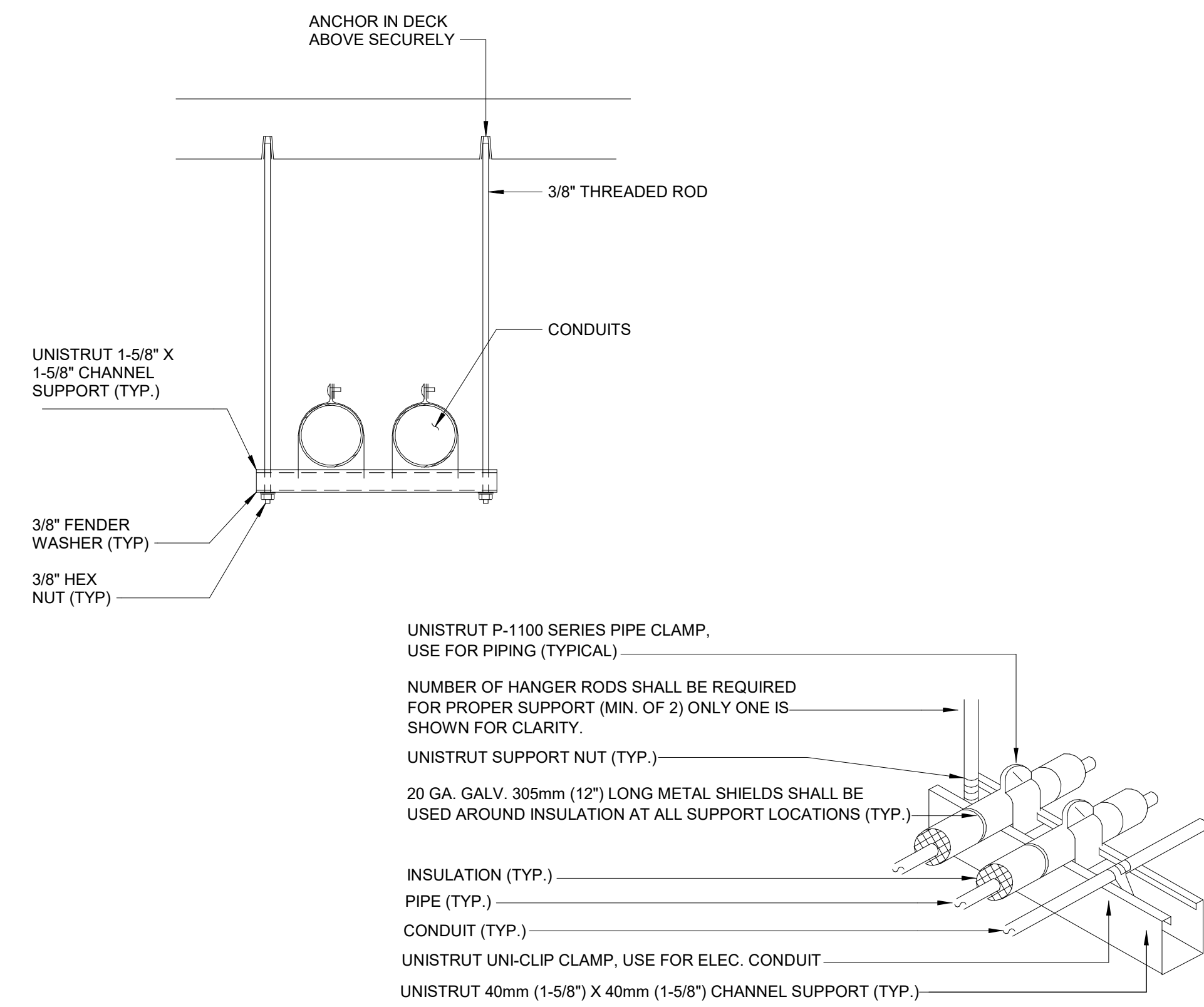
SCALE: NONE 5



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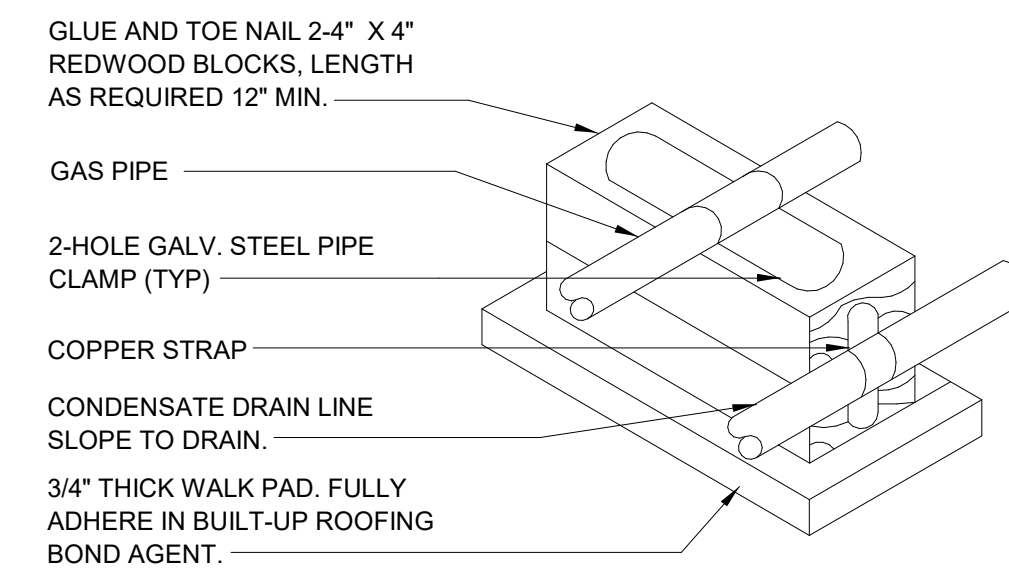


**NOTES:**

1. ALL PIPE CONDUIT, ETC. OF ALL TRADES MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0"
4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.
5. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL AND PLUMBING CONTRACTOR TO AVOID ROUTING CONDUIT IN THE CLEARANCES OF EQUIPMENT PROVIDED BY OTHER TRADES.

**DETAIL - CONDUIT SUPPORT ABOVE CEILING**

SCALE: NONE **1**

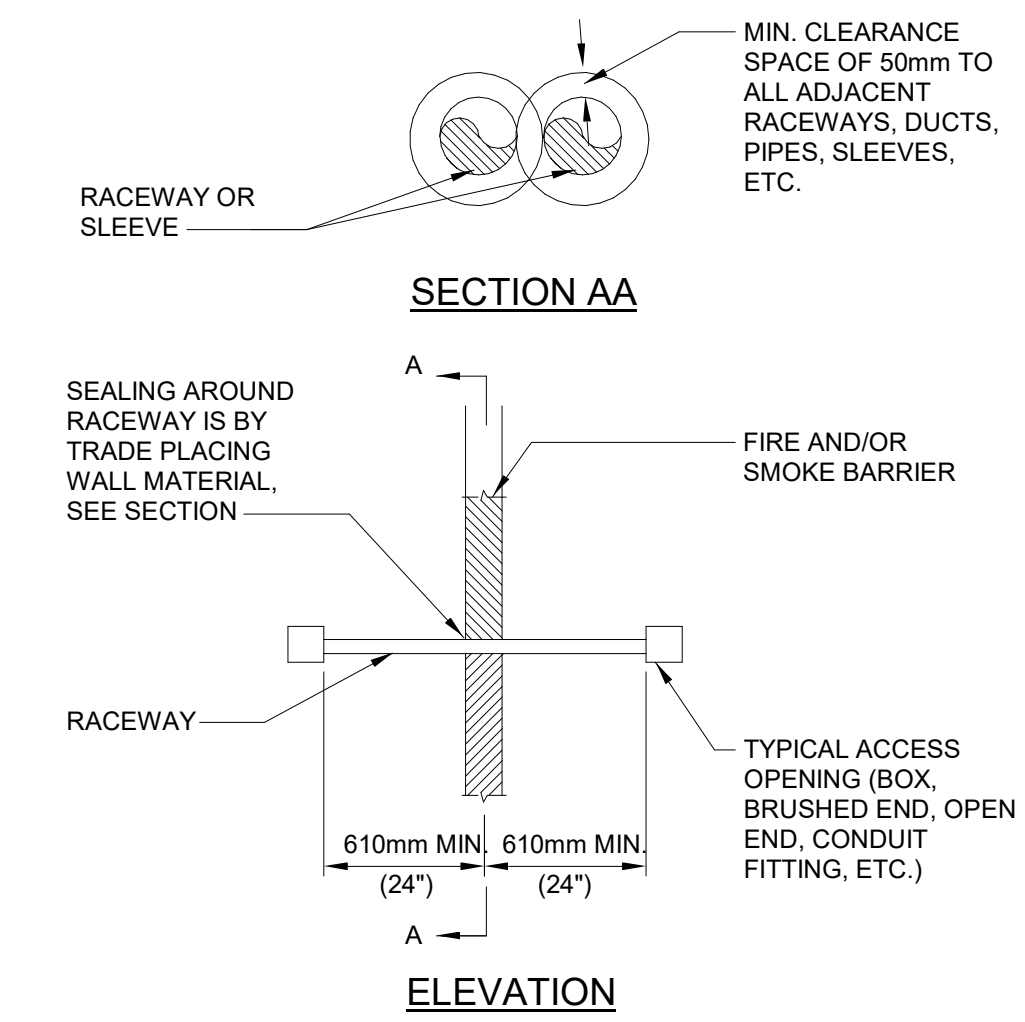


**NOTES:**

1. BLOCKING SHALL BE INSTALLED A MINIMUM OF 8'-0" O.C. AND AT EACH CHANGE OF DIRECTION OF PIPING AND A MINIMUM OF 7" ABOVE ROOF TO TOP OF BLOCKING.
2. FOR ROOF CONSTRUCTION TYPE REFER TO ARCH DWGS.

**DETAIL - CONDUIT SUPPORT AT ROOF**

SCALE: NONE **2**



**DETAIL - WIRING THROUGH FIRE AND SMOKE BARRIERS**

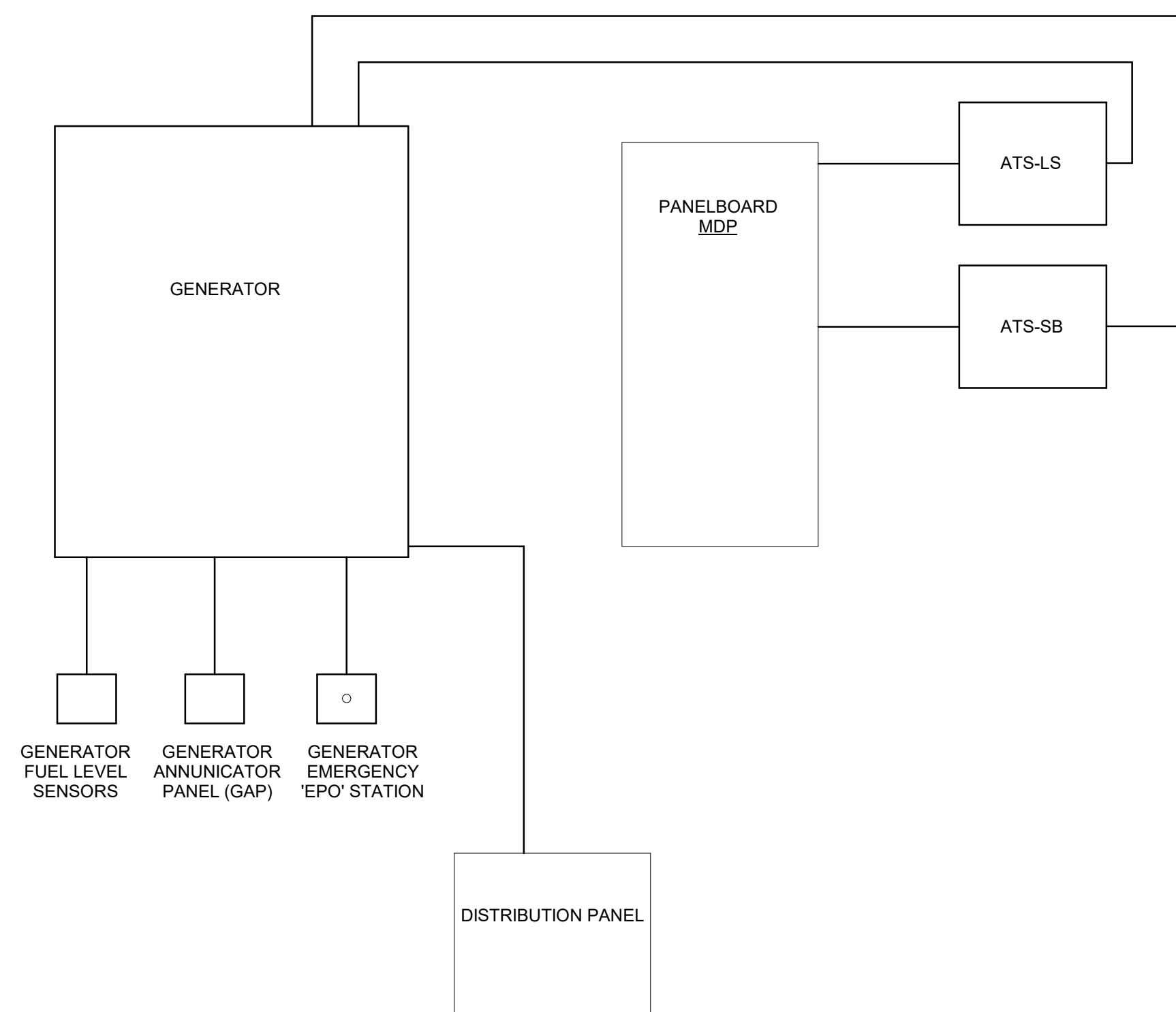
SCALE: NONE **3**

**GENERAL NOTES:**

1. POWER CONDUCTORS FOR GENERATOR FEEDER, BATTERY CHARGER, AND BLOCK HEATER NOT SHOWN. REFER TO SHEET E111 AND PANELBOARD SCHEDULES FOR CIRCUIT INFORMATION.

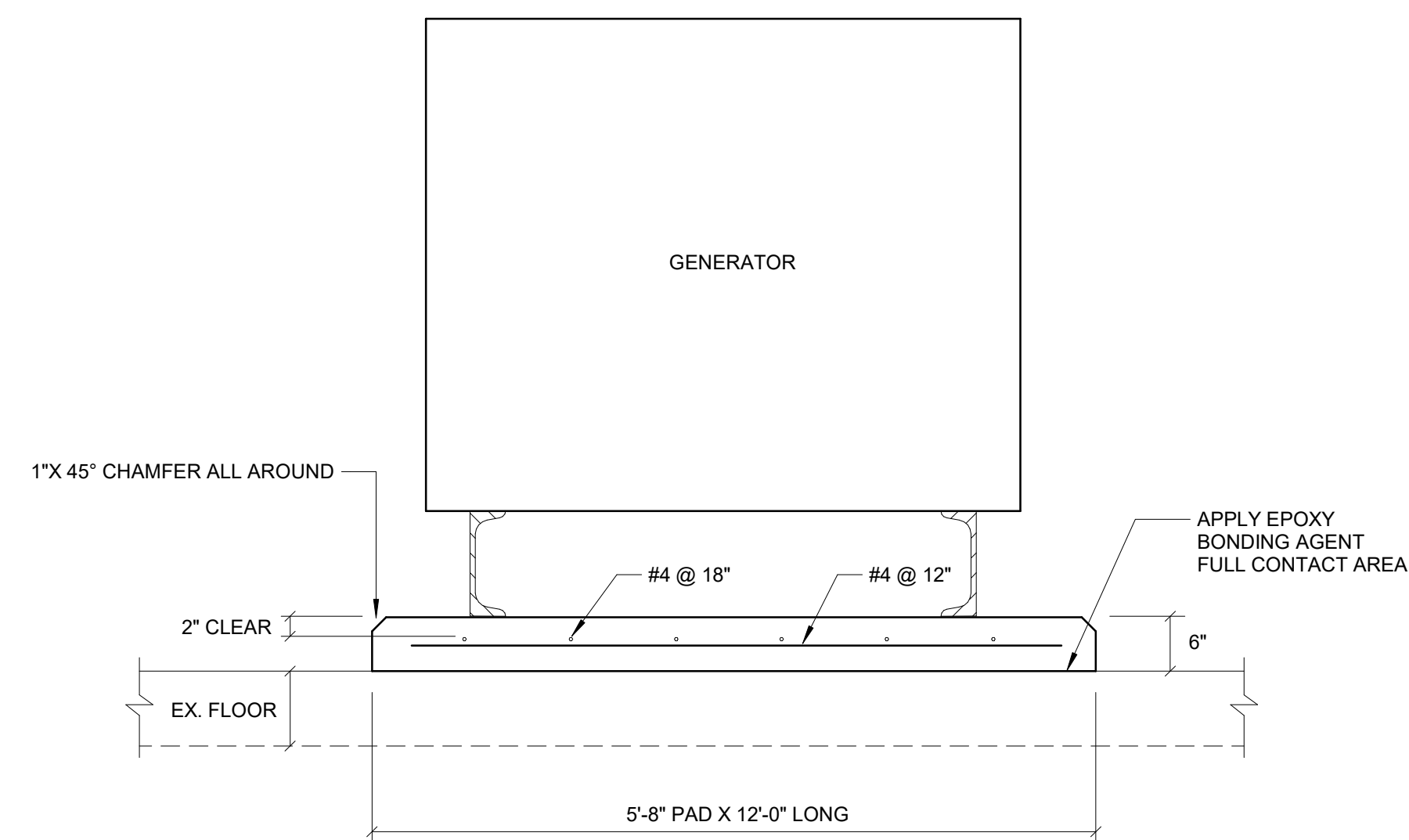
**DRAWING NOTES:**

1. GENERATOR FEEDER TO SWITCHBOARD. REFER TO SINGLE LINE DIAGRAM FOR CONDUCTOR SIZES AND QUANTITIES.
2. GENERATOR ENCLOSURE POWER TO GENERATOR PANEL, TRANSFORMER OR CIRCUITS TO INDIVIDUAL GENERATOR ELECTRICAL EQUIPMENT:
  - A. ENGINE BLOCK HEATER
  - B. BATTERY CHARGER
 VERIFY REQUIREMENTS OF GENERATOR SYSTEM PRIOR TO INSTALLING CONDUITS.
3. CONTROL WIRING AS REQUIRED BY THE GENERATOR AND GENERATOR AUXILIARY EQUIPMENT. MINIMUM CONDUCTOR SIZE FOR THWN STRANDED CONDUCTORS SHALL BE #10 AWG. PROVIDE 10% SPARE CONDUCTORS IN ADDITION TO WHAT THE MANUFACTURER REQUIRES.
4. CONTROL WIRING AS REQUIRED BY THE GENERATOR AND GENERATOR AUXILIARY EQUIPMENT. PROVIDED IN METALLIC RACEWAY.
5. SWITCHBOARD FEEDER TO ATS. REFER TO SINGLE LINE DIAGRAM FOR CONDUCTOR SIZES AND QUANTITIES.
6. CONTROL WIRING FOR FUEL LEVEL SENSORS. PROVIDE 3/4" C, 4#12 PHASE, 2#12 SPARES, 1#12 GND. COORDINATE WITH MANUFACTURER REQUIREMENTS PRIOR TO ROUGH IN.



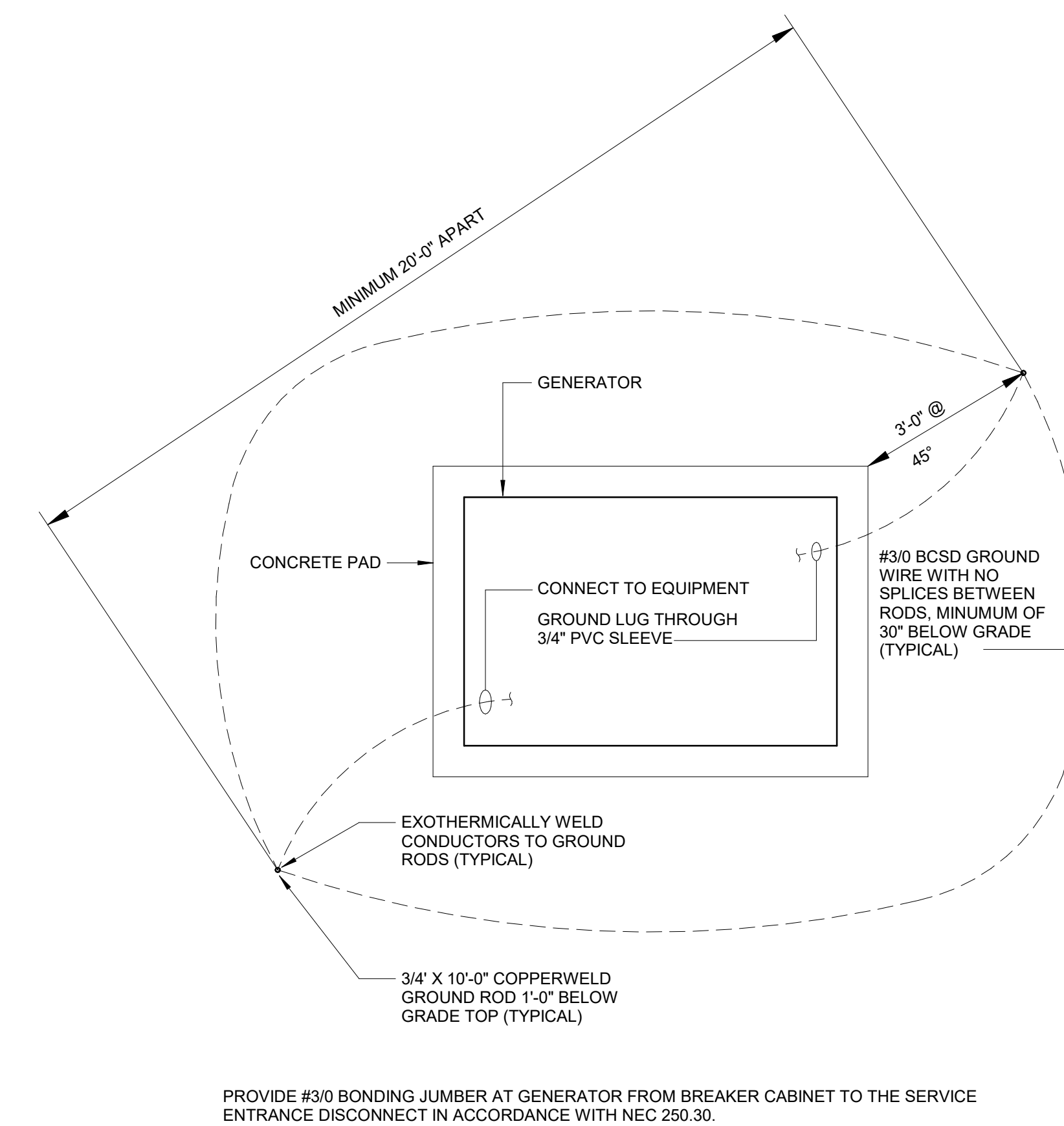
**DETAIL - GENERATOR BLOCK DIAGRAM**

SCALE: NONE **4**



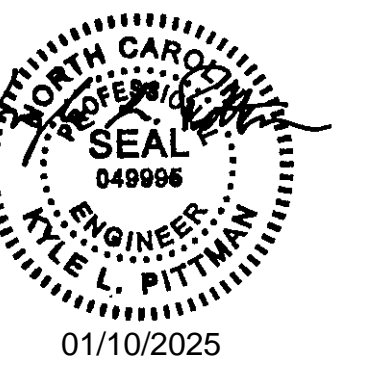
**DETAIL - GENERATOR PAD**

SCALE: NONE **5**



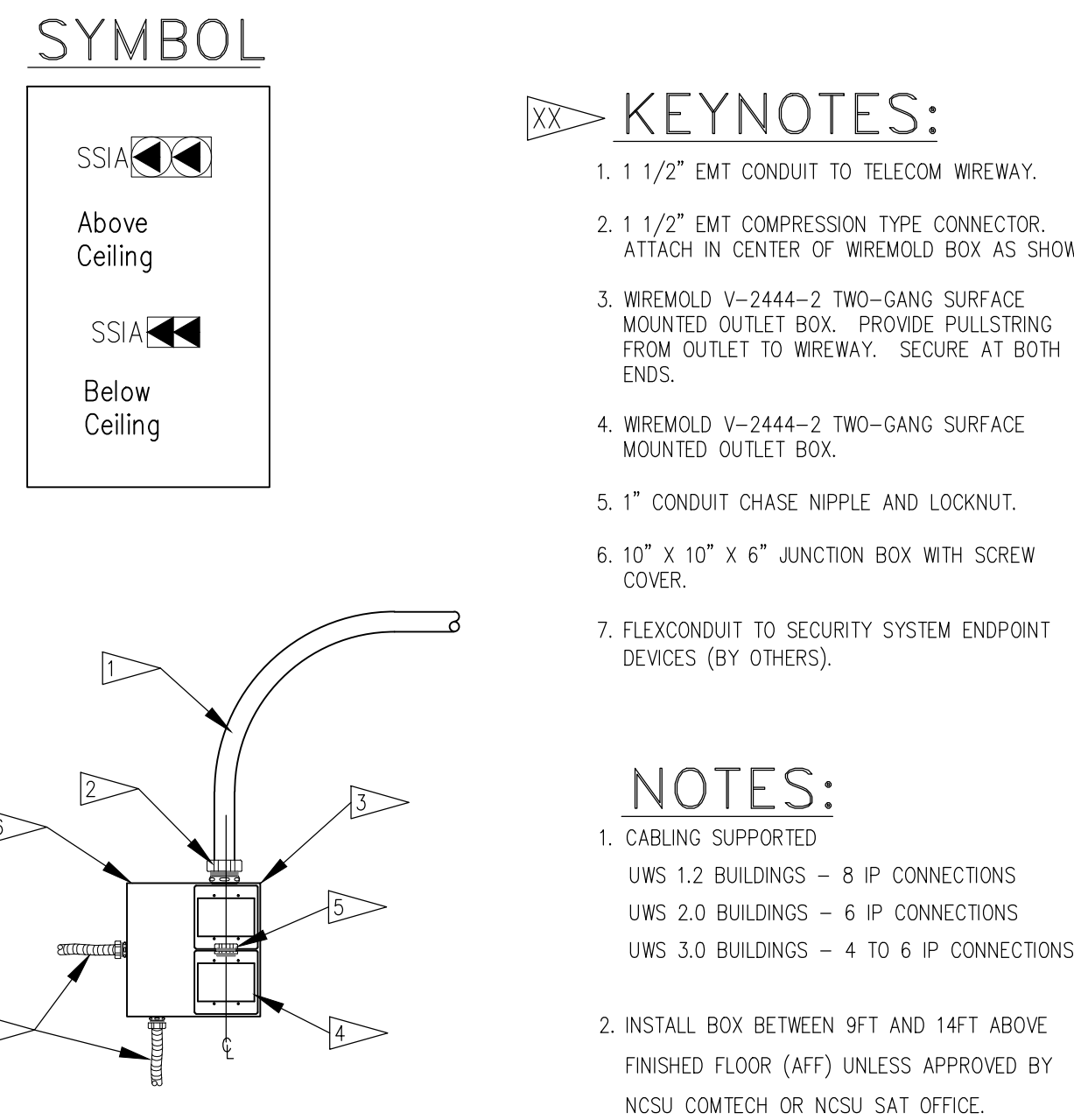
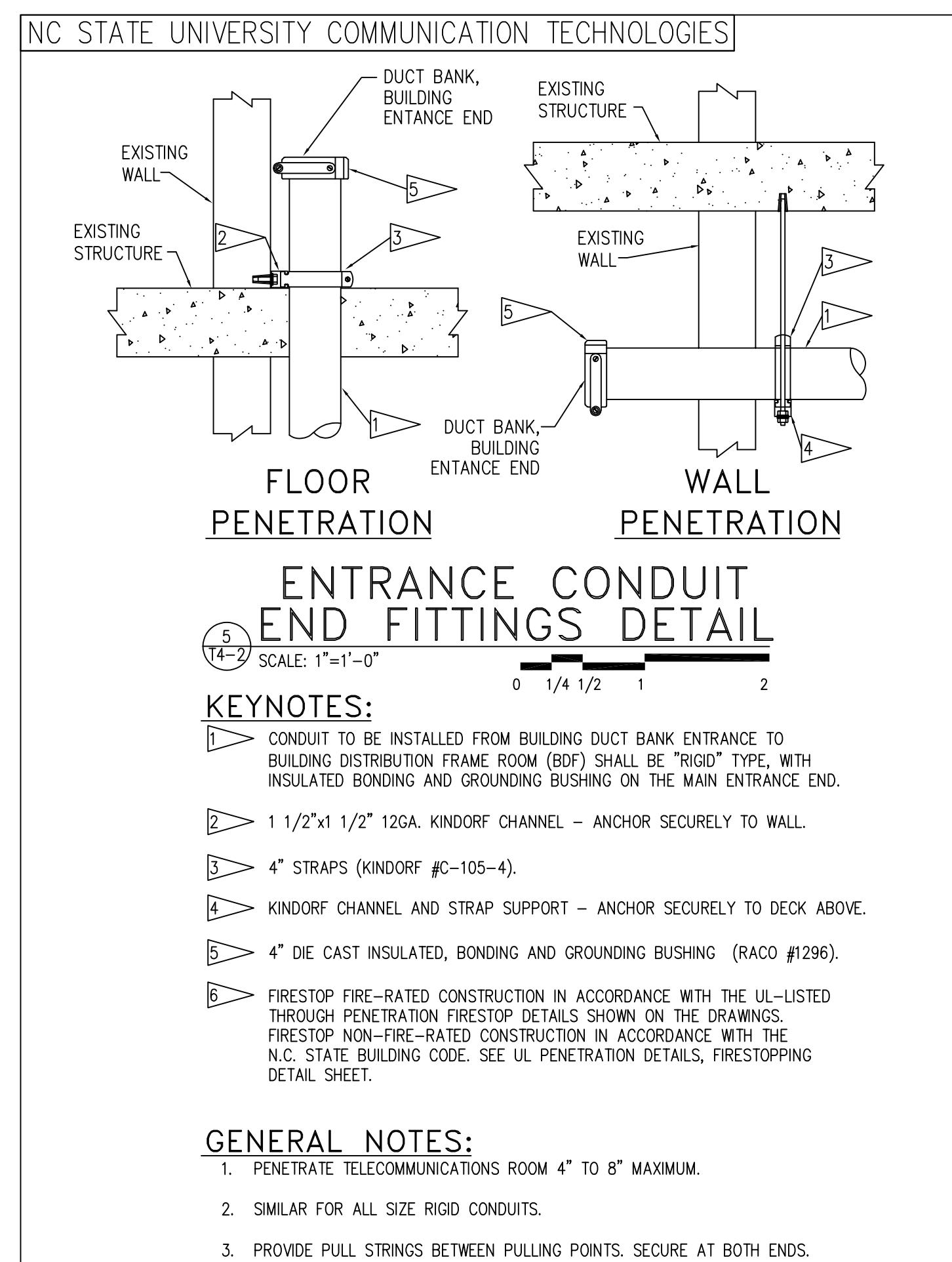
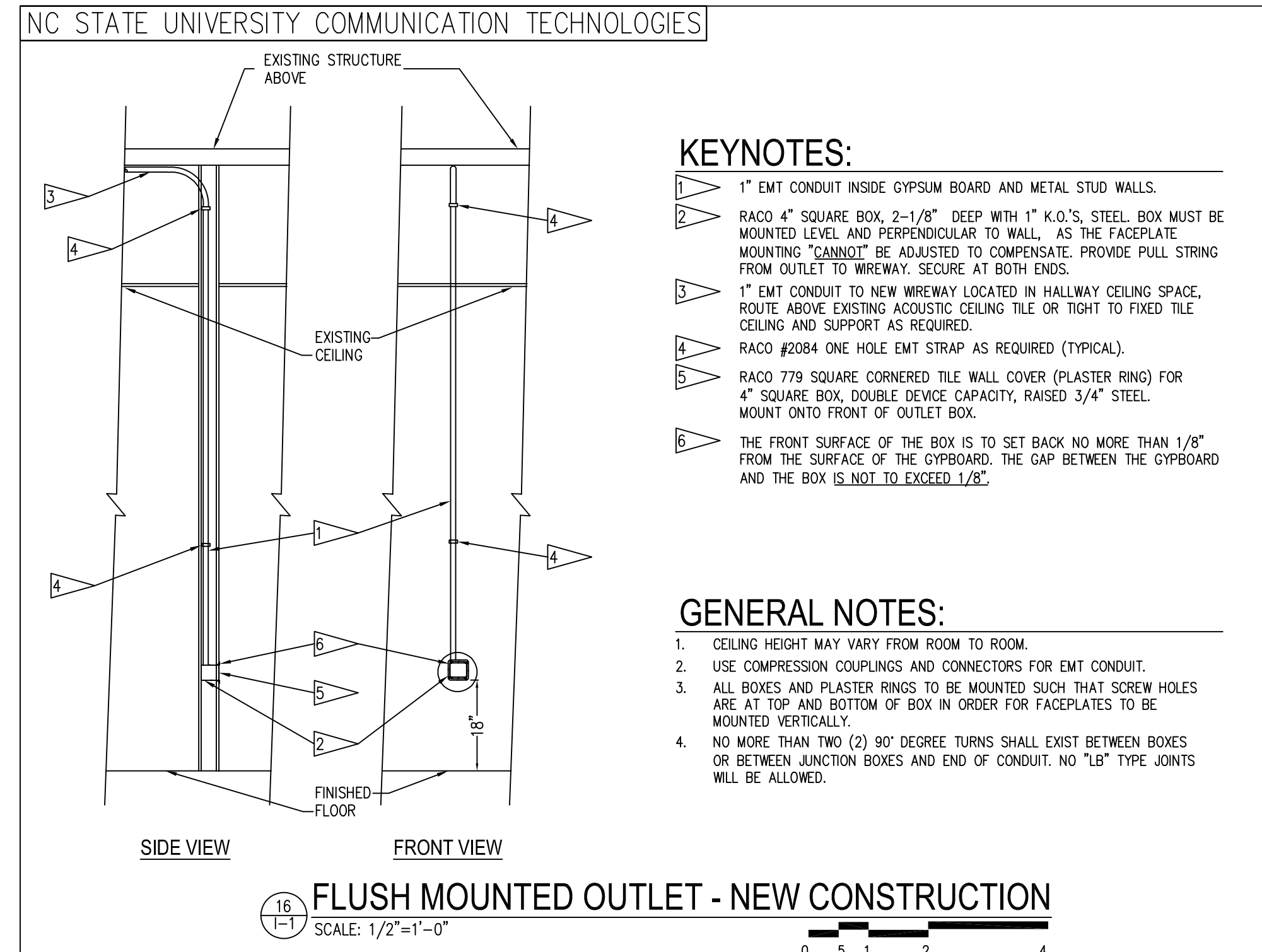
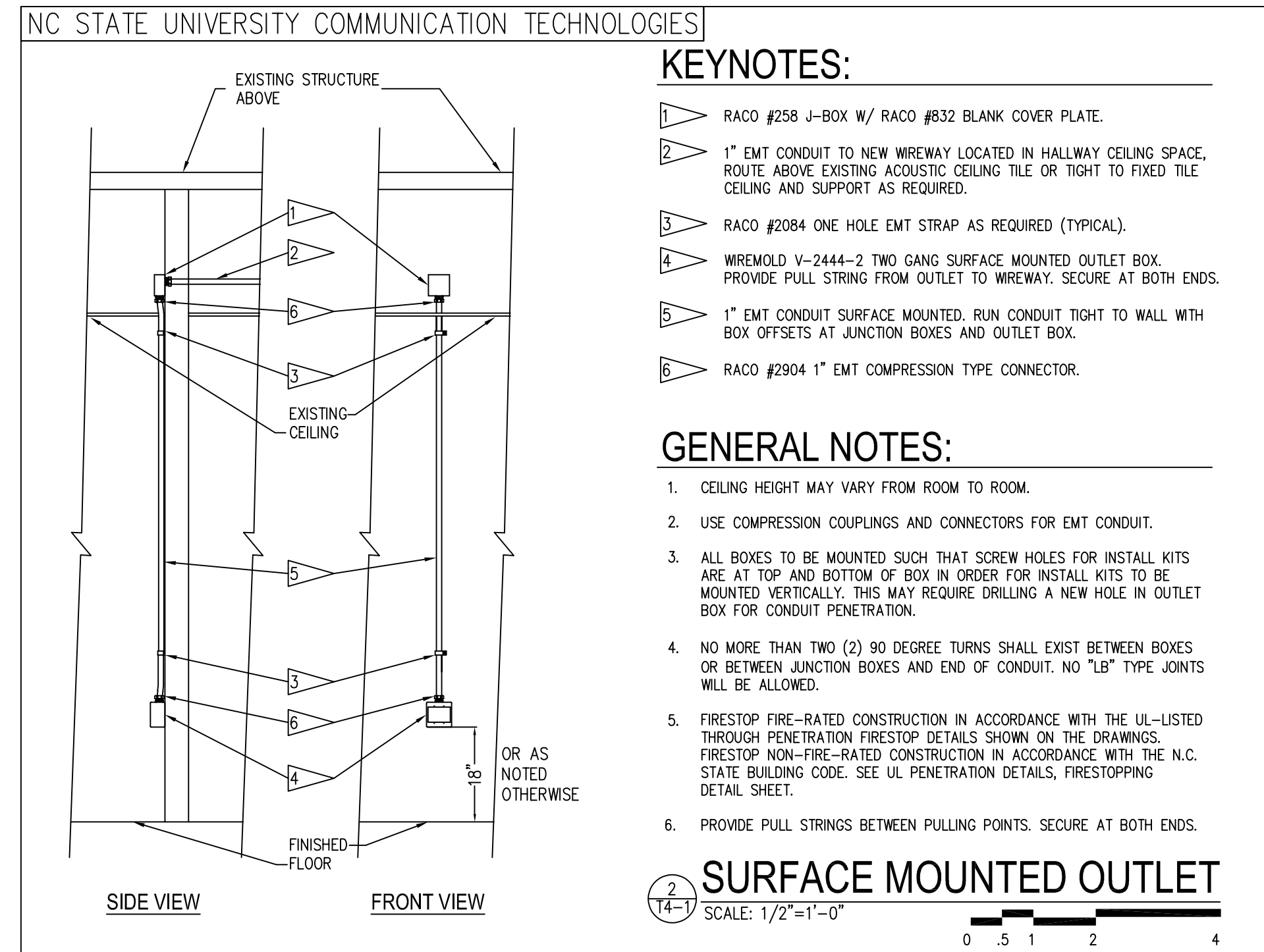
**DETAIL - OUTDOOR EQUIPMENT GROUNDING**

SCALE: NONE **6**

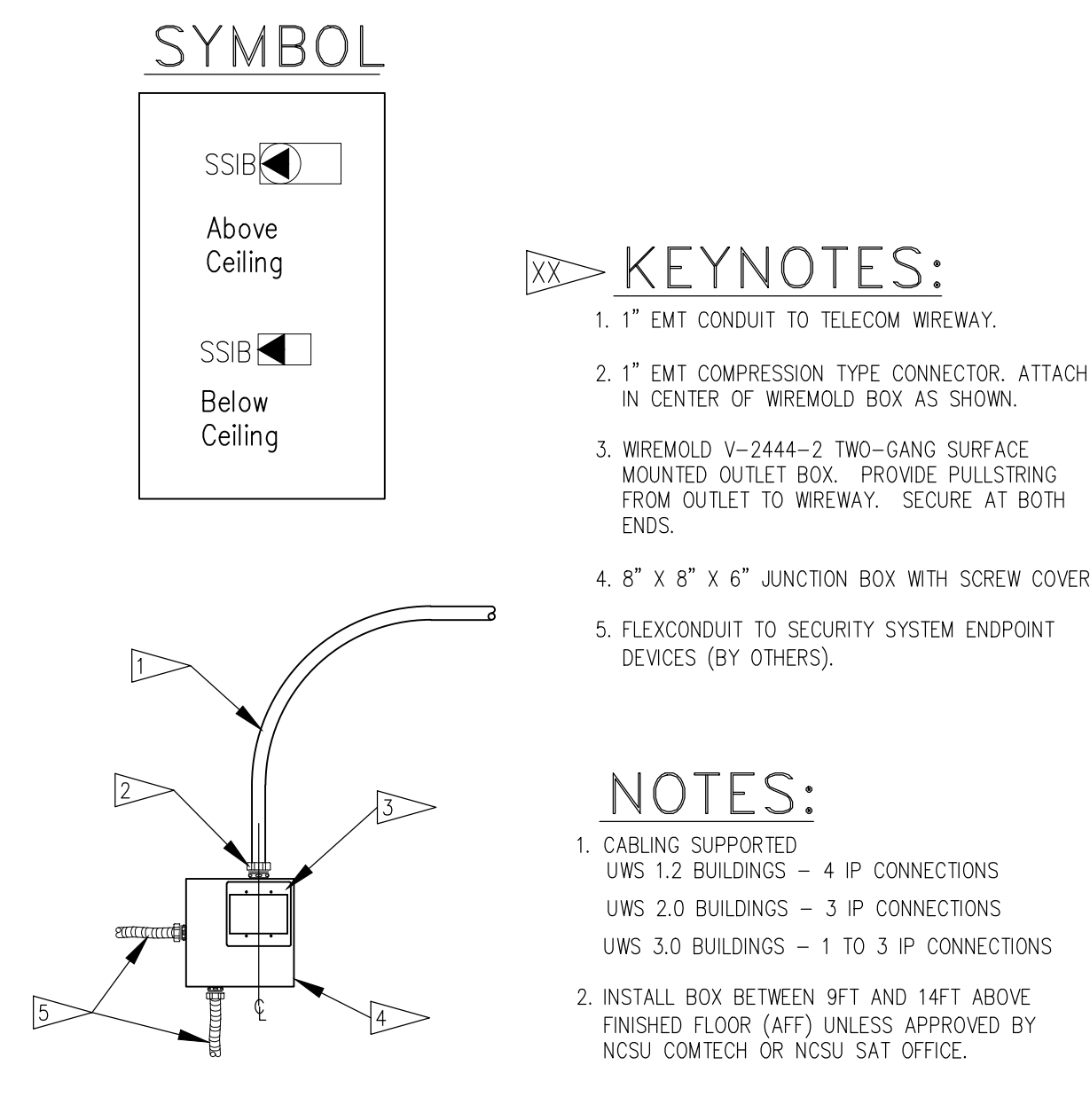


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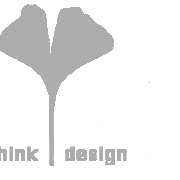
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SECURITY INTERFACE OUTLET (SSI)  
TYPE A



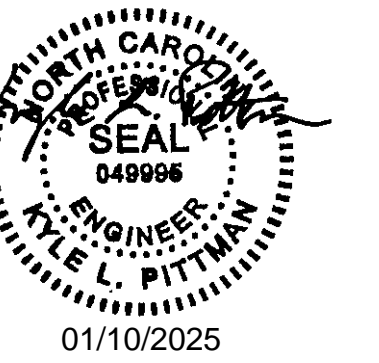
SECURITY INTERFACE OUTLET (SSI)  
TYPE B



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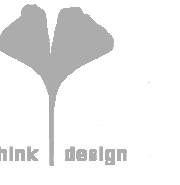
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Code: 42124 Item: 315  
NCSU: 20222007

Project Number 132  
Title  
**ELECTRICAL DETAILS**

Sheet  
**E505**

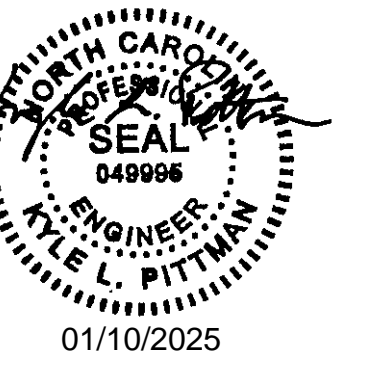
Plate



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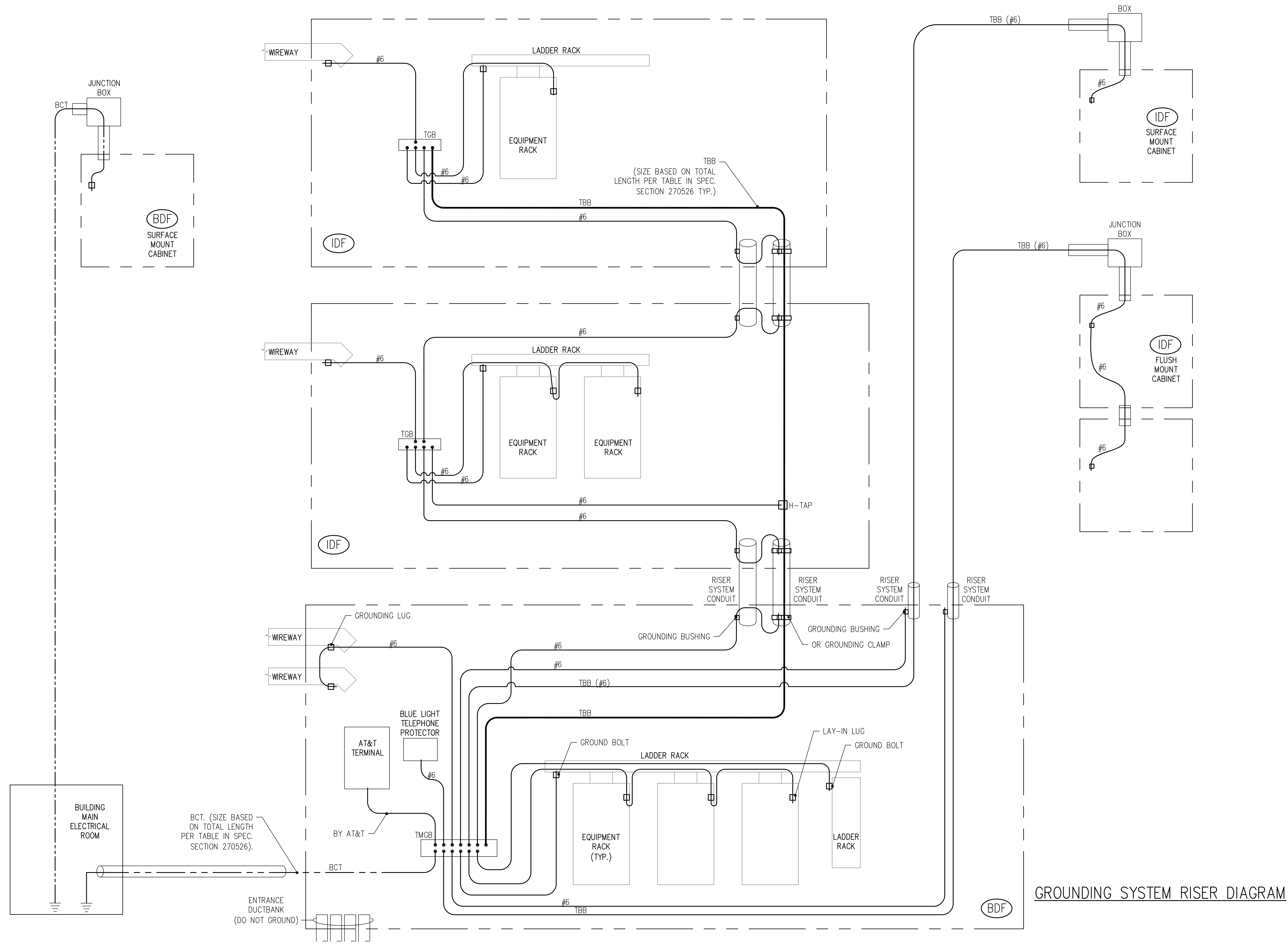
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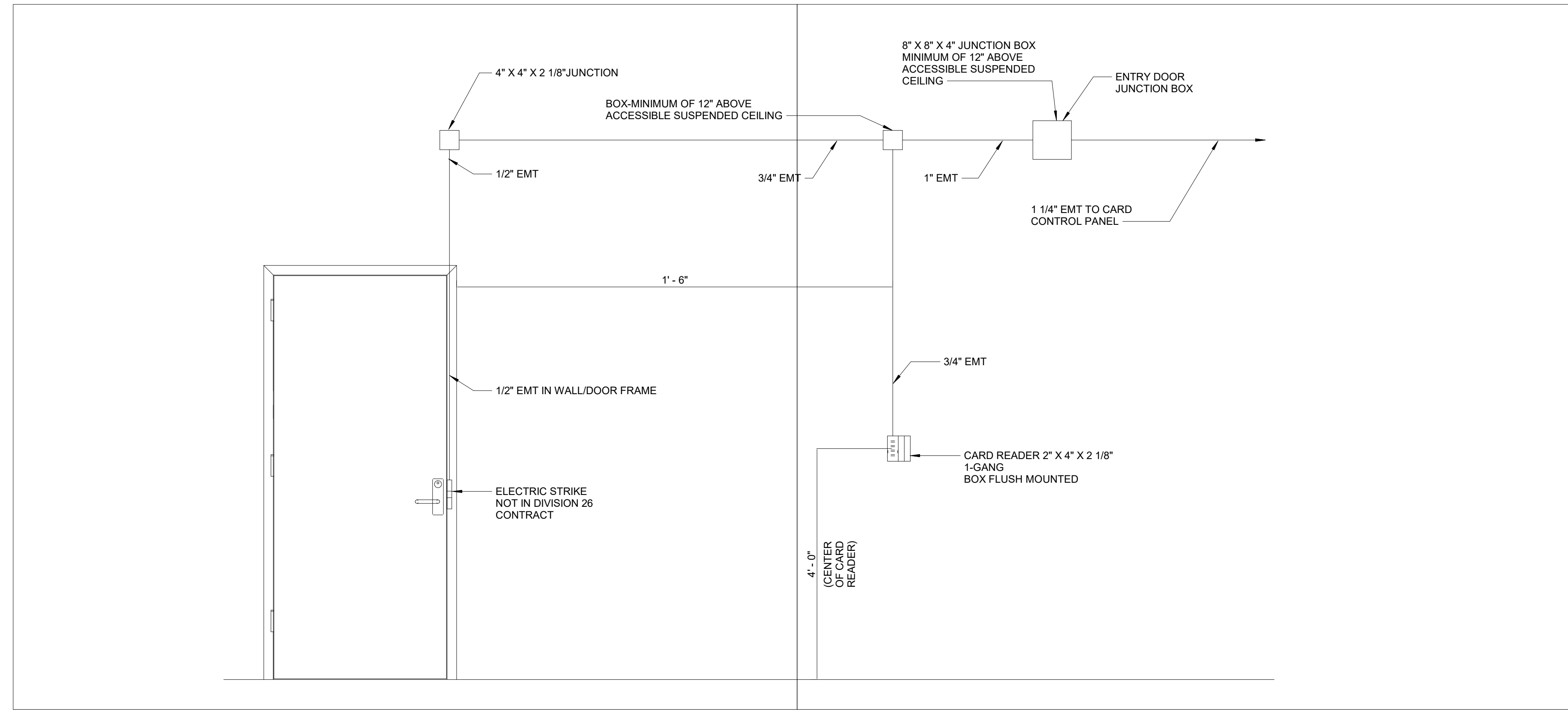
**GROUNDING SYSTEM RISER DIAGRAM**

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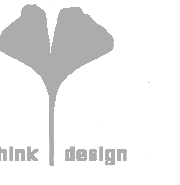
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NCSU: 20222007

Project Number 132  
Title **ELECTRICAL DETAILS**

Sheet **E506**  
Plate



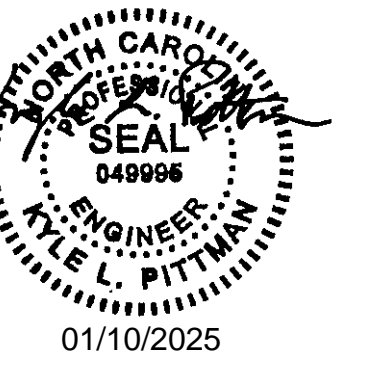
1 **E - DETAIL - ADO-CARD READER TYPE 1**  
SCALE: 12" = 1'-0"



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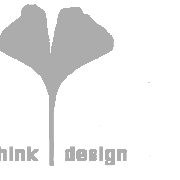
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NCSU: 20222007

Project Number 132  
Title  
**ELECTRICAL DETAILS**

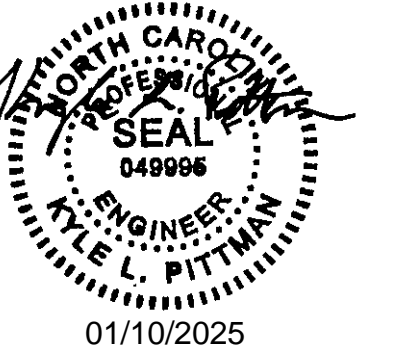
Sheet  
**E507**  
Plate



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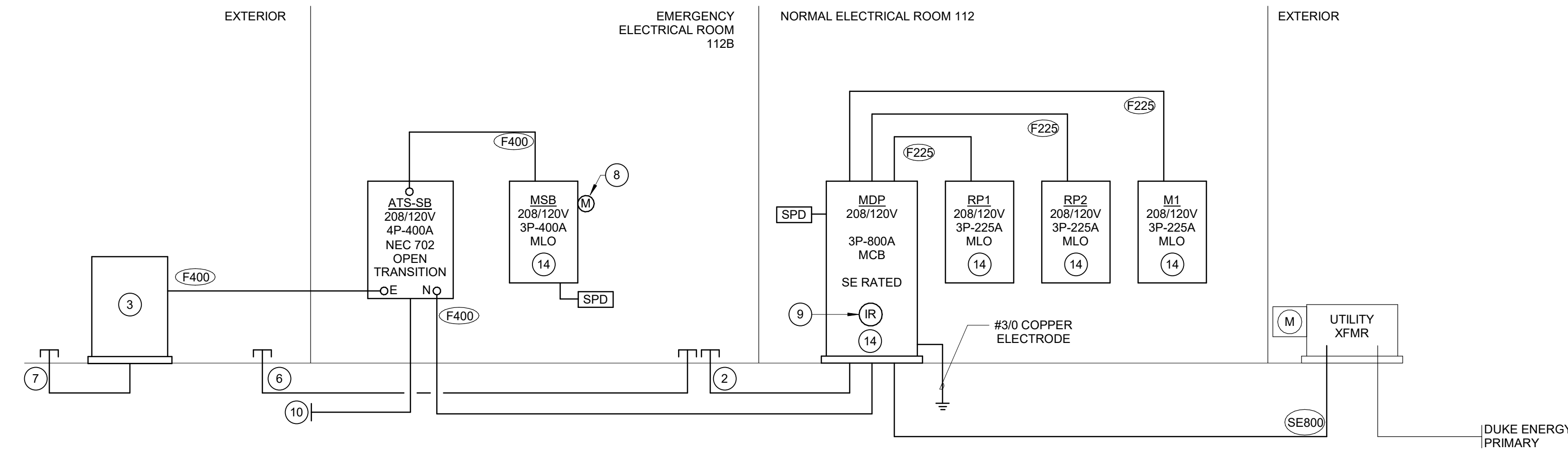


**GENERAL NOTES**

- A. PROVIDE AN SPD FOR EACH PANELBOARD CONNECTED TO THE EMERGENCY ELECTRICAL SYSTEM.
- B. PROVIDE A SIGN FOR EACH ENCLOSED CIRCUIT BREAKER INCLUDING THE TYPE AND LOCATION OF THE NEW 175 KW GENERATOR IN ACCORDANCE WITH NEC 700.7.A.
- C. THREE POLE TRANSFER SWITCHES ARE ALLOWED WITH SOLID NEUTRAL.
- D. ALTERNATE: ALL WORK RELATED TO THE GENERATOR IS PART OF AN ALTERNATE.

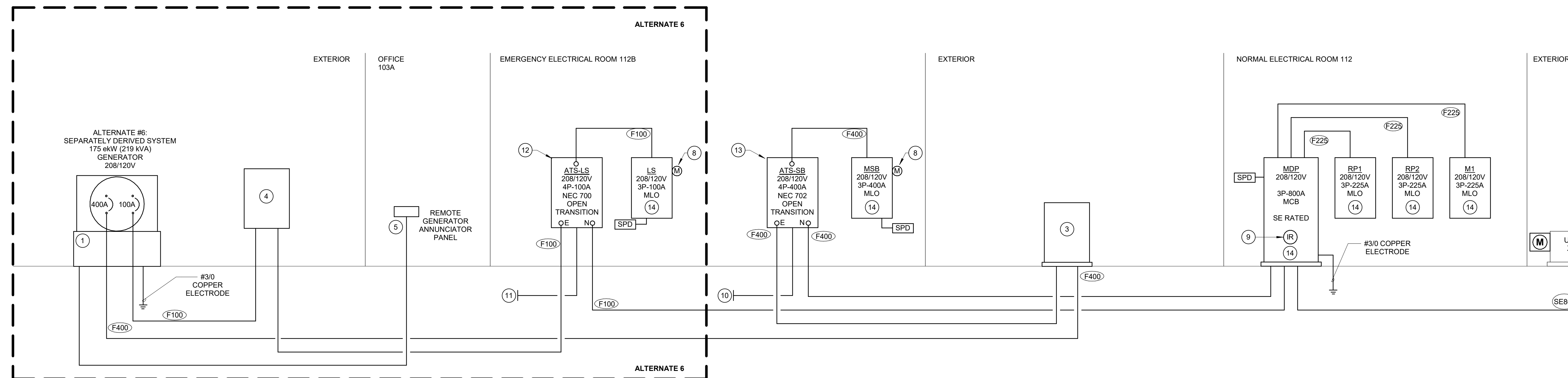
**DRAWING NOTES**

- 1 SEE DETAIL #6 ON SHEET E504 FOR GROUNDING AND BONDING AT GENERATOR.
- 2 PROVIDE 1-1/2" CONDUIT WITH PULL STRING FROM PANEL MDP TO FUTURE LOCATION OF ATS-LS IF ALTERNATE #6 IS NOT ACCEPTED. CAP CONDUIT.
- 3 BASE BID: PROVIDE 400A DOCKING STATION WITH INTEGRAL MANUAL TRANSFER SWITCH, REMOTE ANNUNCIATION AND QUICK CONNECT CAM LOKS FOR FUTURE MOBILE GENERATOR HOOK UP. TO SUPPLY BACKUP DURING BUILDING GENERATOR MAINTENANCE.
- 4 ALTERNATE #6: PROVIDE 100A DOCKING STATION WITH INTEGRAL MANUAL TRANSFER SWITCH, REMOTE ANNUNCIATION AND QUICK CONNECT CAM LOKS PER NEC 700.3.F FOR FUTURE MOBILE GENERATOR HOOK UP. TO SUPPLY EMERGENCY BACKUP DURING BUILDING GENERATOR MAINTENANCE.
- 5 PROVIDE 3/4" WITH 2-18 TWISTED SHIELDED PAIR FOR GENERATOR ANNUNCIATOR PANEL.
- 6 PROVIDE 1-1/2" CONDUIT WITH PULL STRING AND (2) 1" WITH PULL STRING FROM FUTURE LOCATION OF ATS-LS TO FUTURE LOCATION OF FUTURE 100A DOCKING STATION IF ALTERNATE #6 IS NOT ACCEPTED. CAP CONDUIT.
- 7 STUB OUT (2) 2" WITH PULL STRING FOR FUTURE CONNECTION TO GENERATOR IF ALTERNATE #6 IS NOT ACCEPTED. CAP CONDUIT.
- 8 PROVIDE EXTERNAL METER FOR PANELBOARD.
- 9 PANELBOARD SHALL HAVE INFARED WINDOW.
- 10 PROVIDE (2) 1" FOR GENERATOR CONTROLS AND MONITORING TO GENERATOR STUB UP WINDOW. PROVIDE PULL STRING AND CAP CONDUIT IF ALTERNATE #6 IS NOT ACCEPTED.
- 11 PROVIDE (2) 1" FOR GENERATOR CONTROLS AND MONITORING.
- 12 PROVIDE SIGNAGE AT ATS IN ACCORDANCE WITH NEC 700.7(A) AND 700.5(E). THE AVAILABLE FAULT CURRENT SHALL BE PROVIDED BY THE ENGINEER ONCE EQUIPMENT IS SELECTED AND FEEDER LENGTHS ARE VERIFIED.
- 13 PROVIDE SIGNAGE AT ATS IN ACCORDANCE WITH NEC 702.7(A) AND 705.5(C). THE AVAILABLE FAULT CURRENT SHALL BE PROVIDED BY THE ENGINEER ONCE EQUIPMENT IS SELECTED AND FEEDER LENGTHS ARE VERIFIED.
- 14 PROVIDE LABEL REQUIRED BY NEC 408.6. THE AVAILABLE FAULT CURRENT SHALL BE PROVIDED BY THE ENGINEER ONCE EQUIPMENT IS SELECTED AND FEEDER LENGTHS ARE VERIFIED.



**ELECTRICAL RISER DIAGRAM (BASE BID)**  
SCALE: NONE

DESIGNATION	BRKR SIZE	# SETS	SIZE	GRD	CND	REMARKS
F100	100A	1	4#3	#8	1-1/2"	
F225	225A	1	4#4/0	#4	2-1/2"	
F250	250A	1	4#250	#4	2-1/2"	
F400	400A	2	4#3/0	#3	2"	
SE800	800A	3	4#300		3"	



**ELECTRICAL RISER DIAGRAM (BASE BID WITH ALTERNATE 6)**  
SCALE: NONE

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**NCSU Apiculture Facility**  
Raleigh, NC  
SCO ID No.: 22-24494  
Code: 42124 Item: 315  
NCSU: 20222007

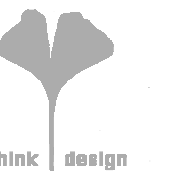
Project Number 132

Title  
**ELECTRICAL RISER DIAGRAM**

Sheet

**E601**

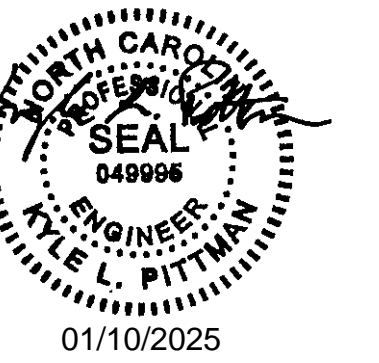
Plate



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BID SET

Drawn: TMW Checked: KLP Date: 1/10/2025 Revisions:

FIRE ALARM OPERATIONAL MATRIX

Table with 33 columns (A-GG) and 12 rows (1-12) showing system inputs and their corresponding outputs across various fire alarm systems.

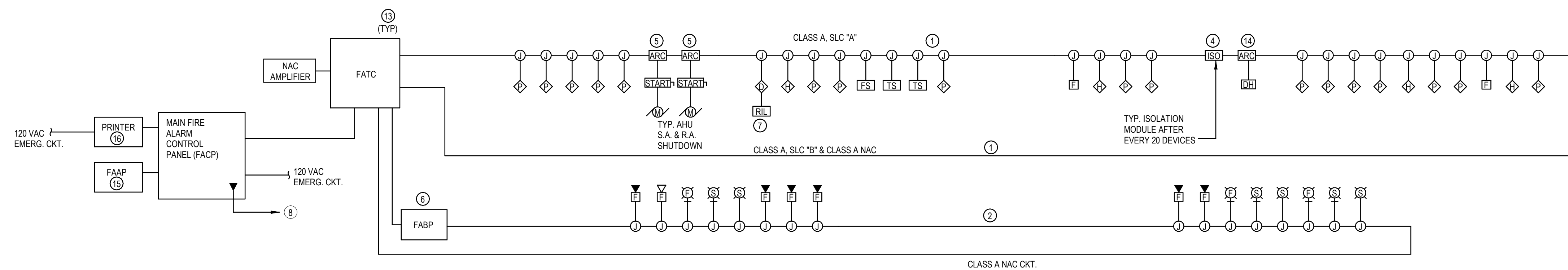
2 FIRE ALARM OPERATIONAL MATRIX SCALE: N.T.S.

GENERAL NOTES

- 1. PROVIDE SPARE WIRE DURING INSTALLATION OF FIRE/SMOKE DAMPER REMOTE ALARM INDICATOR LIGHTS... 2. ALL EXTERIOR FIRE ALARM DEVICES ARE TO BE IN WEATHERPROOF ENCLOSURE... 3. ALL FIRE ALARM CONDUIT SHALL BE RED AND ADHERE TO NCSU LABELING STANDARDS... 4. ENSURE 20% SPARE CAPACITY IS MAINTAINED IN ALL FIRE ALARM PANELS PER DUMC STANDARDS.

DRAWING NOTES

- 1. CLASS A ADDRESSABLE LOOP, SIGNALING LINE CIRCUIT (SLC) PROVIDE MINIMUM #12 SHIELDED TWISTED PAIR (STP) IN 3/4" EMT... 2. CLASS A, NOTIFICATION APPLIANCE CIRCUIT (NAC), PROVIDE MINIMUM #12 CONDUCTORS IN 3/4" EMT... 3. NOT USED... 4. PROVIDE ISOLATION MODULES (ISO) AS REQUIRED IN ACCORDANCE WITH SPECIFICATIONS... 5. PROVIDE ADDRESSABLE RELAY CONTROL MODULE (ARC) AT MECHANICAL EQUIPMENT CONTROLLER... 6. WHEN REQUIRED, PROVIDE FIRE ALARM BOOSTER PANELS (FABP) FOR SIGNAL LOOP CIRCUITS... 7. PROVIDE REMOTE ALARM INDICATOR LAMP AND TEST SWITCH FOR EACH DUCT MOUNTED SMOKE DETECTOR... 8. PROVIDE CONNECTION FROM DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT) IN THE MAIN FACP TO A CELLULAR DACT... 9. NOT USED... 10. NOT USED... 11. NOT USED... 12. NOT USED... 13. PROVIDE ONE FIRE ALARM TERMINAL CABINET FOR EACH FLOOR... 14. WHERE INDICATED ON THE PLANS PROVIDE ADDRESSABLE RELAY CONTROL MODULE AT SECURITY DOORS... 15. PROVIDE REMOTE FIRE ALARM ANNUNCIATOR PANEL (FAAP), COORDINATE EXACT AND FINAL LOCATION WITH AHJ... 16. PROVIDE SYSTEM EVENT PRINTER MOUNTED ON SHELF ADJACENT TO FACP...



1 FIRE ALARM RISER DIAGRAM SCALE: N.T.S.

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NCSU Apiculture Facility Raleigh, NC SCO ID No.: 22-24494 Code: 42124 Item: 315 NCSU: 202220007

Project Number 132 Title FIRE ALARM RISER DIAGRAM

Sheet E602 Plate





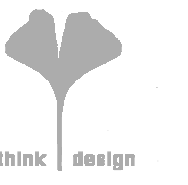


PANELBOARD: MSB														
LOCATION: EMERGENCY ELEC				MAINS: MLO				AMPS: 400						
MOUNTING: SURFACE				VOLTS: 208/120 Wye										
ENCL NEMA: TYPE 1				PHASE: 3										
MIN AIC: 22,000				WIRES: 4										
PANEL NOTES:														
PROVIDE GROUND BUS PROVIDE FULL SIZE NEUTRAL BUS UNLESS NOTED OTHERWISE														
WIRE SIZE	LOAD DESCRIPTION	P	TRIP AMPS	TYPE	CKT	A	B	C	CKT	TYPE	TRIP AMPS	P	LOAD DESCRIPTION	WIRE SIZE
SEE EQUIP & MOTOR CONN SCH	COVERED STORAGE 115	3	30 A		1	0.25	0.25		2				Motor WALK-IN FREEZER 107A	SEE EQUIP & MOTOR CONN SCH
					3		0.25	0.25	4					
					5			0.25	0.25	6				
SEE EQUIP & MOTOR CONN SCH	INCUBATOR 104A	3	30 A		7	0.10	0.00		8	--	20 A	2	SPARE	--
					9			0.10	0.00	10				
					11				0.10	0.00	12			
SEE EQUIP & MOTOR CONN..	(TWH- 2b) EXTRACTION 107B	2	70 A		13	7.02	0.00		14	--	30 A	2	SPARE	--
					15			7.02	7.02	16				
					17				8.93	7.02	18			
SEE EQUIP & MOTOR CONN SCH	AHU-1	3	125 A		19	8.93	0.73		20				SEE EQUIP & MOTOR CONN..	
					21			8.93	0.73	22				SEE EQUIP & MOTOR CONN SCH
					23				0.73	0.73	24			
SEE EQUIP & MOTOR CONN SCH	MOTOR EDUCATION HIVE 106	3	15 A		25	0.73	0.10		26				SEE EQUIP & MOTOR CONN SCH	
					27			0.73	0.10	28				
SEE EQ SCH	VAV-1,2,14,13 RM112, 110	1	15 A		29			0.80	0.10	30				
SEE EQ SCH	VAV-6,7,12- RM108, 103A	1	15 A		31	0.62	0.77		32					
SEE EQ SCH	VAV-8,10 - LAB 104	1	20 A		33			1.40	0.77	34				
SEE EQ SCH	VAV-3,4,5 -RM 107, 107B....	1	20 A		35				1.60	0.77	36			
--	SPARE	1	15 A	--	37	0.00	0.50		38					
--	SPARE	1	20 A	--	39			0.00	0.50	40				
--	SPARE	1	20 A	--	41				0.00	0.50	42			
--	SPACE	1	--	--	43	--	0.00	--	0.00	44				
--	SPACE	1	--	--	45	--	0.00	--	0.00	46				
--	SPACE	1	--	--	47	--	0.00	--	0.00	48				
--	SPACE	1	--	--	49	--	0.00	--	0.00	50				
--	SPACE	1	--	--	51	--	0.00	--	0.00	52				
--	SPACE	1	--	--	53	--	0.00	--	0.00	54				
<b>TOTAL LOAD:</b>						20.00 kVA	27.80 kVA	21.78 kVA						
BREAKER TYPE KEYS:														
LO - INDICATES C.B. EQUIPPED WITH "LOCK-ON" DEVICE GF - INDICATES C.B. IS GROUND FAULT TYPE (5mA FOR PERSONNEL) ST - INDICATES C.B. EQUIPPED WITH SHUNT TRIP DEVICE HT - INDICATES C.B. EQUIPPED WITH 30mA GROUND FAULT FOR EQUIPMENT														
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals										
Motor	41.50	100.00%	41.50											
Equipment	28.08	100.00%	28.08											
				<b>Total Conn. Load:</b> 69.58 kVA										
				<b>Total Est. Demand:</b> 69.58 kVA										
				<b>Total Conn. Current:</b> 193.13 A										
				<b>Total Est. Demand Current:</b> 193.13 A										

PANELBOARD: LS															
LOCATION: EMERGENCY ELEC				MAINS: MLO				AMPS: 100							
MOUNTING: SURFACE				VOLTS: 208/120 Wye											
ENCL NEMA: TYPE 1				PHASE: 3											
MIN AIC: 22,000				WIRES: 4											
PANEL NOTES:															
PROVIDE GROUND BUS PROVIDE FULL SIZE NEUTRAL BUS UNLESS NOTED OTHERWISE															
WIRE SIZE	LOAD DESCRIPTION	P	TRIP AMPS	TYPE	CKT	A	B	C	CKT	TYPE	TRIP AMPS	P	LOAD DESCRIPTION	WIRE SIZE	
2#10, #10G, 3/4"	LTG Room 103A, 103	1	20 A		1	0.00	0.00		2				LTG Room 113-3	2#10, #10G, 3/4"	
2#10, #10G, 3/4"	LTG Room 113-2, 113-1	1	20 A		3		0.20	0.18	4				FACP	2#10, #10G, 3/4"	
2#10, #10G, 3/4"	LTG Room 107, 107B	1	20 A		5			0.50	1.00	6			GEN. BATTERY START	2#10, #10G, 3/4"	
--	FA DACT / PRINTER	1	20 A	--	7	0.10	0.00		8				LTG WALK-IN FREEZER...	2#10, #10G, 3/4"	
2#10, #10G, 3/4"	GENERATOR BLOCK HEATER	2	20 A		9		1.00	0.00	10	--	20 A	1	SPARE	--	
					11				1.00	0.00	12	--	20 A	1	
2#10, #10G, 3/4"	LTG Room 104B, 101, 102....	1	20 A		13	0.06	0.00		14	--	20 A	1	SPARE	--	
--	SPARE	1	20 A	--	15		0.00	0.00	16	--	20 A	1	SPARE	--	
--	SPARE	1	20 A	--	17			0.00	0.00	18	--	20 A	1	SPARE	--
--	SPARE	1	20 A	--	19	0.00	0.00		20	--	20 A	1	SPARE	--	
--	SPARE	1	20 A	--	21		0.00	0.00	22	--	20 A	1	SPARE	--	
--	SPARE	1	20 A	--	23			0.00	0.00	24	--	20 A	1	SPARE	--
--	SPARE	1	20 A	--	25	0.00	0.00		26	--	20 A	1	SPARE	--	
--	SPARE	1	20 A	--	27			0.00	0.00	28	--	20 A	1	SPARE	--
--	SPARE	1	20 A	--	29			0.00	0.00	30	--	20 A	1	SPARE	--
--	SPACE	1	--	--	31	--	--	--	--	32	--	--	1	SPACE	
--	SPACE	1	--	--	33	--	--	--	--	34	--	--	1	SPACE	
--	SPACE	1	--	--	35	--	--	--	--	36	--	--	1	SPACE	
--	SPACE	1	--	--	37	--	--	--	--	38	--	--	1	SPACE	
--	SPACE	1	--	--	39	--	--	--	--	40	--	--	1	SPACE	
--	SPACE	1	--	--	41	--	--	--	--	42	--	--	1	SPACE	
<b>TOTAL LOAD:</b>						0.16 kVA	1.38 kVA	2.50 kVA							
BREAKER TYPE KEYS:															
LO - INDICATES C.B. EQUIPPED WITH RED "LOCK-ON" DEVICE GF - INDICATES C.B. IS GROUND FAULT TYPE (5mA FOR PERSONNEL) ST - INDICATES C.B. EQUIPPED WITH SHUNT TRIP DEVICE HT - INDICATES C.B. EQUIPPED WITH 30mA GROUND FAULT FOR EQUIPMENT															
Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals											
LTG	0.76	125.00%	0.96												
Equipment	3.18	100.00%	3.18												
				<b>Total Conn. Load:</b> 4.04 kVA											
				<b>Total Est. Demand:</b> 4.24 kVA											
				<b>Total Conn. Current:</b> 11.23 A											
				<b>Total Est. Demand Current:</b> 11.76 A											

**DRAWING NOTES**

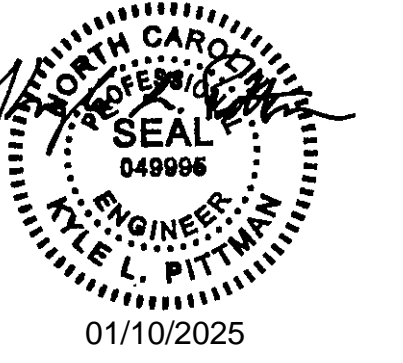
- 1 PROVIDE WITH RED HANDLE CLIP



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NC Certificate of Licensure: C-1126



**BID SET**

Drawn	TMW
Checked	KLP
Date	1/10/2025
Revisions	

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**NCSU Apiculture Facility**  
Raleigh, NC  
SCO ID No.: 22-24494  
Code: 42124 Item: 315  
NCSU: 20222007

Project Number 132

**ELECTRICAL SCHEDULES**

Sheet

**E703**

Plate

PANEL MSB	PANEL LS